A Good Soldier Spoiled

The story of
Major Percy Alexander MacMahon
by Dr. Paul Garcia

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A novel by

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A bronze bust of Percy MacMahon

Preface

This story is part fiction, part biography, part autobiography. While carrying out research for an academic thesis on the life and work of the Victorian mathematician called Percy Alexander MacMahon, I realised that almost all of his personal life was lost. His *nachlass*, the material left behind in archives and libraries, was very small. The development of his mathematical ideas, as recorded in the more than one hundred and twenty papers he published, is by contrast a complete history of his intellectual life. His private life, his personal life, is only hinted at. For his education, his army career, his return to England from India on a sick note, his first marriage, his divorce, and so on, there is documentary evidence from official sources, but no

diaries or journals detailing his innermost thoughts. It is a skeleton of a life, a mere framework of fixed points in physical time and space

After seven years of work, I experienced an ache to meet the man. Worse that unrequited love, in a way, because for this ache there was no hope of relief. But when you have an itch, you have to scratch, and this book is my scratching. I could imagine the meeting, and I could imagine the details around the real, documented events. There is a quote, often attributed to the peripatetic mathematician Paul Erdös, to the effect that 'mathematician is a device for turning coffee into theorems.' This is amusing, but it avoids the issue of the real person who is the mathematician. MacMahon was not a device – and I have no evidence that he was a coffee drinker – but a man buffeted by the usual capricious effects of fate, and a man with a complex non-mathematical life. I have had to mention some of the mathematics in this story, but principally it is an attempt to recreate what might have happened during his life. Some of the events are real; some events are real but didn't happen to MacMahon; some events are the product of my imagination. But I hope that they all hang together to make a believable account of his life.

Because this is about my interpretation of history, I have made myself a character in the tale, and there are some elements of autobiography. I may have drawn parallels between myself and MacMahon; this is pure vanity, and I do not claim in any way to be the mathematician that he was, nor the man.

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The person who deserves most thanks is my wife, Mary, who has suffered with this obsession for a over a decade.

PROLOGUE 1 – Christmas Day, 1929

Percy stood at the window, looking out along the curve of the street. He could hear the gulls squealing overhead, and that confused him. What were gulls doing in the centre of London? No, wait, they'd moved to Cambridge, hadn't they? When was that? But that didn't explain the gulls. He turned back into the room. There was a Christmas tree in the corner. He hadn't realised that Christmas had come round again. The door to the room swung open, and a woman came in carrying a tray. Who was she? It wasn't Aimee. Where was Aimee? Surely the baby should be around somewhere. Why were there gulls?

"Sit down, Percy," said Grace, "I've brought you some tea. I think Dash and Doreen will be here soon." Grace could tell by the way he looked at her that he was having one of his 'turns'. "It's all right, dear, just sit down, have some tea and it will all come back to you in moment."

Percy did as he was told, and as he passed the display cabinet he caught sight of three medals, resting in their cases, lids opened to show the shiny gold discs. He couldn't quite remember why he had them. Were they his ? He sat down, feeling very tired.

"I'm sorry," he said, "I can't quite remember...it's Christmas, isn't it? Where are we?"

"We're at home in Bognor, dear. The doctor said the sea air would do you good. Cambridge was so grey and musty."

"Who's coming?"

"Dash, your nephew, dear, and his wife Doreen. They're motoring up from Southampton. Then we'll have dinner."

"Of course, of course. Thank you for the tea."

There was a little popping sensation in his head, and suddenly he remembered who he was and where. "I'm sorry, Grace, have I been having a turn?"

"Yes, dear, just a little one. Nothing to worry about. Now you just have your tea while I go and check on the dinner."

"Yes, I'm looking forward to seeing Dash. Thank you for looking after me."

That was the last thing he said to Grace. She looked in on him a little while later and he seemed to be dozing quietly. She went back to the dining room and finished laying the table. The bronze bust of her husband stood on a plinth in the bay window, as if watching her.

The doorbell rang, and she went to the door, checking herself in the hall mirror as she passed. So much grey in her hair now. "I must speak to the hairdresser next week," she thought as she opened the door.

"Hello Dash, hello Doreen. Do come in. Dinner's nearly ready. Percy's asleep in the front room, Dash. Why don't you go and wake him."

Doreen said, "Yes, you go and talk to your uncle. I'll help Grace get the dinner ready."

Dash opened the door to the front room. He could see his uncle sleeping peacefully in the leather armchair, his head resting on the wing, a half finished cup of tea on the table by his side. The room was quiet, the air still and heavy. Dash crossed the room and touched Percy's shoulder. "Hello, Uncle. Happy Christmas. Aunt Grace says dinner will be ready in a moment or two."

Percy didn't respond. His head rolled slightly, but no sound came from his lips. Dash moved round and looked down at his uncle. "Oh, Uncle Percy," he breathed, and sank slowly into the other chair.

Dash was still there when Grace came into the room.

PROLOGUE 2 - May, 2006

The huge brick library at Cambridge University squats in the landscape next to Garrett Hostel Lane, dwarfing the people who scurry in its shadow. It has an enormous solidity to it, at once comforting and terrifying. Through the long vertical windows in the central tower, it is possible to make out some of the thousands of books stored within.

To gain entry, the student has to negotiate the heavy revolving door made of yellow-green brass with barely enough room for one person in each quadrant. There are rituals the student has to perform: descend the marble stairs to the locker rooms in the basement, stow away bag and coat, transfer laptop, paper and pencils (no pens allowed) to the transparent plastic bag emblazoned with the library name and logo, obtained for thirty pence from the issue desk. Lastly, wave the library card over the little window set into the polished wood surface of the issue desk to release the glass barrier.

Upstairs is a bank of computers connected to the online catalogue, and students worship at them, noting shelf marks on tiny scraps of paper provided for the purpose. I derive a kind of erotic energy from standing amongst these earnest people with their furrowed brows. When the book I want is flagged as only available in the Rare Books Room, I feel a tingle of excitement. First, there is the long walk from the catalogue room, along the carpeted North Wing corridor, lined with display cabinets, each covered by a large cloth to protect the delicate books and manuscripts from the light. Then turn left down a passageway where students sit at small tables amid piles of books bristling with page markers, to a huge wooden door. It swings open with a gentle sigh, into a room thick with silence.

Professors with wisps of hair and strong glasses, plump young women with pierced lips, thin young men with long hair tied back in loose pony tails - all sit at the enormous wooden tables, each with a great leather bound volume

supported on foam wedges, their heads bent into the open books. They peer intently at the ancient scripts, making slow notes with a freshly sharpened pencil on loose sheets of paper, or typing on laptops. There is more ritual to perform: fill out the request slip, place it in the small oak box, take a place at one of the tables, breathe in the smell of old book, and wait.

When the book arrives, there is a moment of thrilling anticipation, a breathless few seconds while it rests provocatively on the pads. Carefully, gently, I open the book to release its musty odour. I turn the ancient pages and read the text that may not have seen the light of day for years.

CHAPTER ONE – An unexpected encounter

I never expected a wrinkle in the fabric of space-time. Neither did Percy. But I suppose in an infinite Universe, the odd element of weirdness is inevitable. I call it a wrinkle, but of course I have no real idea what it was, and no way of finding out. Whatever it was, it fulfilled a need in me that was so strong it hurt.

The first time I encountered the phenomenon was in mid-2006. It was warm summer afternoon, and I was walking back along Garrett Hostel Lane from the University library towards the centre of Cambridge. I'd spent the morning and the early afternoon checking references for my thesis. If I'd been better organised, I would have written them down four years ago and saved myself the trip. But that's part of learning – it happens after the event. On the other hand, if I'd been efficient in the early days of my research then I wouldn't have been in the right place at the right time to hit the wrinkle.

I was in the final throes of writing up my thesis, on the life and work of the Victorian mathematician, Percy Alexander MacMahon. Scholarship would demand that I refer to him as MacMahon, or Major MacMahon; but I always think of him as Percy. I had been investigating him since 1999. Seeing the whole span of a man's existence was, and still is, a strange, often uncomfortable experience, and emotionally dangerous; it was a stark reminder of my own mortality. The knowledge of a whole life lived, with all its disappointments, tragedies, joys, successes and failures, served to remind me constantly of the branch points in my own life where I had made bad (and sometimes, but less often, good) decisions.

It might be argued that there is no room for emotion in scholarly work, but if people didn't feel passionate enough about something to spend large chunks of their lives reading, thinking and writing about it, then there would be

no scholarly work done at all. I found it difficult to suppress the emotional involvement I developed with Percy, because it all became personal. His successes were my successes; his disappointments were my disappointments. I knew a lot about him, but I also knew that there was far more that I didn't know. Biographers, no matter how much evidence they have, can never have the whole truth. Only autobiographers really know what happened, and why. After seven years, I was desperate to meet Percy, and that just wasn't possible, of course.

Most aspects of our lives go unrecorded, and what little there is vanishes as soon as our houses are cleared by our children. That meant Percy the man was difficult to investigate. His body of mathematical work was easy to get hold of; the books were readily available, and his papers had been published in *Percy Alexander MacMahon: Collected Papers* many years before. But unlike other famous Victorians, he hadn't left boxes of papers and diaries to his College; there were a few letters scattered about in various collections in London, Glasgow, Chichester and Cambridge, but piecing together even the most basic chronology of his personal life had proved to be quite hard work. As a result, there were many unanswered questions: what had happened to him in India? Where had he met his first wife? How had he met his second wife? – the list was long. I so wanted to ask him about all the myriad lost events, the unwritten minutiae of life, the sum of which make us what we are, just as the sum of an infinite number of infinitely thin strips makes an area, and a sum of instants makes an hour.

I'd parked my car in the Babraham park-and-ride, so after crossing the Cam, I turned left to go past King's College chapel, then across King's Parade towards Market Square. I went past Auntie's Tea Shop, where the tables outside were full of people enjoying Earl Grey tea and talking on their mobile phones. Passing through Lion Yard with its noise and groups of oddly clad teenagers, also busy on their mobile phones, I came out on St. Andrew's Street.

The bus stop was in Emmanuel Street, but I hesitated as I was about to turn right out of Petty Cury; it was a nice afternoon, my laptop was comfortable in my backpack, and I wasn't really in a rush to get home. So I turned left, to go north along Sidney Street. I was aiming at Chesterton Road.

Percy had lived in Hertford Street, a turning off Chesterton Road, from 1922 to 1928. I'd been there once before, in the early days of my research, and had got into trouble with one of the local residents. Hanging around outside someone's house taking pictures, especially when they are away on holiday, is bound to arouse the suspicions of the neighbours. A chap had appeared from a house opposite, demanding to know why I was loitering. Once I'd explained my reason for being there, though, his initial caution was thrown to the wind. I found out the name of the current occupant of the house, and that he was away on holiday for a fortnight. I easily found his telephone number, and was able to call him as soon as he got back from his holiday. To my surprise, he wasn't really all that interested in his illustrious predecessor, and didn't seem keen to take me on a conducted tour of the premises, much less let me root about in his attic and cellar for odd scraps of paper that may have been left behind when Percy and his wife moved out. One of the hazards of developing the kind of obsessive interest in a subject that enables you to produce a thesis is that not everyone you meet shares the obsession.

As I passed the top of St. John's Street going into Bridge Street, I was thinking how often Percy must have passed that way as he walked between his house and St. John's College. He'd been 'associated' with the College since about 1904, and when he moved out of London, he did do a bit of lecturing at St. John's. I'll get to that later. I was strolling slowly along Magdalene Street, just by the old coin and medal shop, when I hit the wrinkle. It looked like heat haze, and I paid it no attention at first, lost as I was in my thoughts. But after a few seconds my brain alerted me to the fact that it had gone very quiet. Cambridge is a noisy place, usually, with oversized buses roaring through the

narrow streets, and impatient motorists braking and accelerating as they try to avoid actually hitting pedestrians whilst simultaneously trying to make their displeasure at being held up very obvious. It had stopped; there was just the sound of footsteps and the squeaking of a bicycle in need of some WD40.

I stopped. I looked back, and striding towards me was a large man with a splendid white moustache. I stared, immobilised, as he marched past me and carried on up the road towards the junction with Chesterton Road, where I noticed, somewhere in the back of my mind, that there were now no traffic lights. I watched his back. It was Percy.

It couldn't be. He was long dead. But where were the cars and buses, and the street furniture? It is surprising how fast a brain can work when left to itself; when your conscious self is somehow on hold, and not interfering with the working of your mind, then it can run through many scenarios very fast and realise what is going on, even though you know it can't happen. A teenage diet of science fiction also helps to condition the brain to accept any kind of weirdness, I suppose. The thought that I had somehow stepped into the past formed, and seemed quite reasonable. Percy crossed the road at the junction, without appearing to pay much attention to the traffic – well, there wasn't any – and turned right along Chesterton Road. There was an icy numbness spreading down my legs as I started to run after him; my anachronistic backpack with its even more anachronistic laptop bounced on my back.

I normally avoid conversational situations wherever possible – that's why I like libraries. I can get the intellectual input without the stress of having to become involved with real people. But in emergencies I can switch off the shy, reticent part of me. So as I ran, I shouted, "Percy!" at his rapidly retreating back. I realised immediately that this was probably a bit familiar, since although I knew him very well, he didn't know that, or me. As I called again, "Major MacMahon!" he sort of shimmered and disappeared. I stopped running; a few paces ahead of me I could see the 'heat haze.' Behind me, it was still a

traffic free zone, with a few people on bicycles and one or two other pedestrians going about their business. A man turned to look at me; I suppose I must have looked slightly odd in my Marks & Spencer cargo trousers with lots of pockets, linen short-sleeved shirt, open sandals and trendy laptop backpack. He was wearing a grey striped cutaway suit with a stiff collar, and carrying a silver-topped cane, but after looking at me, he turned and carried on up Castle Street. After a few paces, he, too, shimmered and disappeared.

It seemed I was in a little pocket of nineteen twenties Cambridge, centred on the junction of Chesterton Road with Magdalene Street, that extended a few tens of metres around the junction. As I stood there, watching the spot where Percy had disappeared, he reappeared from the heat haze. He was wearing a pale three piece sack suit, a loose fitting baggy kind of outfit, which I recognised as the one he had been wearing in a group photograph taken at the 1924 International Congress of Mathematics in Toronto. He spoke, and his voice was every bit as loud as the statistician Maurice Kendall had described in a letter he had written in the nineteen seventies to George Andrews, the American mathematician who had compiled Percy's *Collected Papers*.

"Did you call my name, young man?" he boomed. The 'young man' part was flattering, since he was probably only about 15 or 16 years older than me, assuming that I was now in the mid nineteen twenties (I had the oddly comforting thought that my mother had not yet been born at this point, so I was unlikely to meet myself and cause a temporal disaster – but that's too much *Doctor Who* for you).

I replied, "Yes, I did, Per.., er, Major." I stepped forward and extended my right hand, "I'm Paul Garcia." He shook my proffered hand. I couldn't believe it; here I was, actually shaking the hand of Percy MacMahon. "I'm so pleased to meet you, Major, at last."

He looked at me hard, studying my face intently for a few seconds.

"Have we met before ? I'm sure I have seen you somewhere, a long time ago."

"No, no, I don't think so," I said, momentarily even more confused, "I don't believe we have ever had the opportunity to meet before now."

"Then who are you, Mr. Garcia, and why are you so pleased to find me?"

How could I explain? I'm so pleased to meet you because you've been dead for seventy-seven years? That wouldn't really be polite, and the truth would be unbelievable to someone unfamiliar with the writings of Isaac Asimov, Douglas Adams and Philip K. Dick. "I'm, er, hoping to write a biography of you, Major, and I, er, wondered if you might answer a few queries I have about some aspects of your life and work?"

"Why have you chosen to study me, might I ask?"

"Well, um," I was struggling to work out what to do for the best. I didn't know how long the situation would last – the wrinkle might shrink, or vanish, and then would I go with it? – but I didn't want to waste the opportunity the Universe had thrown at me. I suppose I should have been more scared than I was, but I imagine that my brain was flushed with adrenalin or some endorphin or other, rendering me even less capable of normal reactions than usual.

I went on, "Your career has certain unusual features, and your work in partition theory is very well respected, and your recreational puzzles are well-known, and I am interested in the history of mathematics…"

"I'm not history yet, my dear fellow!" he laughed, "But I am flattered that you should come so far to talk to me."

How far did he think I'd come? How far was seventy-seven years in space-time terms? What units was it measured in? Despite having 'done a course' in relativity and related matters, I realised I had no idea.

Percy went on, "I judge from your name that you are from Spain or Portugal?"

"Portugal," I answered, which is nearly true. The fact my ancestors hadn't set foot on Portuguese soil since the mid-seventeenth century didn't seem worth mentioning at this point.

"You have no trace of a Portuguese accent, I must observe."

"No, my mother was from London." Well, she would be in few years; I still didn't know exactly when I was, nor did I have any idea how to find out without seeming very stupid.

"I see. Well, we can't stand here in the street. Why don't you come back to my house, where we can talk more comfortably? My wife will be able to provide some tea, I'm sure. It is not far."

Oh, dear. Just a few metres away was the wrinkle boundary. What would happen if I crossed it? Would I pop back into the twenty first century while Percy carried on in the early twentieth? Indeed, having got here, could I get back to my own bit of space-time at all? If I were trapped here, how would I live? All these questions flashed through my mind as Percy turned and walked towards Hertford Street, before I could raise any objection. Although, to be fair, I wouldn't have known what to object to. I followed closely behind him, hoping that if I was near enough we wouldn't suddenly be separated by seventy-seven space-time units of distance. We passed a Judas tree in the garden of a house that I remembered from my earlier – or should I say, later? – visit to Percy's house, and arrived at the corner of Hertford Street. There was no shimmering or vanishing, so my luck was holding – at least from one point of view. From the point of view of wanting to return home, the outlook was less optimistic. But this was a chance in a lifetime, so I carried on, trying not to worry too much about the consequences.

We turned the corner, and walked up the hill. Then we stopped outside number thirty-one, which looked, from the outside, much as it did when I had seen it in 2001. The small black painted front door was to the right of the bay window. There had been no sudden changes of location in time, which made

me wonder about nature of the wrinkle. But the wondering ceased as he put his key into the lock, opened the door and ushered me in.

CHAPTER TWO - Initiation

Percy could hear the small party of cadets creeping along the corridor outside. He knew what was coming, why they were coming, and he had taken action already. Their intention was to 'turn him up'. It was his second night in the barracks at the Royal Military Academy in Woolwich, and as a 'snooker', or new boy, it was traditional that he should undergo this mild torture. Snookers slept four to a room. The floorboards were bare, although cadets were allowed to bring a rug if they so chose – Percy's was a deep red Afghan eating mat that his father had given him – and there were four plain pine single door wardrobes, four straight backed chairs and four bedside tables with a drawer, 'for the storage of a bible and other uplifting books.' The iron bedsteads were all jointed at the head end so that during the day they could be folded up against the wall, beneath a high shelf used for storing boots. In the enveloping darkness, from his bed Percy could only see a narrow rectangle of light leaking in from the candlelit corridor, outlining the ill-fitting door in its frame.

The custom was to sneak in on the snooker's second night. The bed would be upended against the wall, pinning the occupant against the wall in a very uncomfortable position, where he would be left to extricate himself. There had never been any reports of injuries, at least, not serious ones, from this process, but Percy did not want to be the first casualty in the history of 'The Shop', as the Academy was affectionately known. His father had warned him of this unavoidable event, since he had suffered similarly more than twenty-five years before.

"It's just a bit of fun, lad. They'll leave you alone the first night, let you get over the medical, interviews, form filling and the like. If you protest, they'll chuck water over you, or pile your kit on top so you can't unfold the bed

without it falling on you. So best just to laugh. They'll do it again if you make a fuss afterward, or if they find you irritating generally."

But Percy wanted his comrades to know he was different. So he had planned carefully. The long train journey from Cheltenham had given him plenty of time to think this out. The uncomfortable part was ending up head down, with your neck in the hinged part. As soon he heard the group of seniors approaching the room, he quickly changed position so that his feet were under the pillow. The other three cadets in the room were all feigning sleep, so didn't observe this subterfuge. The raiding party burst into the darkened room and turned up the bed very smartly, so had no time to notice the alignment of the occupant. Percy squealed authentically, "Oh, I say, what the deuce?" and rattled the bedstead a little. His arms were folded across his chest, palms out, his face squashed against the rough wall behind the bed.

The torturers ran out of the room, calling quietly, "Welcome to the shop, old man."

Their aim was to get out before the officer on nightwatch appeared to see what the fuss was about, leaving the victim to be berated for disturbing the officer. But Percy, from his upright position, was able to simply extend his arms, push the bed back into position and assume a more normal sleeping attitude.

He imagined the confusion of the raiders, watching from a vantage point further down the corridor, as the officer threw the door open, looked in and left without saying word. After a few moments, one of their number, Horatio Darling, pushed the door open gingerly and peeked in. He saw Percy, apparently sleeping peacefully. He stepped into the room but leapt backward as Percy suddenly sat upright and said, "Mathematics at nine-thirty on a Wednesday, isn't it, old chap?"

At breakfast the following morning, in the long cold dining hall, Percy was contemplating the two boiled eggs and toast on his plate. Darling sat next

to him. Darling's short, plump body and pale sand-coloured hair against Percy's tall, lean frame made quite a contrast.

"I say, MacMahon, don't know how you got out of being turned up last night, but Sawyer says to be ready for the concert after rounds tonight. You can't escape that."

"Don't intend to, Darling. Looking forward to it, in fact." He made a show of eating his meagre breakfast with great relish.

The first session on a Wednesday for the fifth class was indeed mathematics, a subject usually regarded with awe and distaste by the Gentleman Cadets. It required much thought, and didn't allow for the same displays of manly courage and physical prowess that riding drill, battalion drill or artillery exercises afforded.

"Oh, my Lord," muttered the boy at the desk on Percy's left as the class settled into the room, "more Euclid. All those wretched postulates and proofs. And algebra! No-one ever won a medal for algebra, did they?"

Chemistry was the most popular of the academic subjects among the Cadets, because of the opportunities for making loud explosions and dreadful smells. Foreign languages, when taught by a native speaker, allowed some sport at the expense of the poor tutors, whose command of idiomatic English was not always perfect. Percy, keen to stand out as intellectually as his six foot two frame did physically, had already determined to do well in mathematics. He had found it enjoyable at school, and so why not at the Academy? He sat up straight, and smiled as the cadets fidgeted in their seats.

The mathematics professor entered the room where the forty cadets had gathered. They all stood, a sudden cacophony of scraping chairs, and saluted. "My name is Morgan William Crofton," said the professor. "I am a civilian, so you don't need to salute me." He was a man of medium height, about forty-five years old, with thinning brown hair and tiny spectacles perched on his nose.

He wore a long black academic gown, and carried a large leather bound book under one arm. He turned to the two officers accompanying him.

"These are my Instructors, Major Wordell and Lieutenant Kensington. You do have to salute them. You will meet Mr. MacLeod next time. As you can no doubt tell from my accent, I am Irish, and proud of it. This is the mathematics class, which you must all pass in order to pass the course." A tiny, almost imperceptible groan rose from the boys, still standing by their desks. "Now sit down, and I will explain how it works."

The method of instruction involved minimal effort on the part of the tutor, as far the cadets could see. They had their textbooks, and a list of the topics they were to study, and they were expected to get on with it. The professor wrote up a list of special lectures that he was to give during the term, but he made it clear that attendance was voluntary. Percy made a careful note of the dates and times of the lectures. Any help, when needed, would be provided by the Instructors. Professor Crofton concluded his speech, "Don't think that mathematics is not important to the dashing life of an artillery officer. Before you can gallop into a fortress and cover yourself in glory, the artillery has to make a breech. If the aiming is bad, there'll be no breech. To aim requires mathematics; get it wrong, and you will not be popular, I can assure you."

After this first session, there was much grumbling amongst the young men. Percy watched this with some amusement; his tutor at Cheltenham, Edward Walker, had made sure that Percy had covered most of the first term's syllabus already. So he was confident that he would be able to keep ahead of his peers.

The time for the concert came soon enough. After the night officer had completed his rounds at ten thirty, the cadets waited a decent interval, and then surrounded the snooker. He was required to sing a complete song, or pay the forfeit of having to drink a concoction devised by the senior cadets. Again,

Percy had been briefed by his father, and used his natural talent for singing to good effect. He sang the song "Polly Perkins of Paddington Green," complete with voices:

"I am a broken hearted milkman, in grief I'm arrayed

Through keeping of the company of a young servant maid"

The subject matter, rejection by an untrustworthy servant girl, was popular with the cadets, and by the time Percy completed the fifth and final verse, "It was a bowlegged conductor off a tupenny bus," they were crying with laughter. Sawyer, the *de facto* leader of the senior cadets, a broad lad with a fine moustache, clapped Percy on the back. "I like you, MacMahon. You'll go far here."

So when the third and final initiation ceremony came along, the hair cut, Percy was spared the worst depredations of the 'officer barber'. Snookers were dragged by a group of seniors disguised as officers to the 'barber's room', where another disguised cadet would hack away at their hair. For unpopular or uncooperative cadets, the damage was such that often two or three weeks would pass before the victim was able to go out in public bareheaded. Broad arrows cut into the hair were a favourite mark of distinction. This prevented attendance at the weekly dances, where most cadets enjoyed drinking and the company of cheerful local girls. But Percy's performance at the concert ensured that he suffered a light trim that was no impediment to weekend socialising.

Indeed, it was at the weekend dances, often attended by several hundred people, that Percy enhanced his reputation to almost legendary proportions, assisted by Horatio Darling. Darling had decided that he could do no worse that to bask in the reflected glory that came with being an associate of Percy's, so he was not averse to exaggerating the prowess of his principal. It was not just the 'turning up' episode that had impressed Darling. On Percy's very first Saturday, after the weekly pocket money had been distributed at breakfast parade, he had been the victim of a game known as 'odd man out.' The result

of this jape was that nearly all the pocket money was transferred to a cadet who naturally thought his luck was in. However, the penalty for success was that the winner had to provide jam for the entire mess for a week. Unlike anyone previously, Percy managed to show a profit on this deal, by means which Darling never managed to determine, and Percy refused to reveal.

"Darling," he said, "You just have to know the right people." Who the 'right people' were, poor Darling was not told, and he almost believed that Percy possessed magical powers.

The most daring of Percy's dance escapades, which earned him a place in Cadet history, occurred in midsummer of 1871. The mess room had been well decorated in medieval style, and five suits of armour had been set up in the inner hall to add atmosphere. The evening was well attended; over six hundred tickets had been sold, and there were two bands, providing non-stop music. A young actress, Aurelia Hogarth, had been engaged to sing popular songs and perform comic sketches with some of the cadets. Percy himself wrote a short skit lampooning the antics of the Blackguard, a disreputable fellow who provided 'extras' for the young gentlemen in exchange for unwanted (or purloined) articles of uniform. The transactions were often conducted through the railings surrounding the Academy, and Percy's piece was a great hit. He enjoyed performing with Aurelia, a tall green-eyed girl with her hair in long dark ringlets, of about his own age he guessed, and he delighted in several dances with her during the evening. "You dance very well," she said, "where did you learn ?"

"My guardians in Cheltenham, the Wilsons, were keen dancers and took me from a very young age to many afternoon dances."

"Have you no parents then ?"

"Oh, yes, but my father is presently stationed in India. He was fighting in the Crimea when I was born. I was sent home at the age of six to attend school, when he was transferred to China, and then on to India."

"How exciting. Do you think you will you be posted to India when you are finished here ?"

"I hope so. There are many opportunities for a clever fellow to make his name and fortune in India."

"And are you a clever fellow, then, Percy ? Will you make a fortune ?"

"Oh, yes. I will be famous, too."

"Well I shall be sure to look out for you, then."

"And will you be a famous actress, then, Aurelia ?"

"I will be a singer, renowned the world over, and I shall live in New York and have hundreds of suitors."

"Well, I'll be sure to look out for you, too."

As she left to take her carriage, Aurelia slipped a signed carte-de-visite into Percy's jacket pocket.

Darling, who had taken the part of the unfortunate Blackguard in the performance, was surprised to receive a note from Percy towards the end of the evening; he was instructed to gather together Julian Jocelyn, Sawyer, Larolle and Ridgeley and meet in the first floor billiard room after the dance.

"I say, MacMahon, what's all this about ?" demanded Sawyer, when the group were gathered around the green table.

"Yes, what are you planning ?" asked Jocelyn, a pale young man who shared Percy's fondness for mischief.

"Which squad are on guard duty tonight ?" Percy asked his comrades.

" 'A' squad, with old Chervil in charge, I think," answered Larolle.

"Spot on. And I think we can give them a bit of a well-deserved fright." 'A' squad were a privileged group, who did not take tea in the mess with the other cadets, but supped in their own hall. They considered themselves a cut above the others, and often stopped in the mess, to 'borrow a pipe of tobacco.' Tobacco was obtained at premium rates from the old barber who came in every afternoon to see to the cadet's hair cutting and shaving needs; the pipe that 'A'

squad members used on their scrounging excursions was about the size of a flower pot, and a single fill of it would keep the entire squad going for an evening. So they were unpopular with the bulk of the cadets.

"Listen carefully. Here's the plan." whispered Percy, leaning across the billiard table.

An hour later, with the Mess Room in darkness, and the last of the guests' carriages long since departed down the gravel drive, five knights in full armour stood four abreast, with their leader in front, in the portico. A moment later the the sentry on his beat turned the corner by the morning room and began his march along the front of the building. As he reached the portico, he was very surprised to see the five knights step silently into the road. He stopped, and despite his fear, managed to issue the correct challenge.

"Stop. Who goes there ?"

The reply was delivered in deep, sepulchral tones, "Old Guard."

This fell clearly into the class of an 'unusual occurrence', so the terrified sentry blew his whistle to turn out the rest of the Guard, while backing slowly away from the advancing knights. They formed up in front of the startled Guard, as if it was a normal guard-changing ceremony.

The knights were enjoying the spectacle of the knees of 'A' squad quaking visibly, when the Officer of the Guard appeared, buttoning his tunic. It took it a few moments for him to 'appreciate the situation', but he soon ordered, "Advance. Seize them, they're not ghosts." The embarrassed 'A' squad realised they had been had, and set off in pursuit. The knights, realising the game was up, broke into an awkward and ungainly double. They reached the sanctuary of the Mess room and locked the doors behind them.

By the time 'A' squad gained entry, they found only five empty suits of armour and the words 'Beware the Old Guard' chalked on the wall.

The following morning a carefully orchestrated rumour set breakfast a-buzz, and the members of 'A' squad were subjected to a great deal of ghostly

wailing. It was a long time before they tried their tobacco borrowing trick again.

Percy was very pleased with the result, and also with the letter he received from Aurelia Hogarth that afternoon, thanking him for a splendid evening. She listed a few engagements she had in the vicinity of Woolwich over the next few weeks. Percy replied, telling her of the 'Old Guard' episode, and assuring her he would do everything in his power to attend as many of her performances as possible.

Life for Percy was excellent. He had acquired a small band of admirers, a young lady, a reputation as a good sport, and he enjoyed most of his studies, apart from the incomprehensible lithographs they were given to colour in during Fortification. The news of the death of his father at the age of fifty five, in the middle of October whilst on home leave in Brighton, came as a complete shock. Although they had spent very little time in each other's company, Percy had felt close to his father, and had wanted to emulate his successful military career. At the funeral, his mother Ellen seemed calm, whilst Percy felt bereft.

"I was lucky to have known him," she said, "he was a fine man, and he gave me four wonderful sons." Ellen felt comforted by the presence of her boys, the two elder ones, George and Percy, already on the way to careers in the army, and the younger ones, Ernest and Reginald, bright and enthusiastic. She was angry inside that her Patrick had left her so suddenly, without warning, without permission. He had been sixteen years older than her, so she had known that one day she would be widowed. But this was too soon, and she could not help but weep.

CHAPTER THREE – A long chat

"Please go into the drawing room. I'll tell my wife you are here." I went through into the small front room, which looked much as you would expect of a late Victorian or early Edwardian room. There were two armchairs and a small settee in moss green velvet, with a round table in the bay window upon which stood a large white flowerpot with an aspidistra in it. I stood there, probably with my mouth hanging open. I turned around a few times, taking in the wallpaper with the green and cream stripes, the sideboard, and the small fireplace with the brass companion set. Varnished floorboards showed around the edge of the large Afghan style carpet. On one of the two side tables, by an armchair, was a set of wooden triangles, about 8 centimetres on a side, each painted with three colours chosen from red, blue, white and black. 'Oh, my goodness,' I thought, 'Percy's very own set of triangles, the very ones he described in *New Mathematical Pastimes*.' I reached out to touch them, wondering what had happened – or would happen, the problem of tenses was becoming acute – to them after Percy's death.

I moved across the room, breathing very slowly, to a small bookcase against the back wall. There were copies of Percy's books, *Combinatory Analysis,* volumes I and II, the slim *Introduction to Combinatory Analysis*, and *New Mathematical Pastimes*. That meant it was 1921, at least. I wished I had brought my battered copies of those books with me - I could have got him to sign them for me. But what made the hair on the back of my neck prickle was Percy's copy of Legendre's *Géometrie et Trigonometrie*, a book I had acquired in 2002 and which now sat on a shelf in my own bookcase back - or forward - in Suffolk.

At that moment, the door opened and Percy reappeared, followed by a tall, silver-haired lady in an elegant green and cream dress (a theme in the colours was beginning to emerge, I felt).

"This is Mr. Garcia," said MacMahon, "Mr. Garcia, my wife."

I stepped forward and offered my hand, "Grace, er, Mrs. MacMahon, I am very pleased to meet you." I wished I had brought a camera with me; I had never been able to find a photograph of Grace Elizabeth MacMahon, Percy's second wife, and now, here she was.

"By all means, call me Grace," she said, "Would you care for some tea?" Her voice was quiet, a complete contrast to Percy's confident boom.

"Yes, please, that would be very kind." She left the room, closing the door behind her. MacMahon looked at me; "You are well informed, " he said. I knew he was referring to the fact that I had known his wife's name.

"Yes, I know that Grace Elizabeth Howard was – is," - I was going to have watch the tenses very closely – "your wife. I would like to know how you met, if you are willing to tell me."

"Perhaps. But first I want to know a bit more about you, and why you are so interested in writing about me." He settled down into the armchair next to the table with the triangles, and indicated that I should sit in the other armchair. I slipped off my backpack and placed it carefully on the floor. I hoped he didn't want to know what was in it, because it would be hard to explain. Not as hard as explaining my presence, since at I at least knew what the computer was and more or less how it worked. The same could not be said for the wrinkle in space-time.

"Well, I am a student at Oporto University," I began, hoping that Oporto was indeed in Portugal; it was close to the 'Open', too. "I had to choose a topic for a thesis, and the history of combinatory analysis seemed interesting. As the world's greatest exponent of the discipline, your name naturally came up." I guessed a little flattery would not go amiss, and in any case the truth, that his

paper, *The thirty cubes that can be made with six differently coloured squares*, had simply appealed to my sense of whimsy, didn't seem awfully cogent, as reasons go. I continued, "I have read most of your papers, and all your books, and I have tried to trace your life story as far as I could. But there are some details I need to clarify, which is why I came to Cambridge, to try to find you." I was quite proud of this impromptu explanation of my sudden appearance in 1920s Cambridge.

"You could simply have written to me." Now I was in trouble. Why hadn't I written to him? Royal Mail won't deliver across the Styx? No postcodes in the 1920s, so the automatic sorting machine wouldn't sort? I was saved from having to answer by the return of Grace Elizabeth with the tea. A silver tray, a chintz teapot and bone china tea cups were carried to the table in the window.

"Do you take milk and sugar in your tea, Mr. Garcia?"

"Milk, but no sugar, thank you," I replied, "but please do call me Paul. We are very informal where I come from."

Grace Elizabeth poured three cups of tea, and handed one to me. She carried a cup over to Percy, and then sat on the sofa with her own beverage. "Mr. Garcia – Paul – is a research student studying the history of combinatory analysis," explained Percy, "and he would like to ask some questions."

What questions to ask? How long could I reasonably stay? How could I get back to the twenty first century? Would I be able to return here if I did get back? This was all very difficult; and on top of that, I had this incredible opportunity to talk to the man himself.

"Yes, indeed," I said, "there are many aspects of your life and career I would like to ask you about." I wanted to ask about some fairly personal stuff about his first marriage, to the American girl, Aimee Rose Leese. But I didn't think that would be appropriate for a first meeting, even if was more than likely to be the last, especially with his second wife present. I didn't know how much

she knew, so perhaps something less controversial would be better. I didn't think I could cope with any difficult mathematics at that point, either, so I asked, "Tell me about your boyhood. I know you were born in Malta, in the town of Sliema, in 1854, although I have found no official record of your birth."

"Well, Sliema didn't really exist at that time; it was Fort Tigne, a military garrison, so records often went missing or were destroyed by some calamity or other, so that is no great surprise. I was the second son; my elder brother, George, was two years old when I was born. That was just as the Crimean War started, and Malta was used as a medical facility for the wounded of the Crimea. This kept my father very busy. He was a Brigadier. I don't remember much about that time; I was very young, after all." He laughed, and paused while he sipped his tea. He went on, "I do remember being interested in the way cannonballs were stacked near the gun emplacements, and trying to copy them with fruits and stones. But I was sent to England to go to school when I was about seven years of age. I lived with my grandmother in Brighton, in a house quite close to the sea."

"That would have been at 10, Devonshire Place, the house where your father died a few years later," I interjected.

"Why, yes. You have made some investigations already?"

Indeed I had, but how would I explain how? I took a chance: "Yes, I was fortunate enough to meet your old friend Colonel Jocelyn some years ago. He told me a little about your time at Woolwich."

"Ah, yes, Jocelyn - very interesting fellow. Talented musician. Haven't seen him for a long time. When did you meet him ?"

"Some years ago - 1902 or 3, I think," I replied, trying to remember the details I'd got from the 1901 census.

"Did you meet his wife, Euphemia? Splendid woman! Still living in Earl's Court? Haven't been in touch since we moved up here last year."

Aha. The clue I needed; I knew Percy had moved up to Cambridge in 1922, a couple of years after he retired from the Board of Trade, so I must be in 1923. That would make Percy 69 and Grace 62, although she could have passed for ten years younger, in my opinion. But I couldn't vouch for Colonel Jocelyn's present (that is, 1923) whereabouts since the 1901 census data was the latest available in 2006. I said, "Yes, and I met his two lovely daughters, Lavinia and Gladys." Of course, I hadn't, but I'd remembered the names from the census website, and I thought mentioning it might add to my credibility.

Grace interjected, "We should write to Julian and Euphemia, invite them up here. It would be so nice - just like the old days! We don't entertain nearly enough, Percy."

Percy smiled; "Yes, we must. To continue. I was sent to Cheltenham when I was about ten years old, lodged with young Doctor Wilson whilst I was there. I think he'd just got married a little while before I arrived. Aunt Mary I called her, although she wasn't really an aunt, of course. Doctor Wilson was a friend of my mother, and his brother was a friend of my father. Terrible shame about his boy, Ted. Born after I left - they had three or four other children, mostly girls - so I never really knew him. He died with Scott in the Antarctic about ten years ago. I think they've put a statue of him in the town - I've not seen it yet. They looked after me very well until I joined the Artillery. Let's see, I came up to Woolwich in '71, so I was with them about seven years all told."

I'd known that Percy's nomination form for his scholarship place at Cheltenham College had been signed by Edward Thomas Wilson, but I hadn't known that this Wilson was the father of the famous Edward Adrian Wilson who had accompanied Scott to the Antarctic. Well, that sort of thing hadn't been relevant to the thesis, so I hadn't bothered to pursue the matter - especially as the records from Cheltenham College were a bit sparse.

I settled back into the chair to listen to Percy talk about his childhood. Which was actually not desperately exciting. While he was speaking, my mind wandered a bit, and I worried about my own fate a little, as he spoke about the sunshine and warmth of Malta. Being sent to the cold dampness of England was a shock to his seven year old self, that left him quite miserable at first. He understood that it was important to go to school, but it wasn't clear to him why he had to be in England to do that. He said he had felt trapped, a long way from home, in an unfamiliar world. At that precise moment, I understood exactly what he meant. I knew I had an unrepeatable opportunity, but fear of the unknown was beginning to kick in.

Percy described his schooldays in Cheltenham, with a great deal of affection, I thought. He had been a bright student, and had not had to put himself out a great deal to be successful, it seemed. I had by now thought to get a pencil and pad out of my rucksack. It was a conventional pencil, brought for use in the library, where pens are banned, and I had wrestled a few sheets of paper away from the red plastic clipboard to write on. I didn't make many notes until he got started on his time at the Royal Military Academy at Woolwich.

"Old Jex-Blake wished me well, came to the station to see me off, actually, which surprised the Wilsons, I fancy, and then I was on my own."

The stories were fascinating, to me, and Grace also seemed amused, even though I imagined she'd heard them all before. At one point, as Percy described an episode, she giggled, quite girlishly. I must have looked at her oddly, because she said, "Oh, forgive me. I won't spoil the surprise."

I wrote a lot, which astonished me, because I am very bad at note taking as a rule. The afternoon turned into early evening. Grace made more tea, and partly drew the curtains, chosen to match the wallpaper, and then eventually she said, "It is late now, Percy, and we have to be at college for dinner by eight at the latest."

"I do apologise," I said, "I have taken up too much of your time already. I'd better be going."

Inside, I started to feel a little sick, and the icy numbness in my legs began to return. I had no idea whether I'd be able to return to the twenty-first century, nor whether I'd be able to visit Percy again. We had got as far as his return to England from India, but there was much more that I wanted to know. So I was torn by my desire to stay in 1923 and my terror at having to stay in 1923.

"Well, it has been very nice talking to you. Will you be able to return to continue the conversation ? Tomorrow perhaps ?" asked Percy.

"Yes, yes, I'd be very pleased to come back tomorrow. What time would be convenient ?"

"Grace, you are visiting your sisters tomorrow, aren't you ?"

"Yes, I'm catching the seven-forty train to town. I'll probably stay for a couple of days, at least."

"Shall we say nine o'clock, then ? We can make a day of it."

"That would be splendid, thank you, you are very kind. I'll see you tomorrow at nine."

I found myself outside, alone and confused. I didn't want to go very far, in case I crossed the wrinkle boundary, but on the other hand, I needed to find food and shelter. At that point I realised that my trusty credit card would do me no good, and I had no currency that would be acceptable in this decade. I walked a little way down the road, crossed Chesterton Road and the Cam onto Midsomer Common, and sat down on the grass to consider my position. Whilst I was pondering, I saw Percy and Grace walk arm in arm towards St John's College for dinner. It was still light, but I realised that I needed to do something before it got dark, which gave me very little time. Then a flash of inspiration hit me; just a little way along Northampton Street was an old pub that I had

lunched in on previous visits. It had been there for years, so presumably was there now. I set off to find it.

CHAPTER FOUR - Woolwich

Percy didn't return to Woolwich until February. The year started cold and grey, and the almost continuous rain seemed to have dampened him to the core.

"You seem very low." remarked Jocelyn, "Death of your old man got you down ?"

"Yes, more than I thought it would. I miss him, because I never really knew him."

"I don't follow."

"He was hero, you know. He fought at Alma, Inkerman and Sebastopol. It was a dreadful waste. He was only fifty-five, and he had just shrunk to nothing. One minute he was commanding a brigade, and the next…" Percy's voice trailed away to nothing, and he stared into space for a few minutes. Then he said, "I saw him in his coffin, and he was all skin and bone. I'm never going to have the chance to talk to him, to share stories of soldiering and India. I miss what I was expecting. I'll be working too hard this year for larks. I want to finish by the end of this year, so I can get to India as soon as possible."

"Why the hurry ?"

"You see, Jocelyn," he explained, "I owe it to the Old Man to become a great soldier. So this year I must come first in everything. I can't risk losing marks through discipline issues, so there'll be no more high jinks for now." Darling was a little disappointed; he had enjoyed the vicarious thrill of Percy's sporting exploits. But a part of him had always been slightly afraid, so he was also relieved.

The end of the course came very quickly. Some of Percy's colleagues did indeed have their marks reduced by reason of their 'want of punctuality' and 'general slackness', and no-one was awarded the Good Conduct Sword, but

Percy was top as he had wanted, so the end of year ball was a special celebration. He had learned he was to be sent to Bombay on the first available ship, and he had also been introduced to the Shah of Persia at the Mess lunch. The Shah had enjoyed most of the music played by the band, conducted by Jocelyn at his first important public appearance. When asked which piece he would like to hear again, the Shah asked for the first. But when it started, he whispered to Percy, "No, no, the one before that." So Percy had to convey to Jocelyn the news that the Shah had enjoyed the tune up best.

At the ball that same evening, Aurelia enjoyed that story immensely. As she climbed into her carriage at the end of the evening, she promised to write as often as possible, and Percy knew he would remember the soft smile in her eyes for rest of his life.

In the weeks that followed, Percy spent a good deal of time, and money, at the Army and Navy stores buying his campaigning kit. The whole lot came to nearly two hundred pounds, including the nickel plating for all the steel items. He was grateful for the inheritance, which enabled him to buy the best quality items in every case, and have some of the personal items monogrammed. Advice from his tutors was that this expense would save trouble on the sea journey, as close supervision of one's belongings aboard ship was very difficult.

The day of departure, 12th March 1873, was full of anticipation tinged with sadness. The original Bombay posting had been changed at the last minute to Madras, and he was given the temporary rank of lieutenant. Aurelia, engaged in a theatre production in Suffolk, was unable to come to Portsmouth to see him off, but his mother and two younger brothers made the journey from Brighton. As HMS Euphrates pulled slowly away from the dockside, Percy stood proud in his patrol uniform and waved to his family.

Jocelyn was with him as far as Bombay, but the three-day, thousand mile train ride to Madras that started a mere two hours after disembarkation, he

undertook alone. He had fifty pounds in gold in a money belt next to his skin, for he had been advised to carry sufficient to ease his passage through Madras, and to enable him to buy a horse once he reached camp. The four porters he needed to carry his equipment also needed regular financial encouragement, as well as constant supervision.

By the time he reported for duty at Madras, he had been travelling for nearly five weeks, and April was coming to an end. The officers in his new mess were very welcoming, but dismissive of his training.

Captain Perkins said, "You'll have to unlearn all that theory, young fella. When you get up north, you'll find the pathans don't play by the rules. You'll find engaging the enemy after a long slog through the heat with mules, horses and elephants is much harder than the practice you did at Woolwich."

"I'm sure you're quite right, sir. My father served in the army for thirty five years. I'm under no illusions."

"Glad to hear it. Well, get yourself packed. We're moving north to Lucknow in two days. The guns are already on the way, we're to follow by train."

Percy had barely unpacked, so repacking ready for the five day train journey north to Lucknow was easy. He hoped that once there he might have some time to do some soldiering. He had been travelling for ever, it seemed to him, as the lush green Indian countryside rolled past the window. The train was carrying mostly soldiers, including a large number of native sepoys. The thing that stuck most in his mind was their smell, an appetising aroma of curry that almost made him want to bite into them. There were a few women amongst the travellers. The young ones had bright smiles and small jewels in their noses, and seemed interested in the handsome young officer, for they constantly offered him small sweet confections.

"If you're after a *bibbi*, best wait until we get to Lucknow," said Perkins, "These train girls are not to be trusted."

"A *bibbi*?"

"Ah, yes, probably something your old man didn't tell you about. Lots of chaps have an Indian woman as a sort of informal wife. Helps to make life a bit more comfortable, shall we say. Especially at night."

Percy thought of Aurelia, and decided he might not follow that path.

The first task at Lucknow was nearly his last. Percy's brigade were instructed to build an emplacement for a very large gun on a stony bluff overlooking the river Gomti. The ground on which the gun was to be mounted was hard, but the gun arrived by barge at the riverside below, where the terrain was soft and marshy. A platform had been constructed on the bank of the river to receive the gun, but had been shoddily built by the sepoys.

"Not properly supervised," observed Captain Perkins, as he and Percy surveyed the broken timbers with the gun lying partially submerged in the thick mud. "So, MacMahon, how do you propose we extricate this valuable piece of ordnance from this foul smelling slime ?"

"I think we should dig a pit along the length of the barrel, slide timbers beneath it and then try to roll it up the slope to firmer ground. Then we should be able to raise it onto the carriage to haul it up the hill to the bluff."

"Very good, lieutenant. See to it." Perkins strode off without a further word, leaving Percy in sole charge of 40 sepoys and a subedar. The digging started, and proved very difficult. The mud was soft, and soon the men were up to their waists. As fast they excavated a pit, it filled with water. Percy himself was forced to paddle up to his knees in the dreadful muck. By mid-afternoon the heat was causing the men to flag, and Percy called a break. He took the opportunity to inspect progress, and almost lost his life. The soft mud had been loosened below the gun by the digging, and suddenly the barrel started to roll. Percy was knocked onto his back and began to be pushed slowly downwards by the rotating mass of metal. He called to his subedar, who came rushing to see what the shouting was about. "Bring a rope, quick," shouted the subedar, and

he slid into the mud behind Percy, using his body to support Percy's head and shoulders. The mud oozed around the two men, and they both could feel the suction pulling them down. Percy tried to spread his arms, but the weight of the gun, turning slowly across his body, held him fast. The confused sepoys threw a rope, and the subedar secured it around Percy's chest under his arms. The entire company engaged in a tug of war against the suction of the mud. Slowly Percy was dragged onto higher, firmer ground, as the barrel rolled by half a turn into the channel they had laboured so hard to dig.

Percy, winded, wet and smelly but otherwise uninjured, looked with dismay at the gun, now three feet lower than it had been. Captain Perkins, alerted by a sepoy, strolled up in a leisurely manner.

"Oh, dear,' he murmured, "things are not going well, lieutenant, are they? What's your next plan ?"

Percy stood up, the drying mud on his breeches cracking into a myriad pieces. Just for a moment he was fascinated by the irregular pattern that formed.

"Well, the trunnions are now horizontal. We could support it on them, spread the weight. Let me draw up some plans, make some calculations."

"We can't do anything more today. This lot are exhausted, look at them. Let me have your proposals at dinner tonight. Carry on, lieutenant."

It took a further five days to extricate the gun, constructing platforms to spread the weight across the mud and jacking it up enough to slide railway sleepers beneath. But Percy was given full credit for a successful operation by Captain Perkins, and his colleagues took to using the nickname 'Mudslinger' with affection.

A few weeks after the successful rescue of the big gun, Percy was sent on his first real expedition across country to engage a hostile enemy. He was one of over ninety British officers commanding more than two hundred and fifty natives, in a convoy of three hundred bullocks, nine elephants, eighteen horses

(including Percy's own mount) and two hundred and fifty baggage camels. The elephants were needed to transport three forty-pounder breech loading guns. During the early part of the march, the ground was low lying and boggy, and the guns and elephants were frequently stuck, so Lieutenant 'Mudslinger' MacMahon was often called for.

The longest single march was thirty one miles from camp to camp, made in twelve hours. It involved crossing many dry river beds, known as nullahs, that were often stony. This caused problems for the elephants, whose sensitive feet meant they often refused to cross until sepoys had cleared all the loose stones from the path. At one point, in a particularly narrow defile up the side of a gorge, a projecting rock would have forced the elephants to move near to a steep precipice. The nervous elephants could not be persuaded to cooperate, and the best efforts of the sepoys with sledgehammer only managed to reduce the projecting rock by a few inches. Percy approached Captain Perkins with a plan: "The elephants won't walk on sharp rocks, so if we strew sharp stones on the inside of the track, and clear the outside path to make it smooth, then we might just persuade them through."

"Very well, let's try it."

Once the first elephant had been persuaded through, the rest followed without trouble, and Percy's reputation as a capable and inventive troubleshooter grew.

As they convoy moved north to higher country, the weather became colder, and supplies of *kerbi* and *bhoosa* for the animals harder to find. After the first hard frost, in December, one of the elephants died from cold, and many of the bullocks. Percy was very distressed by this, and even more upset by the death of several of the camp followers, found frozen by the roadside.

As the convoy, much depleted, neared its destination, Captain Perkins gave the order that officers and men were not to undress, but to sleep with their arms and equipment, ready to turn out at a moment's notice. Intelligence

brought from the forward scouting party suggested that the enemy were likely to mount a surprise attack at night. Percy was both excited and terrified by the thought of actual combat. But no attack came. As the guns were being readied, Percy was ordered to accompany the Political Officer, Tucker, to see if negotiations could avoid bloodshed. Tucker and Percy rode to within a mile of the enemy position, whereupon Tucker bade him to remain alert but hidden while he went on alone.

"I'll go alone and unarmed. On no account follow me. I'll return before dark."

After about an hour, Percy was brought out of his reverie by the sound of rifle fire in the distance. Fearing that Tucker had been ambushed, he set off on foot in the same direction, trying to remain behind cover as much as possible. A rough path led up into the mountain, and Percy crept along cautiously. Suddenly, he found himself surrounded by hillmen, who had slipped silently onto the path. They were armed with all manner of curiously shaped daggers and knives, and each one carried his long, inlaid *jhezail,* a home made musket. One, dressed in the long yellow skin coat of his tribe, and even taller than Percy, with enormous black whiskers and curled moustaches that reached almost to his eyes, approached, gesticulating and talking loudly. It was not a dialect Percy recognised, although he had been teaching himself some of the Pathan languages. Percy stood his ground with his back to the mountainside, whilst the men showed great interest in his sword and pistol. The tall one, evidently a leader, attempted to take the pistol, but Percy drew his sword and waved it at the native.

"Stay back," he shouted, "or I'll run you through."

He had no idea whether he would be able to carry out this threat, and he was certain that the others would cut him to pieces in an instant if he did. This was not quite the glittering career that he had hoped for, and in the back of his mind there formed the thought that he did not actually want to die just yet. The

tall hillman threw back his head and laughed. At that precise moment, Tucker appeared, with more hillmen. He was not very pleased to see Percy.

"I was told that there was an armed *sahib* alone in the hills. You are lucky that they haven't chopped you up to take your weapons. It is safer to go unarmed, because that signals your intentions are peaceful. Now let us go back to camp, for there'll be no more trouble from these men."

They walked back to the horses, accompanied by the tribesmen, who were obviously on very friendly terms with Tucker. On the ride back to camp Tucker explained that very often armed conflict could be avoided by careful negotiation, and that the hillmen were pleased to have the artillery emplacement as a discouragement to other tribes who might have conducted raids.

Tucker did not mention the incident to Captain Perkins, and Percy was pleased to have learnt a valuable lesson without losing his life. That night he wrote letters to his mother, to Aurelia, and to Jocelyn in Madras.

CHAPTER FIVE - Cambridge

There it was, the Merton Arms, less shabby than I remembered it, with engraved glass in the windows and fresh paint on the door. I went in, and approached the polished bar. A smart looking young barman saw me. "Yes, sir, what can I get you ?"

"Do you have rooms to rent ?"

"We do have a couple free. Shall I show you ?"

The room was clean and plain; very retro chic, in fact, with some nice art deco furniture.

"This will do nicely, thank you. How much is it ?"

"Ten and six a night, or three guineas the week, breakfast extra if required."

"I'll take it for a week," I said, trying to sound confident.

"Payment in advance, sir," said the young man, smiling.

"Ah," I hesitated, "I've, er, only just recently returned from overseas, and I only have foreign currency about my person. I can, er, leave you this gold ring until I have visited the bank, as security, if that's acceptable." I handed over a heavy gold signet ring that my late (and currently unborn) father had made from scrapings he had collected whilst repairing jewellers' balances in Hatton Garden. This seemed satisfactory, and I was allowed some credit at the bar for a much needed drink on the strength of it. The barman even found me some bread and cheese for supper. Refreshed and slightly more relaxed, I retired to the room to write up as much of my notes as I could. I would have to be careful, because the battery on the laptop would only last a couple of hours. But inspiration struck again, and I was pleased about my habit of carrying my Leatherman multitool everywhere. I was able to cut the moulded plug from the laptop's charger and replace it with the old fashioned round pin plug from the

bedside lamp, which had a very nice art deco shade. It worked perfectly; I thought I might e-mail Apple Computers when I returned to congratulate them on a piece of timeless design.

The bathroom along the corridor was a splendid affair with a large bath, and huge old fashioned taps, and a beautifully decorated WC and cistern, with a real chain to pull. I felt quite comfortable, and looked forward to the following day.

The pub provided a very substantial breakfast, and I set off just before nine o'clock almost unaware of my bizarre predicament. I walked the short distance to Percy's house, checking all the time for signs of the wrinkle boundary. The day was bright and colourful; somehow I had imagined 1923 would be sepia, but the sky was blue, the people pink, the clothes surprisingly modern looking. I realised that the present always feels like the present; although you can appreciate intellectually that one day you will be history, you are not viscerally aware of being in the past.

Percy greeted me very warmly, and we resumed our conversation. He seemed a little more relaxed without Grace there, and I felt more comfortable about asking him questions about his first marriage. At lunchtime, we walked down into the town, with me on tenterhooks the whole way in case of temporal displacement. But my luck held out, and we enjoyed a splendid long lunch, returning at four o'clock in a very cheerful state. No sooner had we sat down than dinner was mentioned.

"I've taken the liberty of inviting you to high table at college this evening."

"That's very kind. I am most grateful. Perhaps you could tell me how you met Grace ?" I think the wine had emboldened me.

The conversation continued uninterrupted until it was time to leave for dinner at the college. This turned out to be a splendid affair, and I was decidedly underdressed. However, I think my status as a foreign student gave

me leeway to be odd. There was sherry in the Senior Common Room to begin, followed by a procession of academics and their guests through the dining hall, past rows of very young looking undergraduates, to the 'high table', set on a raised platform at the far end of the room. The magnificent four course meal was accompanied by a great deal of wine, and I found myself listening to a number of abstruse conversations on theology, philosophy and the quality of modern students. Percy talked to a youngish academic who was interested in his recent book, *New Mathematical Pastimes*, and had apparently had a set of Mayblox as a child, which delighted Percy, and his appreciation boomed across the hall.

After brandy back in the common room, I was feeling very giddy. The walk back to my lodgings at the pub helped to clear my head a little, and I had just enough wit left to set the alarm on my mobile to wake me for breakfast before I sank into a deep sleep. I was wakened before the alarm by a strange dream in which I was trapped forever in the past, where I died before I was born, and also the pressure on my bladder from the previous evening's excesses. After breakfast, I went back to the room to write up my notes from the previous day. I was not due to meet with Percy again until after lunch, so I resolved to spend the morning trying to find the boundaries of the wrinkle. I reckoned I could spot the shimmering from a distance, so I wouldn't need to get too close and risk falling back into my present - or was this my present, and the twenty-first century a different present ? At this point, several thoughts occurred to me.

Would I actually go back to the time I had come from ? Or would it be later, earlier, or a different era altogether ? If I got back to the same time, I might still be in time to get home without anyone noticing. If it was later by the same length of time I had spent in 1923, I would have a lot to explain. And if was even later, then I could be in serious trouble. My head was spinning with all this, and my years of science fiction reading and courses on relativity were not providing any answers. So I distracted myself by setting out on my

exploration. I walked very slowly south from the pub, back towards the place where I had started this adventure. There was no sign of the haze, and I continued cautiously along the road. One of the shops had a familiar sign outside: three balls. A pawn shop, and a flash of inspiration struck me, again. I went inside and slipped off the old Rolex watch that my father had given me years ago when he had been in charge of auctioning dead people's effects at a large London hospital. It was a traditional wind-up job, and had once been valued at quite a large sum, so I guessed I might be able to raise some money. I had no idea whether Rolex had existed in 1923, but I thought, in for a penny, in for a pound, and laughed at my own joke.

The man behind the counter wore a brown work coat, and had glasses with a fold down magnifying lens. As he bent to examine the watch, I could see myself reflected in his shiny bald head.

"This is an unusual piece," he said, "have you had it a long time ?"

"Several years, twenty or more," I answered, truthfully, "my father gave it to me. I think he got it abroad, on a trip to Europe."

"I see. I am not familiar with this particular model, but the manufacturer is, of course, first class. It seems quite genuine, so I will advance you twenty pounds. You must redeem it within six months. Clear ?"

Twenty pounds sounded quite a lot, but just to see what would happen, I said, "Yes, can you make twenty guineas ?"

The pawnbroker flipped the magnifier down again and bent his head to re-examine my watch. There was a brief silence, and he looked up and peered at me with one normal eye and one very large eye. I wondered if he had spotted something wrong. But he sighed and said, "Very well. Guineas."

I left clutching four very large five pound notes and a eight half-crowns (I had asked for some small change). I continued my slow walk south towards the town centre, without any sign of space-time anomalies until about fifty yards past the Round Church. Then ahead of me I could see the air shimmering.

I was torn. Step through and go home, or stay and continue to talk with the man I had come to know so well from a great distance. I hesitated for a long time. The pawned watch had provided me with plenty of ready cash, and I wasn't really bothered about getting it back. My father had never actually owned it, so it wasn't a family heirloom in the proper sense, so I decided to make the best of the opportunity. I located the eastern and western edges of the wrinkle, but I didn't have time to go very far north, because I wanted to get some lunch before I met Percy.

I found a small gentleman's outfitters and bought a shirt, with a collar, a pair of trousers and a light jacket, for three pounds, fourteen shillings and sevenpence halfpenny. I enjoyed thoroughly reacquainting myself with old money. The decimal sort had never seemed terribly real to me, probably because I had been living abroad in the early 1970s when it was introduced. The weight of the half-crowns and the familiar little sixpence pieces, tanners, made me feel quite at home. I bought lunch in a little tea shop, where I was served by pretty young teenage girl, who was also in full colour, and smiled a lot. I left her a threepenny tip, the tiny silver coin being one that had been replaced before I was born, not just for the service, but also for not being sepia and severe.

I was still excited when I knocked on Percy's door. He answered it looking very relaxed, with no collar and his sleeves rolled up.

"Come in, come in," he welcomed me, "we can talk for a few more hours, until Grace returns. She sent me a telegram to say she'll be arriving on the five twenty from Liverpool Street, and then she'll get a cab."

So we did. He told me all about his teaching at Woolwich, his meetings with some of the most famous mathematicians of his time, his great breakthrough in invariant theory, and we had just started on his election to the Royal Society when the sound of a motor taxi outside alerted us to Grace's arrival. Percy leapt up and went to the door. They greeted each other with a

hug and a kiss, which was very touching, and then we both carried Grace's luggage into the house. I felt very honoured by this simple act, somehow, and amazed to be participating in history. My fingerprints would be on that case, and on other things in the house, although I knew none of it would survive the many refurbishments that the house would endure in the years to come. I wondered if I could leave a message in the fabric of the building. Whilst Percy helped Grace upstairs with the luggage, I slipped one of my visiting cards between the floorboards with a note on the back with the date, although since I had never had a phone call, I knew it hadn't been found before 2006, if at all.

We had some tea together, and then I bid them goodbye. I didn't want to overstay my welcome. Percy agreed to meet me for lunch the following day, and I returned to my room at the pub to write up the day's notes.

I paid over three guineas and retrieved the gold ring from the barman before going out to find dinner. I had to be careful, because the shimmering edge of the wrinkle would hard to spot in the gloaming. I felt less conspicuous in my new clothes, but I didn't dare go out without the laptop, so there was still an anachronistic element to my attire. I returned to the tea shop, but it was closed, so I had to search a little further afield to find a restaurant. If only the wrinkle extended into the town centre, it would be much easier. I tried going north again, but where I was expecting to find the county offices I had visited as part of my job in local government, there was a jail, so I decided not to explore any further in that direction.

I found a place to eat near a post office in a street I had never visited before, and had a very traditional meat pie and potatoes. Back at the pub, I had a couple of pints before retiring to my splendid art deco bedroom, where I spent a dreamless night. The following morning, I walked about aimlessly, all the while checking for the boundary. My small section of the nineteen twenties was beginning to feel very claustrophobic. The first flush of adrenaline-charged academic fervour was passing, and, along with a growing fear for my personal

future, I missed home. I remembered the last time I had felt this sort of low level terror. I had been on a four week business trip round the Far East: Tokyo, Hong Kong, Singapore and back to Tokyo. My boss had fallen ill during the last week in Tokyo and left me all alone to finish the trip. After three days in such a foreign environment, I looked in the mirror while shaving and could have sworn I was turning Japanese.

My alarm levels rose even higher during my wanderings, since the haze seemed closer, certainly to the south and west. So I was feeling quite anxious when I met Percy at lunchtime. He was as effusive as ever, and told me a great deal about his mathematical work, as well as the story of his reunion with Grace, which was really romantic. I'm sure the rest of the restaurant was as riveted as I was. But my underlying angst was bubbling hard, and when it came to the end of the meal, it boiled over.

"I'm afraid I shall have to return home tomorrow," I said, with my heart pounding.

"Well, that is sad, I have enjoyed our talks a great deal. Will you be able to bid Grace farewell before you leave ?"

"I shall have to leave early, but I could stop by for a few minutes, yes."

I slept very badly that night. I was very frightened about crossing the wrinkle again. It is one thing to step into the unknown by accident, but to do it deliberately is altogether harder. I was not one for white water rafting or bungee jumping, so this sort of physical challenge was not something I was practised in. I dressed slowly the following morning, and only picked at my breakfast.

I walked back to Percy's house for nine thirty, and knocked. Grace answered the door.

"Percy has had to go to the college. I gather you are returning to Portugal."

"I am going home, but I hope to return sometime. I am very grateful to you both for your hospitality. It has been such a pleasure to meet you both. I had often dreamed of talking to Percy and meeting you, but for it to come true was beyond my wildest dreams."

I think Grace was a little surprised by the emotion in my voice, a mixture of regret and terror. She could have no idea how unlikely our meeting had been. I refused her offer of tea, and as she closed the front door I set off down Hertford Street. I had decided, during my sleepless night, that I would head for the southern boundary, so that I would reappear in the twenty first century more or less where I had left it. The question of when was open. It was a fine morning. I walked slowly along the pavement, watching out for any sign of the haze. I spotted it very close to the Round Church, so I had been right about it moving. I stopped and tried to control my breathing; I could feel my heart banging against my ribs. As I stood there, I spotted Percy coming out of the college, down the road to my right. I couldn't let him see me, so I walked smartly forward, through the shimmering air ahead of me.

CHAPTER SIX - India

A few months later, with the new fort firmly established, Percy was sent further north, to join an established mountain battery of two seven pounders, a company of the Kohat light infantry and a Sikh company of the Punjab National infantry under Colonel J. H. Gordon. He was to replace a lieutenant, Gunnerson, who had been killed in 'mysterious' circumstances. The subaltern, Matachin, told him the story.

"It was a very strange incident happened on 31st October in connection with poor old Gunnerson. We all shared a single pole tent, so got to know each other quite well. On that morning when we were lying in our beds, Gunnerson, normally a taciturn chap, was particularly lively, quoting bits of Dickens, Thackeray and other works. We asked why he was so cheerful on such a miserable day; he replied he had reason to be happy, for he was certain he would die on 30th or 31st October, the result of an encounter with a soothsayer some time before."

"A soothsayer?" said Percy, raising his eyebrows and stroking his moustache.

Matachin went on, "He was that sort of a chap. Given to introspection, always worrying about the future. We pressed him to explain. He said that, as the enemy had been driven off with the loss of their guns on 30th, there was now no possibility of a fight on 31st, so he felt he would live through the year and wished all in the tent were as safe as himself. But at about four that afternoon the enemy again attacked, with small arms, and the Troop came into action near the river. After a while, the Captain, wishing to advance, sent Gunnerson to find a ford, which he quickly did and returned; he dismounted and continued to superintend the firing of his guns. Shortly afterward the captain ordered 'Limber up,' and as Gunnerson was mounting, a shot ricocheted from

the opposite bank, struck him on the head, killing him instantly. Thus was his belief that he would die on 30th or 31st most strangely substantiated."

"A sorry tale," said Percy.

General Tytler called for Percy to attend him in his tent. "You were recommended to replace Gunnerson because of your high marks in mathematics, MacMahon. The key to dislodging these Afridis is well-aimed artillery fire, and you're just the man to do it, I am told."

"I will do my best sir. Do we have any up-to-date drawings of the enemy's position ?"

"You can have all of Gunnerson's intelligence on that subject. We'll commence our artillery attack after breakfast tomorrow. Off you go."

It was a very early breakfast, taken quickly and quietly in darkness. At daybreak, a large force of infantry marched from the camp toward the enemy villages at Zawa, which lay in a hollow basin approachable only through a winding, narrow gorge about seven miles long. The gorge narrowed so much at its head that it would more properly be described as a tunnel. What Tytler didn't tell Percy was that the place was regarded as impregnable, having never before been taken. The plan was to fight all the way along the gorge, taking each crest in turn, until all the enemy forces were concentrated in the basin.

At each turn in the gorge, a *sunga*, or stone breastwork, had been erected, and it was Percy's job to knock them down. The seven pounders had an effective range usually reckoned as about two thousand yards, and were easy to move along the ridges above the gorge. The first sunga was easily destroyed, Percy's use of the Watkins range-finder enabling the guns to hit lower third of the walls at 1990 yards, in a classic cut-and-push operation. Using four common shells to the foot, a horizontal cut was made near the base of the wall, followed by two vertical cuts at either end. The defences had been poorly maintained, so a couple of well-placed rounds then pushed the whole section over. Shrapnel shells dropped just inside the cut sent the enemy soldiers

fleeing, leaving the way clear for the infantry to enter with very little resistance. The guns were limbered up and moved quickly into the remains of the sunga, a mere 1600 yards from the next one.

The action continued all day, until failing light made further use of artillery impossible. The position, two thirds the way along the gorge, was secured, and Percy retired to his tent with congratulations from Tytler ringing in his ears.

The following morning, the attack was pressed forward until the remaining forces of the Afridis, two or three thousand strong, formed up behind the cover of a crest. Direct fire was not possible, but Percy moved his guns to a point where it would be possible to enfilade the reverse of the crest. The range was twenty five hundred yards, and Tytler was uncertain.

“Those seven pounders can't reach that far. We'll have to go for a frontal assault.”

“Sir, please. Give me an hour, “ said Percy. “We are not trying to destroy the breastworks. At that range, with the right fuze, I am sure I can drop shrapnel shells in amongst them.”

“Half-an-hour,” said Tytler, “I can't afford to allow them too much time before we take them.”

Percy spent ten minutes with a pencil and his notebook, calculating. He had seen this done on the practice range at Woolwich, so he knew it was possible. With both guns firing at twenty rounds an hour, he was certain he could demoralise the enemy sufficiently to give the infantry a better chance. As it turned out, after twenty minutes and a mere dozen shells, the enemy turned and fled, leaving the infantry nothing to do but march into Zawa.

The total losses were one officer and three sepoys, with a few wounded. Around two hundred Afridis were killed. Percy was hailed as a hero; he revelled in the praise, and tried to appear modest. From mudslinger to gunslinger, his reputation as an artilleryman was assured, and he hoped his

father would have been as proud of him as he was himself. To cap it all, Tytler called him in to receive some more good news.

"Your rank has been made permanent, Lieutenant. And backdated to September '72, so there'll be a good pile of back pay for you. Well done, MacMahon. Your sharpshooting saved us a lot of time and men today."

Percy was sent back to Multan for a few months. Whilst there, he had a letter from Jocelyn in Madras, with the news that he had married Euphemia Balderston, daughter of a British civil servant. She had been born in India, and apparently never been to England. Percy was suddenly aware that he had not had a letter from Aurelia for nearly eighteen months. Part of him was saddened by this, but he was so absorbed in establishing himself in the Artillery that he realised a serious relationship would not work. He was considering writing another letter to Aurelia, when a message from a Colonel Daniel Mocatta, via General Tytler, arrived. He was to report as soon as possible to the Colonel in Kohat.

"Good morning, Lieutenant," said Mocatta, welcoming Percy to his tent a week later, "you come highly commended. I won't beat about the bush. You've heard of the Afridi tribe, I guess."

"Yes, sir, I have been in action against them and some of their allies at Zawa, a little while ago."

"Well, we are having a bit of trouble with a different branch of the tribe up here, the Jowakis. Bahadar Sher Khan has managed the pass Afridis for last quarter of a century, but seems to be losing his grip now. A couple of years ago, Captain Cavagnari proposed the construction of a new road through the pass, and it has taken until now to get approval from the Government to build it. But the Jowakis are now causing trouble. Seems they don't want the road, and they've been harassing the surveyors, and generally creating havoc along the entire route, along with the Hasan Khel tribe." Mocattta paused and ordered tea from the tea-wallah outside the tent.

"What are we to do, then ? Push the road through by force ?" asked Percy.

"That would mean taking on the Adam Khel tribe along the whole border. We can do it if we have to, but it will be expensive. No, the plan is to make a show of force, accompany a convoy of merchants through the entire pass and try to persuade the Afridis that a better road would be of benefit to them by improving trade. There'll be a light mountain battery with the force. It will need to move fast, and undertake action in awkward situations. After your handling of the Zawa operation, General Tytler recommended you."

"Thank you, sir, I'll do my best, of course."

"I'm certain you will. Now let me introduce you to Major Moran, in charge of intelligence. He'll be able to give you the full picture."

Mocatta led Percy across the camp to another tent, and showed him in. Moran greeted them both warmly. He was shorter than Percy, stocky, but with a splendid set of moustaches. Percy considered that it was about time he too allowed his moustache to grow, and resolved to do so with immediate effect. "I'll leave you to it, then," said Mocatta.

Moran ordered tea for both of them, and they settled back into comfortable folding chairs that must have cost Moran a pretty penny.

"Let me just fill you in on the pass Afridis." began Moran, "They are, as a rule, the smartest, most well-set up of the pass-men. Their favourite dress is a grey *kurta* and turban. I tell you this because it will help if you adopt some of their dress patterns - and the turban is more protection that a helmet in close combat. They are motivated by money. Did you know it is their custom to buy wives from neighbouring tribes ?"

"I had heard that, yes."

"A hard working wife can be obtained from around two hundred rupees, unless you want good looks, too. The pretty ones, who are rare, I can tell you, command up to a thousand rupees or more. But they work like donkeys, cutting

grass and wood, fetching water, cooking, and so on. Leaves the men with nothing much to do except improve their aim." Moran laughed, a loud guffaw. He went on, "Not only do they trade their relatives, but if a man dies, his wife becomes the property of his heirs. More often than not she'll be sold on. I tell you this because it is my belief that the current troubles are no more than a money making exercise. They want us to buy them off. So our plan is to show them that it will be more costly to prolong the skirmishing than to accede to the new road. Take it from an old shikari, MacMahon, if you hit them in the pocket, they'll soon co-operate."

It took several hours to go through the maps and plan the route. In addition to the seven pounders, for first part of the journey, two nine pounders drawn by elephants would accompany the force. They saw action almost immediately. The first day's march, on 2nd December, despite some deep ravines and the slippery state of the road, passed without serious incident. Percy had taken Moran's advice, and wore a short *khadi*-silk kurta with wooden buttons over his regular riding clothes, and a large grey turban. These had been provided by a couple of Jowakis who were accompanying the convoy, principally to act as interpreters. Moran had enjoined Percy to watch them closely. There was some sniping from the hillsides, which resulted in a dispute between one of the gunners and his driver. The driver was accused by the gunner of cowardice, in that he had 'bobbed his head' when he heard the crack of a sniper's rifle. The driver denied this, and a fight broke out. As the lieutenant in charge, Percy was required to investigate the case, and a Drumhead court-martial was set up. The gunner turned out to have been drunk.

"No man in this Troop is a coward, so shake hands and say you are sorry," commanded Percy, confident now in his authority, despite the antagonist being at least fifteen years older. Although the gunner apologised for the accusation of cowardice, the apology was very grudging. He clearly was heard to mutter, "but he did bob his head as a round shot passed over, he did," while

obeying the order to shake hands. In view of that and the drunkenness, Percy had no alternative but to sentence the man to ten lashes, to be administered at a more convenient time. He did not want one of his gunners incapacitated just then.

On the second day, a large force of Jowakis, assisted by some Khels, had taken up a strong position on the Shergadra Ridge. The terrain was steep and rugged, covered with wild olive and sinutta bushes. The crest, running east and west, was covered in loose rocks and boulders that the pass-men had used to construct some sturdy looking surgas. The enemy was clearly not going to mount an attack, but could use the position to harass and snipe. Percy had time to study the lie of the land and formulate a plan. He decided to form up the guns, with the larger cannon in a position to mount direct fire, and the smaller on the flanks to enfilade with shrapnel shells once breeches had been cut. A few opening rounds of shrapnel forced the enemy behind the surgas. Percy's direct shelling of the surgas was very accurate; he didn't need to look - the sound of the percussions told him everything he needed to know. The hard sharp sound of masonry being hit gave way to the hollow, fainter sound of broken walls. The smoke changed from blue to grey as the defences crumbled.

Once breached, the surgas were abandoned and the infantry were able to storm the position almost without loss. The Afridis had bolted down the other side of the crest, and some had taken up a position on a small hill over seven hundred yards away, well beyond the range of their jhezails, although a few had Enfield rifles, enabling them to cause some irritation to the victorious occupiers. The whole process took only three hours, and the number of shells expended was minimal. Percy was toasted well that evening at dinner in Colonel Mocatta's tent.

There had been only one tragic incident. The gunner under sentence had been hit in the lungs by one of the better armed Afridi sharpshooters and was in

the hospital wagon. Percy went to visit him before dinner, and found him in a bad way.

"It's the sentence that bothers me more, sir," whispered the poor gunner, "I don't want to go with that on my record. Can you help me, sir, please ?"

Percy promised to raise the matter with the Colonel. After dinner, he described the man's injuries and his request to Mocatta. "Let's go to him now," said Mocatta, putting down his brandy. Standing by the man's bedside, Mocatta said, "What's your recommendation, Lieutenant MacMahon ?"

"The Gunner has acquitted himself well today, sir. He did his duty at the gun, and then helped with the infantry charge. I recommend that his record be clean."

"So be it. Well done, Gunner." He left the wagon.

"Thank you, sir, I can rest easy now," breathed the gunner.

In the morning, Percy was informed that the man had died from his wounds during the night.

From the commanding position on the ridge, Percy was able to see into the neighbouring valley, where a number of small settlements lay. As the field force descended, Percy's accurate fire made these villages too hot for the Jowaki forces, and they retired to the next crest, imagining that they were out of range. But the heavier guns showed them the fallacy of this impression, and the shrapnel shells soon had them running in large numbers. Once they had reached three thousand yards, Percy stopped the bombardment, since he could no longer judge the effectiveness of the fire. Later in the afternoon, groups of sappers used explosives to demolish the fortified towers in the valley. It was splendid show, and the former owners could undoubtedly see it very clearly. Mocatta and Moran both came to congratulate Percy on his gunnery, and Mocatta hinted that a Brevet Captaincy, if not a full Captaincy, might well be in the offing. Percy slept a satisfied, deep sleep that night, confident that his career was on track. In the morning, before the column set off to meet the merchants and their

camel train, Percy wrote to his mother, and to Jocelyn to congratulate him on his marriage. He did not write to Aurelia.

The large guns were left behind to secure the ridge, and two forty pounders were ordered up to make a more permanent garrison. Moran said he had some secret work to do, and rode off, leaving Percy in sole charge of the two mobile seven pounders.

CHAPTER SEVEN - Jowakis

After two days further marching, with only minor irritation from Jowaki snipers, the force and Percy's guns met up with Major Sandeman, the Political Agent in command of the operation. There were several squadrons of Punjab and Sikh cavalry, and a half battery of two howitzers, some nine hundred men in total, with a baggage train of about four thousand camels. All these men, animals and equipment was to be escorted through the pass.

It was as if a small town was on the move, the whole comprising more than three thousand people. Percy was at once fascinated and repelled by the noise and the smell. All the animal handlers seemed to be shouting at one another simultaneously, and great clouds of dust swirled over everything.

The weather had been clear but cold up to that time, but as the enormous column of people and animals started to move, a light drizzle started up. It became heavier as the day progressed, which was both a blessing and a nuisance. It discouraged the Jowaki snipers, and suppressed the dust kicked up by the baggage train, but it gradually seeped into clothing, and made the ground slippery.

Two days passed in this manner, with not a shot being heard anywhere. The whole caravan stopped by a town called Khera in order to rest the animals and reprovision. This turned out to be a dreadful mistake, for cholera was raging in the place. The cholera belts, designed to keep the abdomen warm, offered no protection, and despite confining everyone to the camp outside the town, the bad water laid low many men overnight. With no facilities for filtering water, Major Sandeman decided it would be madness for everyone to stay. After a 'council of war' amongst the senior officers, Percy included, it was decided to send the infantry and artillery ahead, with the cavalry following

a day behind. The baggage and camels would bring up behind. The next camp was at Hagee-ka-Shur, some fourteen miles distant. It proved a trying march, as men kept falling out of the ranks, ill and dying. The litters were rapidly filled, and it became necessary to leave men behind, under guard, to be picked up by the baggage train and rear guard. But the disease continued to spread. A cholera hospital was set up outside the village, under the supervision of a native doctor, and the force moved on to Pir, about twenty miles further on.

More men were dropped on the way, but about five miles from the camp the column with Percy and his guns at the head of it reached the entrance to the Pass, where clean water was found in a running stream. This encouraged the officers to push on a further twenty miles or so up the dry river bed, which left the soldiers and animals very tired. The cholera seemed to be abating, and it was decided to stop to rest for a day or two and allow the camels to overtake the main force.

Percy was grateful that the disease had spared him, and wrote letters to his mother and younger brothers. The camels overtook them and they set off behind them, and a further march of twenty five miles found them on the banks of a river well stocked with *maksur*, an Indian salmon, which were very good to eat, and a welcome change to the diet. Major Sandeman was called on to ride ahead with the cavalry to settle a dispute with the camelmen, who were trying to evade the payment of the prescribed pass fee of eight shillings a camel. Percy rode with him, and was impressed by his calm demeanour and his ability to conduct such difficult negotiations. They returned to the camp a few hours later, and made preparations to leave first at first light. Instructions had been left with a native officer to hold the camels at the entrance to the pass so that the escort could get ahead.

The following morning, when the artillery arrived at the pass, it was discovered that the officer had disobeyed his orders and the whole entrance was blocked with a noisy confusion of camels. Percy was suspicious about this, and

took it upon himself to ride up a little track at the side of the pass, to where he could see further.

Sandeman and his fellow officers were surprised by the sight of Percy galloping back to where his seven pounders were waiting. He ordered one moved to a position in the centre of the flat, stony ground, and had it unlimbered.

Sandeman trotted up to him. "MacMahon, what the devil are you up to? We've almost got the camel situation under control. There's no need to blow them out the way."

"Sir, the blockage was not an accident. Have the officer we left in charge arrested. There is a force of Jowakis assembled beyond the camels, and they'll cut our infantry to pieces as soon as we move through."

"But what are you up to ? You can't see them from here."

"I don't need to. I have their range, and I can drop shrapnel among them from here."

The native officer was nowhere to be found, unsurprisingly. After a few minutes of rapid calculation, Percy issued instructions for the aiming and loading of the gun. The camels seemed totally unconcerned by the loud reports, which went on for an hour.

A further hour elapsed before the infantry were able to proceed into the pass. Percy and Sandeman rode with them. A thousand yards along the narrow path, they came across a number of bodies, possibly thirty or forty, but no active Jowaki troops.

"By God, MacMahon, you're a marvel. If these devils had had the chance, they'd have surprised us and made a lot of trouble. Well done indeed."

The body of the native officer was discovered a few hundred yards further along. He'd been badly mutilated and his throat cut so deeply that his head was barely attached. Clearly the Jowakis had assumed he'd betrayed their

intentions and position to the British force. Percy was fêted as a hero, and Sandeman wrote a long letter of commendation to his commanding officer.

The march continued for a further gruelling thirty days, but without any serious opposition from the Jowakis. Upon his return to Multan, the story had been told all over the mess, and there were many toasts to the man who had destroyed an enemy he couldn't even see, and from behind a crowd of noisome camels. Percy enjoyed the attention; by now, his moustache was quite magnificent, and he had taken to wearing the Jowaki turban most of the time, so he cut quite an unusual figure amongst his colleagues.

CHAPTER EIGHT – Jowakis again

Early in 1877, Percy received orders to report again to Colonel Mocatta in Kohat. The almost-promised Brevet Captaincy had not happened, but for this new posting he was promoted to Subaltern, back with the No. 1 mountain battery permanently.

"Glad to see you again, MacMahon," said Mocatta, "Got a special job for you this time. Those pass Afridis are causing trouble again, and we think you are just the chap to sort them out. You have quite a reputation with the Jowakis, you know. They think you have magical powers after that incident last year. 'Mystical Grey Turban', they call you."

"Very flattering. It was just good intelligence and the power of mathematics, really."

"Don't be too modest. It doesn't pay to be to be shy and retiring, not if you want to win. And we don't want you to be at all reticent now. The plan is that we will let the troublemakers know you are here, make sure you are highly visible, send you out on patrol so they'll be sure to see you around."

"That alone won't stop them harassing us though, will it, sir ?"

"No, but you will take out some of their towers, but from positions where they can't see you at all. Work some of your magic again. That'll soften them up, give the Political Agent some advantage in his negotiations."

"Will Major Sandeman be conducting the negotiations again ?"

"No, it's Major Moran. You know him, of course. He was very impressed with your gunnery. It was he who suggested this plan."

Moran greeted Percy very warmly.

"Glad to see you again, Lieutenant. The Colonel's outlined our plan, I take it. Dashed awkward fellas, these Jowakis. Fine soldiers, but not keen to submit to anyone, even when they're outgunned. But you certainly put the wind

up ‘em in the pass that time. I’ve got maps of their main settlements, we can look at those after dinner, eh ?”

Moran put his arm across Percy’s shoulders and steered him across the compound to the mess. They enjoyed a fine curry and copious brandy afterward. Back in Moran’s quarters, Percy looked at the very detailed maps of the Jowaki settlements that Moran himself had prepared.

“These are excellent maps, Major, but I’ll still need to go and look at the sites myself. I’ll need to see exactly where to place the guns, and get precise ranges. We’ll need to work out how to move the guns into position without being observed,” said Percy.

“Absolutely, old fella, absolutely. I’ve got a guide lined up for you, Subedar Ranjit, and a couple of trustworthy men, Hawkins and Simpson. Ready as soon as you are.”

The following day, Percy introduced himself to his new team. They spent a week or so practising range finding before setting out on their first mission. Moran had suggested the targets, and Percy decided to reconnoitre all four locations, travelling to the furthest and then working back to the artillery base at Kohat. The expedition would take about two weeks, Percy estimated, and so the little group set out on a bright, cold morning into the mountains. The first target was about fifty miles distant, a small village built amongst fruit trees, in the shadow of a high hill. It was approached along a narrow defile, with a small river flowing next to the road. The party picked their way carefully up the side of the gorge and found a point overlooking the village with its round stone tower, about forty feet high, with a door some fifteen feet above ground. Defenders would retreat into the tower, and draw up the ladder once inside. The walls were very thick, and could resist even a determined artillery bombardment for a long time. It was very costly in terms of time and ammunition to try to storm such towers. The usual method of destruction was to dig a pit in the floor and lay up to a hundred pounds of explosive inside. Percy’s plan was to try to

drop shells onto the roof and bring it down on top of the defenders, and destroy the internal structure.

It was clear from where they observing that from a high enough vantage point, this would be relatively easy, but more difficult from a low attacking point. The high angle of fire needed would put the seven pounders at a distinct disadvantage. So the problem was to get the guns to a high enough point.

Percy made careful notes and annotated Moran's maps with his own measurements. He was pleased that they had met with no hostile Jowakis. The second and third targets proved equally peaceful, with just a few villagers out in the nearby fields and no signs of any recent military activity. It was at the fourth target, about eleven miles from Kohat, where they met with trouble. As they rounded a bend in the road, a small party of Jowakis sprang from the bushes, some on foot, and a couple mounted. Percy was in the lead position, and charged immediately, cut down the first man, struck the second, but was then ridden down, horse and all, by the two mounted Jowakis. In the confusion, he dropped his sword, and as he was searching about for it in the mud and grass churned up by the animals' hooves, the two horsemen came at him, yelling curses and waving their lances. He rolled onto his back, drawing his pistol from its leather holster and managed to wound the nearest horseman with his first shot. He could hear his comrades calling to one another and the sounds of shooting as the second rider galloped toward him with a lance in one hand and a raised *tulwar* in the other. Percy rolled to one side, caught the lance in the crook of his elbow, and pulled the man from his horse. The Jowaki crashed to the ground, dropping his *tulwar*. Percy snatched it up and caught the warrior a hefty blow on his shoulder, nearly severing the arm. The first horseman, recovered from the impact of the pistol shot that had only grazed his neck, pounced on Percy from behind, twisting the sword from his grasp, and would have run him through had Subedar Ranjit not rushed toward them and shot the man from thirty paces.

The remaining Jowaki flourished his *tulwar* at Percy and began shouting and dancing about. He swung his weapon but Percy was able to parry the blow with the bloody *tulwar* he was still holding, so the man swung round and cut at the Subedar, who also parried the thrust. The man swung again at Percy, and caught him on the head badly. Percy fell backwards, blood streaming into his eyes. He could see the raised *tulwar* and was certain that he was about to die. Suddenly, the Subedar thrust his sword through the man from behind, the point bursting through his chest just below the breastbone. The last thing Percy saw was the dead Jowaki falling towards him, sliding slowly off the Subedar's blade.

When he came round, Percy found himself on a litter hastily constructed from a few cut saplings bound together with twine and covered with his own bedroll, being hauled slowly back to Kohat by his own horse. The litter bumped and scraped the ground, and Percy groaned a little at the vibration. Hawkins and Simpson were walking alongside, while Subedar Ranjit led the way.

"He's come round, sir," called Hawkins. The party stopped. The Subedar's face appeared in Percy's field of vision.

"Lieutenant, glad to have you back. If it had not been for your turban, your skull would have split like a gourd. We are but a short way from home now."

Percy tried to speak, but a searing pain in his head meant that he could only smile weakly before closing his eyes and lapsing back into the darkness. It was a week before he was fully conscious, and able to send for the Subedar, who arrived with Colonel Mocatta and Major Moran.

"I want to thank you, Ranjit, for your brave actions surely saved my life," said Percy.

"The Subedar has been mentioned in my report," said Mocatta. "I'm afraid you won't be able to carry out your mission, now, MacMahon. The

doctor says you'll be a long time recovering from that blow. We're sending you off to Muree for a while, to convalesce. But the Major here thinks he can finish the job with your information. Well done, lieutenant, and good luck."

Moran merely smiled and nodded. The two officers left, and Percy sank back onto his pillow. Ranjit spoke.

"You were very lucky, Sahib. Those men were out to get you for sure. They must have recognised you, and realised you were on a secret mission. They may have been tracking us for days."

Later, in Muree, MacMahon had two items of bad news. Moran had successfully destroyed three of the four towers, but each one had been empty, as if the Jowakis had known the attacks were coming. But the head wound was not healing properly, so he was to be returned to England for further medical treatment. He felt disappointed, even somehow betrayed. It was with a very heavy heart that he packed for the long journey home. It was as if everything was coming to an end, long before it was supposed to. Where would the glorious career come from ? How would he live up to his father ? Patrick William MacMahon had died with the rank of Lieutenant Colonel; at home in Brighton, Percy's mother had a display case with his decorations: Crimean medal and clasps for Alma, Inkerman, and Sebastopol, Knight of the Legion of Honour, conferred by the Emperor of the French in 1856 for distinguished conduct in the field, a Sardinian war medal, the fifth class of the order of Medjidie, a Turkish Crimean medal and a Companion of the Bath for service in the field. Where would Percy's medals and decorations come from now?

The stopover in Malta did nothing to lift his spirits. His memories from twenty years before were brighter and fresher than the reality of the new town of Sliema that had grown up around the old Fort Tigne. The sunlight seemed hard and the shadows deeper than he remembered. By the time the Jumna docked at Portsmouth on 25 January 1878, he was as grey as the sky.

CHAPTER NINE - Frustration

A full twelve months on sick leave left Percy seething with frustration. Even more distressing was the knowledge that he would never be able to return to front line duty on the North West Frontier of the Empire. The head injury had left him suffering from a mild intermittent giddiness, and a stiffness in the neck. Riding was out of the question, and the noise of artillery fire gave him double vision.

He was bitter about the way the army had treated him. His plan to demoralise the Jowakis had been put into action by Moran, with such great success that Moran was now a Colonel, and the entire brigade had been given an India General Service Medal with a Jowaki clasp. For Percy, there was nothing, not even a note of thanks from Mocatta. He felt that somehow defeat had crept up on him just as he was about to triumph. That would not happen again, he promised himself. He would be more vigilant, and take full control of his life.

At the beginning of 1879 he was posted to Dover with the Ninth Brigade, in charge of issuing stores. Another twelve months of interminable tedium, and then a move to Sheerness. Dover had at least had some social life, but Sheerness was more than he could bear.

He had been writing to Jocelyn, who was still in India, but due to return to Woolwich during 1880 to take up a post in the music section of the Academy, lamenting his situation. Aurelia Hogarth had vanished, his social life had sunk to an all time low, and he could see no way forward. His grand plan for taking control was already looking shaky. It was Jocelyn who made the suggestion. 'Your use of mathematics at the Jowaki pass is legendary,' he wrote, 'why not pursue that ? Join the advanced class.'

Percy wasn't sure. Back to school for two years, no guarantee of a decent commission afterwards, and the likelihood of forced early retirement. It didn't add up to a very attractive proposition. But on the other hand, a lifetime of counting caps, long johns and socks would surely drive him mad. So he wrote to Professor Greenhill at the Academy and asked for a place on the next course. The response from Greenhill was swift and enthusiastic, for he had consulted Morgan Crofton as soon as the application arrived on his desk. Crofton's recommendation and the tale of Percy's triumph over the Jowakis were enough to get him an offer to start at the beginning of 1880.

The return to Woolwich was a great relief. 'Back at the heart of things, with real people and some real work to look forward to, after two years in the wilderness,' he wrote to Jocelyn, 'and I am looking forward to seeing you again, and meeting your wife at long last.'

Their reunion was as ecstatic as manners would allow.

"Jolly good to see you looking so well, MacMahon," said Jocelyn.

"Pleased to see you, too, Jocelyn."

They were in the Royal Artillery mess, sipping gin and tonic before the dinner gong sounded.

"How are you getting on with the course ? Back to school, eh ?" asked Jocelyn.

"Very interesting indeed. Lots of research, helping Greenhill with his ballistic work, and pursuing some other avenues in the algebra of forms. Greenhill is promising to introduce me to Cayley very soon and even Sylvester, when he next visits England. He thinks I might be able to make some progress with the problem of finding a basis for invariants."

"Don't frighten me with the detail just yet, old man," interrupted Jocelyn, "not before dinner."

The was a sudden disturbance as an officer burst into the room, laughing and shouting. A stocky, dark man with a shock of long unruly hair and his

jacket unbuttoned, he went round the room slapping everyone on the back and making loud remarks about their appearance.

"What-ho, MacMahon, how's the algebra coming along ? Solved any interesting equations ? Who's this then ?

"West, good evening. This is my good friend and colleague Lieutenant Jocelyn, come to work with the band. Jocelyn, may I introduce Captain West, known also as Hengler for reasons he refuses to divulge."

"Pleased to meet you, West. Do you play ?"

"Only polo, old chap, no talent for music, I'm afraid, although I like a good dance tune, eh, MacMahon ?" West moved on to his next victim.

"Good Lord," whispered Jocelyn, "what a fellow."

"Indeed," replied Percy, topping up his gin, "he chases the cows on the common for sport, and jumps the ha-ha at full gallop afterward. He's started regimental polo matches on the common in the six months I've been here, and caused no end of fuss in the mess. The whole place is much more rowdy than it was in our day. Old Morris does his best to keep order, but he's due to retire next year. I dread to think what'll happen then."

The dinner gong sounded, and the two friends were swept into the dining room by the crowd.

After dinner, Jocelyn volunteered to provide some entertainment at the piano, which was well received, especially by 'Hengler' West. He downed prodigious quantities of whisky, tossing the empty glasses into the crowd round the piano and shouting for more. Eventually, he staggered upstairs to his room, but soon he could be heard shouting for a waiter to bring more whisky. Jocelyn looked at Percy, and said quietly, "Shall we have some sport with the fellow ?"

"My goodness, Jocelyn, marriage hasn't dulled your appetite for a jape, has it ?"

The conferred for a few moments, and then intercepted the waiter as he mounted the stairs to answer West's increasingly loud demands for more

whisky. The crowd by now had gone silent, watching with interest as Percy and his new companion prepared their trap. After several minutes more shouting, West burst red-faced from his room onto the balcony, cursing and threatening to run the staff through. Seeing a waiter standing with his back to him, he gave the fellow a mighty shove. The waiter pitched forward over the balcony rail and plunged into the atrium with a loud thud. West leaned over the rail and looked down at the mangled body, the colour draining from his face.

With a gasp he ran back into his room and bolted the door. The crowd, silent until then, erupted into howls of laughter. Percy and Jocelyn stepped over to the body, and began to remove the borrowed clothing from the dummy. They handed the jacket and trousers back to the waiter, cowering in the kitchen in his undergarments.

"I fancy Captain West may be a little more subdued for a while," said Percy as the waiter dressed.

"Yes, sir, I hope so, sir."

The next morning, West was late for parade, having endured a great deal of banter at breakfast. His soldiers had done their best to get themselves ready without supervision, but did not satisfy the inspecting General.

"Captain West, these men are perfectly disgraceful," he muttered as he march along the front rank, "I have never seen a more dirty-looking set of scoundrels in my life."

"But you haven't seen the rear rank, yet, sir," said West, unaware of his own joke.

A few weeks later, West tried to redeem his battered reputation.

"Ah, MacMahon,' he cried, joining the pre-dinner throng, "fancy a little wager ?"

"What do you propose, Captain ?"

"I'll wager you five guineas I can run the length of the front parade while the barrack clock strikes twelve."

"Three hundred and sixty yards in twelve strikes. How long does that take, I wonder ?"

"No idea, but I know I can do it. Come on, MacMahon, what do you say ?"

"Very well, I accept. When do you propose to undertake this feat ? What about tomorrow, Sunday ?"

"No, sorry, I've an engagement."

"Monday, then ?"

"No, it'll have to be next Friday. At noon."

They shook hands to seal the bet. After dinner, Jocelyn said, "You'll lose, you know. He's very fit. Rides daily, exercises morning and evening."

"But why wait until Friday ?" mused Percy.

At noon on Sunday, Percy was observed by several of his colleagues timing the clock as it struck at midday. He was there again on Monday, and Tuesday. On Wednesday he was seen by a few people talking earnestly to Morris, the man in charge of the mess, and then Harmsworth, the groundsman.

By ten to twelve on Friday a considerable crowd had gathered to watch the challenge. Jocelyn had formed up the band on the ground and they were playing some popular tunes to keep the audience amused. At five to twelve, West appeared in his running gear, and took up a position at the western end of the parade. He smiled and waved at his colleagues.

"Hope you've got the fiver ready, MacMahon," he shouted for all to hear.

"I shan't need it," replied Percy, sauntering toward the eastern end. The crowd fell quiet as the minute hand of the parade clock quivered and clicked into a vertical position. The mechanism hummed and as the first stroke sounded, West sprinted hard. By the fourth stroke he was sweating hard and looking a little worried. At the seventh stroke, he tried to increase his pace, but

the onlookers could sense he wasn't going to make it. At the final bell reverberated into silence, West was ten yards short. The crowd gasped.

He stopped, and stood bent, his hands on his knees, breathing hard. Percy strolled over to him, a clapped him on the back.

"Too many good dinners in the mess, Captain. You can let me have my winnings tonight."

Over lunch, Jocelyn remarked, "I'm surprised you won that wager, MacMahon. I was sure he'd do it."

"So was he, but only because it was Friday. I timed the strikes, and noticed they get slower as the week progresses. Harmsworth usually winds the parade clock on a Saturday morning, so I slipped him half a crown to wind it a day early."

"You sly old fox. Will West work it out ?"

"I'm sure he will. Morris said he's been winning that wager for years, and made a pretty penny at it, so he may be quite sore about losing a source of cash."

West gave no sign that he'd understood what had happened to him, but Percy's reputation as something of a magician was fully restored to the level he had enjoyed nearly a decade earlier as a Cadet. Even Greenhill commented, in a very avuncular manner.

"Heard about how you gave West a trouncing. Well done. Now, we must get on with our calculations. We'll visit Cayley together next weekend." Cayley's reputation as a mathematician was huge, he'd been something of a child prodigy, as well as First Wrangler in 1842, and Percy was very excited at the prospect of meeting such a respected figure. He remembered his old tutor at Cheltenham, Edward Walker, who had been a Wrangler himself in 1844, had told tales of Cayley's legendary abilities. Percy even allowed himself the luxury of a little fantasy, where he would solve some great problem and be widely acclaimed, perhaps even invited to join the Royal Society. Maybe he

could achieve a glorious career despite his injury. Soldiering might not be the only way to win accolades.

CHAPTER TEN - Cayley

The trip to visit Arthur Cayley, the greatest mathematician alive in England, was Percy's first time in Cambridge. Greenhill remained silent during the train journey from Liverpool Street, absorbed in checking proofs of a paper due to appear in the *Proceedings of the Royal Artillery Institution*, leaving Percy to watch the English countryside. The moment they stepped out of the Cambridge station building, Percy knew he loved Cambridge. The walk to Cayley's rooms overlooking the river was a joy. The strong old brick and stone of the colleges just oozed history and learning, and Percy could feel the almost magnetic attraction of the academic life.

Greenhill took them straight to Cayley's rooms, made the necessary introductions and then excused himself to visit the Wren Library at Trinity College. Alone with the grand old man, Percy felt strangely childlike, as if in the presence of his long dead father. But Cayley put him at his ease very rapidly, asking him about his military service and then about the mathematics he was doing with Greenhill.

"You have made a wise decision, young man," said Cayley, his grey eyes twinkling. He was sitting in his customary position, balanced sideways on the edge of his chair, one arm thrown over the back of the chair as if to anchor himself in place, lest his large head cause his thin body to slide on to the floor. "Mathematical research can provide you with a glittering career, with more comfort than is to be found on the frontiers of the Empire. I can sense that you still have doubts, perhaps you still mourn the loss of the military honours you might have had. But, believe me, you can do as well, and better, for there is nothing to compare with the excitement of mathematical discovery. You will be pushing at the frontiers of knowledge, and charting the workings of the

Universe itself. Conquering an enemy composed of men is nothing compared to the satisfaction of conquering the secrets of God's great creation."

Cayley's stutter seemed to disappear by the end of this short speech, and his boyish smile broadened into a great grin. Despite the way his clothes seemed to engulf his frame, he appeared to Percy to grow in stature as he spoke. Percy nodded, temporarily overwhelmed by the passion in Cayley's voice. Cayley went on, "At the moment, you are engaged in practical work with Greenhill, where he has told me your ability to calculate accurately is of immense value. But you should recognise that you can penetrate more deeply, understand more about the structure of the things you study, and be able to exhibit those things at will." His eyes shone with enthusiasm.

Percy was not entirely certain what Cayley meant, but he could sense the fire in Cayley, the passion that this old man stored within himself. He said, "What are you suggesting, Professor ?"

"Research, mathematical research. You are calculating tables, to solve some equations so that guns may be made more effective. But those equations are only instances of more general mathematical objects. Look beyond your equations, seek the deeper meaning, the connections between things. Understanding and great satisfaction are to be had that way. And immortality."

"How will I find the time to undertake such work ? When I have finished the course with Professor Greenhill, I may be posted anywhere."

"Greenhill and I have discussed this. Your talent is too great to be wasted on some far flung battlefield. Greenhill will be able to secure you a post as instructor at the Academy. The duties are light, and you will have time to follow your instincts." Almost as an afterthought, Cayley added, "With your agreement, of course."

"I will certainly give the matter serious consideration," said Percy, a little stiffly. He did not want to appear ungrateful, but it seemed rather impertinent of the two professors to have mapped out his future so thoroughly.

He was only barely paying attention as Cayley turned to discuss matters of a more mathematical nature.

That night, back in Woolwich, he found sleep did not come easily. Cayley's words bounced around inside his skull as he tried to reconcile the attractiveness of the proposal with his annoyance at the presumption of his elders. He remembered glimpses into the colleges as he and Greenhill had walked through Cambridge on the way back to the station, the green lawns, the groups of earnest young men in their gowns. It was very tempting.

"You should consider Cayley's words carefully, MacMahon," Greenhill had said as they walked, "you have a great talent. It would be a great loss to mathematics if you did not use it. Think of it as service in the name of God rather than merely the Queen."

These words made sense to him, although he wasn't especially religious. He went to church at Easter and Christmas, and while in India he had joined in with the services in the various camps, but just because that's what everybody did, not because it provided any comfort. So the idea of serving God was not particularly attractive in itself, but as a metaphor for something wider than regiment or country, perhaps for a place in history, that was very attractive. But the loss of control in giving in to a plan devised by other people, even such venerable men as Greenhill and Cayley, was a concern.

When he did finally fall into sleep, he dreamt of cannon fire, horses galloping and the clash of sabres, of the battlefields that he would never see.

The following day, a Sunday, he spent in his rooms, calculating tables for Greenhill. He had borrowed the Academy's arithmometer to help with the work, and the routine of turning the dials and the clicking of the brass and steel mechanism was strangely calming. By the end of the day, he knew the way forward, and went to find Greenhill in the Mess.

"Ah, MacMahon, good to see you. Sherry ?"

"Thank you, Professor. Dry, please. I have been working on the tables today, and they are nearly complete. The calculating device is a great help."

"Splendid, splendid. And have you been giving some thought to Cayley's proposal ?"

"Indeed, I have thought of little else. May I be frank with you ?"

"Of course. I would not want anything else."

"I have decided that the career path suggested by Cayley and you is one I shall take, but I must say that I was disquieted by the discovery that you had been plotting this without my knowledge."

Greenhill handed Percy the sherry and looked him directly in the eyes without speaking. Percy returned the look.

"You are a proud soldier, MacMahon, and you would undoubtedly have acquitted yourself well on the borders of Her Majesty's Empire. Had you survived the recent war in Afghanistan, you would have been awarded medals, most certainly promoted, and feted as a great warrior. That was your destiny. But fate intervened, and brought you here. I did not wish to see the talent that you have, so far unrecognised, go to waste in merely calculating trajectories in staff tents on battlefields around the globe. You have much to offer, and much to gain. I am sorry if you feel I have been presumptuous or disrespectful in any way. My intention is merely to secure you for the service of mathematics."

"I understand, and I am grateful. What is the next step ?"

"I have approval to increase the number of instructors to four with effect from Autumn of next year. As soon as you complete the course, the extra post will be yours."

His future settled, at least for the short term, Percy relaxed. There was a dance that very evening after dinner, and he decided that the rest of Greenhill's tables could wait. He brushed his hair, straightened his jacket, and determined to enjoy the entertainment. The third dance of the evening brought him into contact with a very striking young woman, with a strong, clear face and pale

hair piled up at the back of her head. She danced well, and her laugh was entrancing.

"So you are the famous Lieutenant MacMahon," she said as they whirled around the floor, "I have heard about you. A soldier and a genius, I am told."

"Your informants may have exaggerated the case, Miss...er?"

"Leese. But you shall call me Aimee, and when this dance is finished you will bring me a drink and tell me all about your exploits in India."

Having yielded control of part of his life to Greenhill and Cayley, it did not seem so odd to yield the evening to this exciting young woman with the strange accent. When he had finished telling her about his encounters with the Jowaki Afridis, he asked about her origins.

"I was born in Italy," she said, "But my mother is Danish, although she was born on the family plantation in the West Indies, and my father is a naturalised American. Until a few years ago he was the American consul in Taranto."

"So why are you in England, in Lewisham, of all places ?"

"My father was actually born in Portsmouth, and he always dreamed of spending his retirement here in Kent, the garden of England. My mother would have preferred New York, I think. She finds the weather here uncomfortable. But we don't want to talk about my parents. Tell me more about India."

Percy had not had a great deal to do with women since the mysterious Aurelia Hogarth. He had not taken a *bibbi* in India, partly for fear of becoming too attached, and partly through fear of disease. Since his return to England, he had not had much opportunity to meet anyone, and, to be truthful, not much inclination. But the feeling of inner peace that he was currently experiencing, and the attentions of this beautiful girl combined to make him think he might be falling in love. The music and the wine may also have contributed.

Over the next few weeks, he saw Aimee Leese several times. He was introduced to her father, Robert, an elderly, frail man with a leathery complexion, and her mother, Catherine, who was younger but seemed surrounded by an aura of disapproval. Robert took to Percy straight away, but Catherine was quite cool. She seemed to Percy to be restless, constantly moving about and making plans. Aimee doted on her father, and, much later, Percy realised that it was his influence that encouraged her to respond so positively to his advances. But at the time, he was just overwhelmed with passion and found it hard to concentrate on his studies. Greenhill noticed, too. "You should ask her to marry you, my boy," he said, smiling at Percy over sherry in the mess.

CHAPTER ELEVEN - Marriage

On Tuesday, 19th April 1881, Percy Alexander MacMahon and Aimee Rose Leese were married in St. Mark's Church, Lewisham. The vicar, the Reverend Sidney Randall was a round, red-faced fellow who enjoyed weddings more than any other part of his job. His infectious enthusiasm ensured it was a happy event; many of their friends, including Jocelyn and his wife Euphemia, and Greenhill himself, came along and made very merry long into the night. Cayley sent his best wishes, but was unable to attend due to teaching commitments. At the end of the ceremony, the couple left the church under an archway of freshly waxed artillery swords held aloft by a group of enthusiastic cadets recruited by Jocelyn. The glittering blades against the clear blue sky gave Percy the feeling that he was marching into a bright new future, freed from the burden of his ignominious departure from the battlefield. The couple made their way by carriage to the large house they had rented, on Nightingale Terrace in Woolwich, to spend their first night alone together.

Their bliss was rudely shattered the very next day by a loud hammering upon the front door. Emily, the housemaid, ran into the morning room without knocking, and Percy was about to scold her when she gasped, "Sir, sir, 'tis the maid from Mrs. Leese, you must both come quick."

The maid had come in a hansom, and was in a very agitated state. When Percy and Aimee arrived at his in-laws' house, they were met at the door by a middle-aged man in a dark suit and downcast eyes. Aimee recognised him immediately; "Doctor Maddock, why are you here ? What's happened ?"

"Miss Leese, I am so sorry. There was nothing we could do. I'm afraid your father has succumbed to his illness."

Aimee uttered a sharp little cry and ran past the doctor, up the stairs. She left Percy standing in the hallway. He put out his hand and introduced himself, "MacMahon. Miss Leese and I were married yesterday."

"I think you had better go to your wife, then. Her father is dead. He has been weak for a long time, and I expect the excitement of the wedding was too much for him."

Percy considered this verdict as he went slowly upstairs. Aimee and her mother were standing, clutching one another, by the large bedstead upon which the peaceful remains of Robert Leese lay. Only his head was visible, resting on several pillows. He appeared very serene to Percy. Aimee released her mother and turned to Percy.

"Oh, Percy," she murmured, "he's gone, and I didn't get to say goodbye. He was so happy yesterday, he said he was so pleased to see me settled, and now he's just gone."

Percy didn't really know quite what to do or say; this was not the start to married life that he had expected. He put his arm around Aimee's shoulders and hugged her. Catherine stood silent, staring into the middle distance.

The funeral took place a few days later, at the same church where Percy and Aimee had married. Catherine left almost immediately afterwards for her annual visit to her son in New York. This was the first time that Aimee had not accompanied her, and she did complain, very mildly, to Percy that she would miss seeing her brother, Percy Henry Leese. Aimee had found it amusing that her brother and husband shared the same name. But the first few weeks of her married life with Percy A, as she styled him, were more sorrowful than amusing.

By the time Catherine returned at the end of July, home life for Percy had settled down, with Aimee more relaxed, and enjoying being her own woman for the first time in her life. Percy was at the Academy attending lectures or working with Greenhill during the day, leaving Aimee to run her

own household. The course was more or less over, Greenhill had secured the promised post for him as Instructor, and he had heard that a promotion might go with the post. Aimee told her mother about it when she called on the couple two days after her arrival back in Lewisham.

"Percy will be made a captain when he takes up the post next Fall, mother. And he has had a mathematical paper published, and he's working on two or three more papers. Professor Greenhill is certain Percy will be a great mathematician. He's written letters to several important people already. It's very exciting."

"I'm sure it is. But mathematicians don't make much money, do they ? Do you want to hear about your brother ?"

"Yes, of course, but money isn't everything, you know. It's not true anyway. Some of the people Greenhill has written to are very well connected."

"I'm sure you're right, dear. Now let me tell you what your brother has been up to. He's been buying real estate in Missouri and Colorado, and he's gotten engaged to be married, to a girl he met in Missouri, Miss Elzada Files. Isn't that wonderful ?"

Aimee was rather disappointed that her mother seemed more interested in her brother's earning capacity and forthcoming marriage than in Percy's potential as a great intellectual. But she was used to coping with second place in her mother's affections.

"That is excellent news," she agreed, smiling and looking her mother directly in the eyes. "Elzada is an unusual name, isn't it ?"

Percy returned from the Academy in time for afternoon tea, and welcomed Catherine warmly. He detected that the warmth was not reciprocated, and he guessed that somehow Catherine held him responsible for her widowhood, at least partly. For his part, he felt that Robert had been clinging to life only to see his daughter settled, and that once he had seen that

happen he had simply let go. The atmosphere being somewhat cool, Percy excused himself after tea on the grounds that he had work to do for Greenhill.

Two hours later, he emerged from his study, a small room at the back of the house on the first floor with a good view of the long garden, to find Catherine was still there.

"I think Mother should live with us for a while, Percy. She can't go back to the London house and be alone. It's not right," said Aimee.

"Well, I suppose so. You might have consulted me earlier, though. Where will she sleep?"

"In the room across the landing from ours. It's all arranged, the room has been made up, and Mother's luggage will arrive tomorrow."

When the celebration dinner held to mark his promotion to Captain in October was held, Percy's mother-in-law had been in residence for several months. Her presence was not a peaceful one. Although she indulged Aimee's acquisitive nature by providing extra money for clothes, she used her apparent generosity to keep a tight control on her daughter.

"She can't live here forever," said Percy one evening as they were preparing for bed. "I am not the master in my own home, and neither are you the mistress. The servants look to your mother for instructions before they come to us. We should be in charge from cellar to garrett."

"Percy!" she said, rather too shrilly, Percy thought, "You are not proposing that we throw my mother out, I hope. She must stay as long as she likes. She is only recently widowed. You mustn't be so heartless."

The promotion dinner was the first serious dinner party that Aimee had organised, and both Greenhill and Cayley attended, as well as the Jocelyns, two of Percy's fellow graduates with their wives, and his mother, Ellen, who had travelled up from Brighton by train. Aimee was extremely nervous, but their cook rose to the task, and with some extra help borrowed from the neighbours, presented the assembled company with a memorable nine course feast. During

the meal, Catherine quizzed Cayley on the potential of mathematics to provide a good living.

"My dear," said Cayley, "for many years I had to support myself working at the law, but the world is changing and it is no longer necessary for mathematics to be pursued by amateurs and clergymen alone. There are now more opportunities for men of ability to earn a good salary teaching mathematics."

"And do you think my son-in-law has that ability ?"

"Oh, yes, indeed. He will be a great teacher, and a great mathematician, of that you can be sure. I cannot vouch for him becoming very rich though." Cayley laughed quietly. "But mathematics feeds the soul and affords insight into the deepest mysteries of the world, so he will have those riches to nourish his mind."

Catherine was not very impressed, and even less impressed by the apparently relaxed lifestyle Percy seemed to have while he waited for the appointment to begin. For four months, he filled his days with calculations for Greenhill and worked on some mathematical papers. This he was able to do at home and it seemed to Catherine that he was simply leading the life of a gentleman, but with no visible means of support.

One day in early December, Percy overheard Catherine and Aimee talking in the morning room.

Catherine said, "My dear, he does nothing all day. The acquisition of wealth requires hard work. My family did not become rich landowners in the West Indies by sitting around staring into space."

"He is waiting to take up his post as Instructor, Mother, in March. Until then, he is doing important work for Professor Greenhill." Aimee's defence somehow seemed to lack conviction, and Percy felt suddenly irritated. He dared to raise the question of Catherine returning to her empty London home. Again, it was at bedtime.

"Your mother's been here several months now, and apart from buying you clothes, she has contributed nothing to running the household. My salary is only five hundred, and it won't stretch much further."

"My mother is a widow. She has very little money. How can you be so wicked?"

"I'm not being wicked. I'm merely saying that she could help with the household expenses. If she is not going to use the house in London, she could perhaps rent it out and use the money to support us. Or perhaps she could sell the house and make over a portion of the proceeds to us."

"I can't ask my mother to do that. I won't hear of it. You are being so nasty to me." With that, Aimee stormed out of the room and banged the door so hard hard that the door knob fell off. This was annoying enough, but it was an event that would come back to haunt Percy in a way he could not imagine.

The time spent at home together nevertheless had an effect, stirring Percy's dormant libido into life. One morning in early February, Aimee waited until breakfast had been served and Emily had returned to the kitchen. Catherine was taking breakfast in her room, as was her habit. Once she was certain they were alone, Aimee whispered across the table, "Percy, dearest, I have some news for you."

"What is that, my sweet ?" asked Percy, spooning marmalade onto his toast.

"We are going to be parents."

Until that moment, Percy had not considered, in any depth, the possibility of becoming a father. Of course, he had appreciated that marriage would probably involve children, but the whole thing had happened so fast, meeting Aimee and the decision to get married, there hadn't been time. Now, suddenly, for the second time in his life, he had to think about the future. This time it felt better; there wasn't the hopelessness he had felt before starting the advanced class. He had a job, a home, a wife, and, if Cayley and Greenhill

were to be believed, a career in mathematics. A child would make him complete, in a way.

"That is truly splendid news, my dear. Truly splendid. Yes. When is the baby due ?"

"The middle of October. I'm am so pleased you're pleased. I will tell mother today.

"Did you think I would not be pleased ? Why would would you think that ?"

"Well, we hadn't discussed it at all, and with you about to start your new post, well, I don't know."

"I am pleased. Very pleased. Shall I come with you to tell your mother? I am sure Greenhill will understand. I can finish the calculations later."

"No, no, I'd rather tell her on my own. But you mustn't tell anyone else, not yet, please."

Percy disobeyed this request by writing a short note to his mother in Brighton, to tell her that she was to become a grandmother for the fifth time. She replied with the news that Percy's sister-in-law, Rose, the wife of his younger brother Ernest, was also pregnant.

CHAPTER TWELVE - Birth

By the time Percy started work as an Instructor at the Academy in March, the number of daily callers at Nightingale Terrace had fallen below five a day for the first time in a month. Professor Hart welcomed his new team member warmly. "Good to have you with us, Captain. I've heard a great about you from Greenhill, and a letter from Arthur Cayley himself recommending you in glowing terms."

Percy was a little embarrassed. "I hope I can live up to my reputation, Professor." He was a little more boastful when he told Aimee about his first day as a teacher. Even Catherine seemed to be a little impressed.

"It seems as though your husband may yet make something of himself," she said, avoiding Percy's gaze and addressing herself entirely to her daughter. Percy detected the slight, but realised that even such faint praise was progress, and simply smiled at both women. "Who has been to call today, then ?" he asked, turning to a subject that would be of more interest to them. It was with a sense of great relief that Percy received the news that Catherine was about to depart for her annual trip to America a few weeks earlier than planned.

The following two months were very busy for Percy. As well learning how to teach, and getting to know his three colleagues, the languid Captain Jerome Boteler, the well-dressed Mr. Edwin Tylecote and the twitchy Mr. Patrick Foord-Kelsey, he wrote three papers, all of which were published in a single volume of *The Oxford, Cambridge and Dublin Messenger of Mathematics*.

The teaching was less demanding than he had feared, although he had to keep his wits about him to ensure that the cadets behaved in class. In his day, there had always been a subaltern on duty to see to discipline and to prevent the 'young gentlemen' becoming distracted from their books, but this was no longer

the practice Forty sixteen and seventeen year olds, expected to work through the long syllabus on their own, were capable of turning into an unruly bunch if not carefully supervised. Although Percy's reputation from India and his rank ensured some respect, there was always one cadet who wanted to demonstrate his own superiority. Sometimes Percy recalled that in the past, he had been that cadet. He remembered fondly the many occasions when he had orchestrated mysterious noises, unpleasant smells and disappearing equipment in the classroom.

Without Catherine's overwhelming presence in the house, the atmosphere seemed lighter, and the lengthening days added to Percy's sense of optimism. Even Aimee was a little less tense, and laughed at his descriptions of the antics of some of the cadets, stories he would not have told her in Catherine's presence.

"So the cadet actually brought gunpowder into the classroom ?" she asked

"Yes, he had intended to set off a small explosion in the instructors' desk. It was done when I was a cadet on a number of occasions. A little bit of powder and a thin fuse will blow the lid up and make quite a lot of noise and smoke." Percy smiled at the memory of the startled instructors, dropping their chalk and berating the subaltern on duty for not noticing the prankster at work.

"Isn't that rather dangerous ?" said Aimee.

"If you get it wrong, yes. You may blow the desk apart, and flying wood can be very nasty."

Percy's talent for anticipating misdemeanour didn't stop the practical joking, but it did transfer it to other classes, so leaving him with plenty of time during his teaching sessions to think about his own mathematics. He had begun to discuss with Cayley areas of mathematics in which he might undertake research. The work in ballistics that he was pursuing with Greenhill, although very practical, did not seem to offer much opportunity for original discovery.

Cayley was adamant that it was the thrill of discovering something new that made mathematics so exciting. "It comes entirely from your own mind," he said, "you think hard about a topic, and suddenly you know something that no-one else knows. Until you publish it, you are very privileged. Your brain contains knowledge about the universe that is in no other brain. For a while you're totally unique. It is an exhilarating feeling, my dear Captain."

"Where should I look, then, for something to provide an opportunity to experience this wonder ?"

"I would like to say invariant theory, but I fear the continental work may have put paid to that. There is still much to be discovered, of course, but mostly it is a matter of computation. I know you excel at that, MacMahon, but although completing a long and complex calculation is itself a source of great satisfaction," Cayley paused for a moment, as if remembering some past triumph, "it's not quite what I was talking about. Partition Theory has been a neglected subject for many years. I will discuss the matter with Sylvester when I visit him at Johns Hopkins in few weeks time."

So while Aimee swelled gently, Percy busied himself with an investigation into what was known about partition theory, that branch of mathematics that tries to count how many ways a number can be made by adding together sets of smaller numbers. He found that although the famous Swiss mathematician Leonhard Euler had discovered a very powerful technique to do the counting, a number of English mathematicians had tackled the problem in a particularly idiosyncratic way during the first half of the century, Cayley included. A whole new subject opened up before him, the study of the history of mathematics. Until this point, Percy had not considered that the history of a subject could shed any light on modern developments. But his study of the history of partition theory convinced him otherwise, and he began to take an interest in the whole story of mathematics.

On three occasions, Percy took Aimee to the regular balls held at the Mess, but each time, she was too tired to dance, she claimed.

"But you dance, if you like, my dear," said Aimee, waving him toward the dancefloor. "I'm sure Euphemia Jocelyn or Gwendolin Ward would love to turn about the floor with you."

"Well, if you're certain. I'm sure dancing will do the baby no harm."

Cayley called on Percy a few days after his return from his American trip to visit Sylvester, a man who was almost a legend in his own lifetime. He greeted Aimee warmly, and observed that it wouldn't be long before Percy was in for something of an upheaval to the pattern of his life.

"Now to business," he said, "I have had a long talk with Sylvester about your work, and he has suggested that you might look at the link between certain aspects of invariant theory and partitions. He had intended to investigate it himself, but his duties and commitments are too time consuming. Let me explain."

Aimee dozed in her chair as Cayley covered several sheets of paper in mathematical symbols. She was dimly aware of the murmuring as the two men discussed the mathematics.

"I thought the Germans had dealt with the issue of a basis in invariant theory," said Percy, as Cayley outlined Sylvester's suggestion for further research in the subject, "what point is there in this line of research ? Not that I am suggesting Professor Sylvester may be misguided, of course, I merely seek illumination."

"Of course, of course. You are right to ask the question, and it is good that you have kept up to date with recent developments in the theory."

"Well, I was hoping it would provide some help with the difficult equations that have arisen in Professor Greenhill's analysis of the ballistic question."

"Good, good. The Germans have provided an existential proof of the result, but their method does not enable the mathematician to calculate the form of a desired invariant. We - Sylvester and I - are sure that a more direct approach would enable us to calculate the things themselves. It is one thing to know that something may exist, but quite another to be able to see it, and to use it. This would complement the German method, but also demonstrate that direct algebra is ultimately of more practical value."

"I see. Well, I will take your advice, and devote some serious thought to it. May I keep these notes ?"

"By all means."

Aimee was fast asleep and didn't hear Cayley whisper to Percy, "Don't wake your wife. Give her my best wishes for the birth," as he crept out of the door. Percy was very excited by his conversation with the great man. He wrote carefully at the top of the first page of Cayley's scribbled notes the date, the fact that they were in Cayley's own hand, and fixed the sheets together with a pin.

Catherine returned to the house in mid-September, to assist with Aimee's confinement. Almost immediately, Aimee became more distant, and slightly aggressive. The suggestion that Catherine might stay at a hotel rather than in the house was not well received, so Percy was grateful that he did not have to spend all day at home any more. He began to exaggerate the time his duties would take, so that he could stay on at the Academy for as long as possible. He even began to have dinner there two or three times a week. This turned out to be his undoing, at least as far as his wife and mother-in-law were concerned.

Aimee gave birth to a baby girl on 11th October, two weeks earlier than expected. Percy was at the Academy when she went into labour, and the message, sent by Catherine, did not get to him until almost four hours later. They named the child Florence Aimee, after Aimee's baby sister who had died

before her first birthday in 1853. Percy could understand the desire to commemorate, but was not entirely sure that using the name of a dead child was a good omen, particularly since he too had had a baby sister, Florence Susan, who had died aged just eleven months in July 1854, just two months before his own birth – something he had not told Aimee. Florence seemed very tiny to Percy; the sight of her brought a strange hollow feeling to his stomach, and an unexpected tear to his eye. Aimee was very weak after the birth, so Catherine took up residence in their bedroom, fussing around the baby and taking complete charge of running the household. Percy was forced to sleep in his study, suddenly an interloper in his own home.

He slightly surprised to see several bottles of wine being taken into the bedroom where Aimee was resting, but was assured by his mother-in-law that this was perfectly normal and had been recommended by the doctor to help Aimee regain her strength.

"I've heard of medicinal brandy," remarked Percy to Captain Boteler, "But a whole case of Nuits St. Georges seems rather extravagant. I'm not convinced a nursing mother should be drinking such large quantities anyway."

"Does seem a bit rum, old boy," replied Boteler, a married man and father of four himself. "Can't say my wife did any such thing with any of our sprogs. Couldn't have afforded it anyway."

One horrible evening, when Aimee was clearly inebriated, and Catherine had 'fallen asleep' on the bed – their bed – she came hammering on the study door.

"Percy, Percy, come quick, the baby is deformed, I'm sure of it. Oh, do come." Percy ran up the stairs to where Florence was sound asleep, and peered carefully into the crib. The child seemed perfectly at peace, her tiny chest rising and falling as she slept.

"Look, her face, it's not right, her ears are too large, her eyes are too far apart, she's deformed." Aimee was beginning to screech as she spoke, so

Percy grasped her firmly by the arm and led her out of the room. The parlour maid, Emily, was already on her way up the stairs to see what the fuss was about.

"Listen," said Percy, "There's nothing wrong with the child, she's a baby, she's supposed to look like that. I think you may have had a bit too much restorative wine this evening, you wicked woman." He tried to laugh, to add some levity to the situation, and to allay the fears of Emily.

"Emily, the mistress is a little tired tonight. Perhaps you could help her into bed."

Aimee glared at him, rubbing her arm, but allowed herself to be led away by the quietly murmuring maid.

Percy had more than enough to keep him occupied at work, and he spent a good deal of time at the Mess. He wrote up his own work on the ballistics that Greenhill was working on, finished calculating the tables for Greenhill's own paper on the subject, and wrote a couple of general papers on algebraic matters. His mind was on fire, and the mathematics fairly fizzed out of his brain. The suggestion made by Sylvester was proving tricky to implement, although he could see how it might be made to work. As the weeks turned into months, his excitement mounted. To add to this, Henry Smith, the Savilian Professor of Geometry at Oxford University, died suddenly, and it was announced that the post would be filled by none other than Sylvester.

"I am very close to solving this problem," he said to Aimee over dinner one evening in April 1883. "It is very exciting. I understand what Cayley was talking about, I think. If I can get it out before Sylvester returns to Oxford, then I shall be able to present it to him in person."

"Well, that's wonderful news," said Aimee, hesitantly, and Percy could sense she was about to say something uncomfortable. His absorption in his mathematics, and Aimee's preoccupation with the baby meant that they had spent little time together since Florence's birth.

"Is there something on your mind ?" he asked.

"Mother is going to visit Percy Henry again next month. She wants me to go with her."

"What about Florence ?"

"She would come with me."

"Can you take a babe-in-arms on such a trip ? Is that possible ?"

"Of course, the ship is very comfortable, and Mother would be there to help, and she is taking her housemaid, Jane, so it would be very easy. It's only three months. It would give you time to finish your great project. When I come back, you'll be famous, the talk of the town."

Percy saw no point in arguing, and so in early May he waved goodbye to his wife and daughter at Portsmouth and travelled alone back to the empty house in Woolwich. At first, the peace and quiet in the house was very welcome, and he was able to devote all his energy to overcoming the obstacles in the mathematics. He found the process absorbing and very satisfying. Occasionally, he noticed Emily watching him from the drawing room doorway, fascinated by his incessant scribbling. She was very startled when he suddenly stood up and shouted, "Got it. Emily, bring me a brandy, please."

He sat up all that night writing, and took the paper to Greenhill the following morning.

"It looks sound to me, but you must show it to Cayley. I suggest you go there today - but have a shave first. We can cover for your duties."

The excitement as he sat in the train to Cambridge that afternoon was almost more than he could bear. Cayley read the paper slowly and carefully.

"We must send this to Sylvester immediately. This may be just the result we were hoping for. Well done, MacMahon, well done. It is a shame that you did not attend the University here. You would have been senior wrangler, of that I have no doubt."

"You flatter me, sir. But I am grateful for your help and support. I shall prepare a fair copy for Sylvester immediately." Percy hoped that the great man would summon him to Oxford immediately, but Cayley was at pains to point out that he had only just arrived back in the country after an absence of six years, and might be preoccupied.

The letter that arrived a few weeks later was not what he had been expecting.

CHAPTER THIRTEEN - Separation

Emily brought the morning post in with his breakfast. "Letter from abroad, sir. I think it is the mistress's handwriting."

"Thank you, Emily."

Aimee had sent a telegram upon her arrival in New York some time ago, but this was the first letter. Percy opened it carefully. It was a long description of sightseeing trips in New York and the surrounding countryside, and Florence's progress with teething, crawling, and attempting to stand. It finished with a short but worrying paragraph: 'Percy Henry is moving out to Colorado to supervise development on his land holdings there. We are going to accompany him. I think Mother is considering moving back to America permanently. I will telegraph when we leave for Colorado. It may not be possible to telegraph from there yet, so I will write when we arrive and tell you all about it. Much love from your wife, Aimee Rose.'

Percy experienced a cold sinking feeling in the pit of his stomach. He had been dubious about the wisdom of taking a baby to America anyway, but now to contemplate a long overland journey to the middle of nowhere seemed foolhardy in the extreme. But he was too far away to stop them. By the time his reply caught up with Aimee, she would be halfway across the continent.

His sense of hopelessness was compounded by the news Emily brought to him some weeks later: the Leese house in Lewisham had been put up for sale. Catherine had sent for her most precious possessions, and the remainder had been sent for auction. The most upsetting aspect was that she had done this without telling him beforehand. He wrote to Aimee to express his concern at this development, but he knew that she would be completely under the thrall of her mother and nothing he could say would make any difference.

But then a welcome distraction from this arrived in the form of a letter from Sylvester himself, congratulating him on his paper, and asking for his agreement to have it published in the journal Sylvester had founded at Johns Hopkins University, the *American Journal of Mathematics*. He showed the letter to Greenhill.

"This is most impressive, MacMahon, most impressive indeed. I think you should now raise your profile beyond Woolwich. You must become active in the leading Societies. I suggest that at the very least you should join the London Mathematical Society and the British Association for the Advancement of Science. If you are to fulfil your destiny as one of the great mathematicians of this century, you need to be seen. Just as in the army, it is not enough to be good. You have to be seen being good."

By Christmas, Percy was on the Mathematical and Physical Science Committee of the British Association (and Cayley was elected President), and had been admitted as a member of the London Mathematical Society. He found the social activity a welcome distraction from his concerns about his family. The meeting with Sylvester had not yet happened, but he remained optimistic on that front at least.

1884 began with a headache, caused by the very rowdy New Year's ball held at the Mess. Morris, the man in charge of events and catering, had resigned in 1881, and a new man, Burlingham had taken over. He ended up fighting the French cook, Monsieur Genet, beside the Crimea Memorial. As a result, Morris had been brought out of retirement, and the New Year's event was also his second retirement celebration. A lot of port had been consumed to mark Morris's second departure, and to cement a new understanding between Burlingham and Genet. Emily brought Percy his coffee, but seemed oddly unsympathetic, perhaps as a result of being woken at three in the morning to let her master in after the carousing.

But it was the letter that arrived in the second post that made Percy's head really throb. It was from Colorado, from a town called Lariat. Aimee was there with her mother and brother, and seemed smitten with the scenery, the climate and the people. 'You would love it here, Percy,' she wrote, 'I want you to come out to Colorado, and we can start a new life in fresh clean air.'

This was too much to take in. What was Aimee suggesting? That he abandon his new career, just as he had made a major breakthrough, to go to live in the middle of nowhere, with no income and no prospects? It was preposterous, and Percy was certain he could detect Catherine's influence. Aimee would never have made such an outrageous suggestion of her own volition. She must return at once. He sat down at his desk, pushed his mathematics to one side and wrote a short letter, pointing out the absurdity of the suggestion. 'I think you should fetch our daughter back to England immediately,' he wrote. Normally, he would have asked Emily to go to the Post Office, but he decided to put the letter in the post himself. He walked on to the Mess for a stiff drink and lunch.

A few days later, a note arrived from Sylvester himself. It was hard to decipher, but it seemed to say that Sylvester would be passing Percy's paper to the editorial board of the *American Journal of Mathematics* with a strong recommendation that it be published as soon as possible. The following morning a note from Cayley arrived, congratulating him on getting his first substantial mathematical paper into such a prestigious journal. Percy wrote to Aimee with the news, and told several colleagues, including Jocelyn, over dinner at the Mess that evening.

But his delight at this success was marred by the knowledge bubbling along at the back of his mind that the state of his marriage was not normal. It took nearly a month for Aimee's response to his demand that she return, to arrive. It was full of regrets and apologies, and descriptions of the wonderful life Florence would have in the wide-open spaces of Colorado, with proper

skies, clear air and a fine climate. But it was also clear that she had no intention of returning to Woolwich. Percy wrote another short letter, repeating his urgent desire that she should return home, and explaining yet again that he was teetering on the brink of becoming a force to be reckoned with in the community of British mathematicians, with the legendary Cayley and the famous Sylvester both taking an active interest in his career. But deep down, he knew the marriage was doomed; the old adage 'marry in haste, repent at leisure' sprang unbidden into his mind. What would he tell his colleagues, his brothers, his mother? What would he tell Cayley?

He tried to displace the dismal thoughts with mathematics. He wrote papers on symmetric functions, and experimented with the discovery he had made that had so delighted Cayley and Sylvester. There was a possibility that it might provide the key to an alternative to the German existential results, and he enjoyed the long, involved calculations that covered many sheets of notepaper. Immersed in this world of algebra and operators, his emotional turmoil was held in check. Perhaps the thrill of Colorado would wear off, perhaps his brother-in-law's land deals would fail, or perhaps Aimee would simply see sense. Emily occasionally asked when the mistress would be back, and Percy fobbed her off with some excuse about taking an extended holiday. But the weeks became months, and despite his regular letters, some angry and demanding, some conciliatory and newsy, there was no word.

It occurred to him that there might have been some tragedy, and he would never know. The year dragged on, and the skies over Woolwich turned their usual woolly grey colour as the temperature dropped and the drizzle grew up into proper rain. One dark morning in mid-October, news of the tragedy he had speculated about, arrived. The letter had spent three weeks being carried from Colorado. Emily, in the kitchen, heard him curse, and ran up to see what the matter was, but he waved her away.

The letter was not from Aimee; it was from Markham, Patterson and Thomas, Attorneys at Law. It advised him that Aimee Rose Leese had applied for a divorce from Percy Alexander MacMahon, RA, in September 1884, in accordance with the law of the State of Colorado. As he read the words, his legs turned to ice and for many minutes he could not move. The grounds given for the divorce were his unreasonable behaviour towards his wife, and his disregard for his child. Paragraph five of the 'plaintiff's statement was especially hurtful, noting 'that plaintiff and defendant lived happily together for about six months after their said marriage, but from that time forward, and until plaintiff left him, the defendant has been guilty of extreme cruelty, and unnatural and inhumane conduct towards the plaintiff.' Percy's eyes prickled. How could Aimee say such things?

The statement continued, 'at the time of their marriage the father of the plaintiff was dead, and had left for the support of the mother of plaintiff property and securities which yielded to her an income barely sufficient to maintain her in humble states of life and plaintiff had no means or property other than her wardrobe and jewelry theretofore given to her by her parents. That the defendant frequently during the first year of their married life upbraided her because she had no fortune, and urged upon her to compel her mother to settle her property and income upon her, the plaintiff, that he might have its use and receive its benefits, and because plaintiff moved not to comply, and because plaintiff's mother moved not to dispose of her property and income, defendant threw against her assertions that she was dependant upon him, was a beggar, that he supported her and fed her, and that she was no better than an object of charity.'

Percy's brain seethed with indignation. Not only had she lied about her father, she had twisted Percy's words to make him out to be a heartless golddigger. But worse was to come. In the very next paragraph, Aimee claimed, 'that about the time she was to become a mother, she sent for her

mother to come to her at home in England that she might be with her in her confinement. That she so sent for her with defendant's consent, but when plaintiff's mother arrived in England from America, defendant without any cause and through sheer wantonness in foul and abusive language, forbad plaintiff's mother to enter his house, and it was only when plaintiff, who was afraid to suffer the pangs and dangers of childbirth without the presence and care of her mother told the defendant that she moved to go to a hotel where he mother might see her until after her confinement that defendant consented that her mother might be with her.'

Percy could hardly believe what he was reading. Aimee went on to accuse him of refusing to pay for the wine recommended 'to preserve and restore her strength,' and had been unsympathetic when Aimee had been worried that the baby was deformed, to the extent of telling her that he 'hated the sight of her.' The accusations of physical violence were pure fabrication: 'that upon two occasions defendant had used personal violence against the paintiff, each time seizing her by the arm and with rudeness dragging her about.'

The document became more and more fantastic as he read it to the bitter end. Apparently, he had become 'enamoured of another woman', to whom he 'paid the most marked and assiduous attentions at balls and other social gatherings, dancing with her and giving to her so much of his time and flattery that their relations became a public scandal where they lived and plaintiff's life was made miserable in the extreme.' The misrepresentation of events, the re-sequencing, the exaggeration, all were incomprehensible. The final paragraph, begging for divorce, because 'the plaintiff's life with the defendant became a hell – death at many times seemed preferable to existence, and it is no longer possible that she should live with the defendant nor be subject to his control and cruelty',

Percy stared at the paper in front of him, the spidery writing dancing across its surface. The breakfast was left unfinished, his appetite extinguished. When the cold feeling in his legs subsided, he resolved to take some firm action against this humiliation.

Legal advice was clearly going to be necessary. He decided to consult Cayley, who had many years' experience as a barrister. A short note requested an interview, and Cayley agreed by return to talk with him at the weekend.

"My dear fellow, this is absolutely scandalous," commiserated Cayley after listening in silence to the sorry tale. "But I doubt there is a great deal we can do. Colorado has been a State of the Union for less than ten years, and has freedom to make many of its own legal arrangements. If the local law allows for such events, then in Colorado it is perfectly lawful, even if it is not recognised by the law of England."

"But there must be something I can do. I wasn't warned, I have been given no real chance to contest the matter. It is impossible for me to attend the hearing."

"It has been a while since I practised. Let me make some discreet enquiries - I shall protect your identity, have no fear - and find out if there is any recourse. But let me advise you, if she has made up her mind, then there is nothing that can be done to force her to return to England. At best, we might get some compensation."

Percy was silent, and stared out of the window at the river and the marsh, watching the people walking and talking outside. It seemed all rather unreal. Cayley let him meditate for a few minutes, and then said, "Let us talk of mathematics for a few moments. Sylvester has written to me about your paper, *Seminvariants and symmetric functions*, and he has studied it in great detail now. He has high hopes that it will provide the foundation for an algebraic proof of the basis theorem. Confidentially, he has spoken of recommending you for the Royal Society on the strength of it."

Percy was flattered by this accolade, and for a short while, until it was time to catch his train back to London, he allowed himself to become absorbed in the discussion of his mathematics.

Cayley responded two days later about the divorce with a discreet note. It was not good news. Colleagues, more adept in matters of American law, confirmed Cayley's original prognosis. The best Percy could do was send a brief letter to the court, using a form of words suggested by Cayley:

'*I Percy Alexander MacMahon a Captain in the Royal English Artillery being the defendant give the County Court of Arapahoe Colorado notice that both the plaintiff my wife and myself being English and the marriage of the plaintiff and myself being an English one and I being a domiciled Englishman and my wife being resident in Colorado only by reason of her having stayed away from me without the consent of me (her husband) I hereby give you notice that the above court has no jurisdiction and that for the aforesaid reasons I decline to appear to the summons alleged to be issued by my wife herein*.'

Percy posted the letter on the ninth of August, 1884. He burned all of Aimee's correspondence that evening. He fended off the questions from his colleagues, friends and family by saying that Aimee was unwell and unable to travel. He gave up the house and moved into lodgings a few hundred yards down the road in Cypress Villas. Emily transferred to the Jocelyn household, and Percy was once again a bachelor.

Mathematics was his comfort, and he worked on several papers at once, publishing in several journals. He attended Sylvester's inaugural speech as Savilian professor, nearly two years after Sylvester had accepted the post - things are never rushed in Oxford - and was proud to have been mentioned no less than three times during the discourse. At the reception afterward, many eminent scientists and mathematicians made the effort to talk to him, and for the first time in a long time, he started to feel as if life might yet turn out well for him.

A letter arrived from the court in Arapahoe County in late October, advising him that, after a careful cross examination of the witnesses (the plaintiff and her mother), the court had found the case against him proved and consequently the marriage between Percy Alexander MacMahon and Aimee Rose Leese had been formally dissolved. The child Florence was to remain in the care of her mother and grandmother in Colorado. After a large brandy, Percy lit a cigar and burned the letter in the ashtray. He stirred the ashes with the spent match.

CHAPTER FOURTEEN - Remarriage

At the end of summer the following the year, a second blow fell. Another letter, this time from Aimee herself. Very formal, very stiff, and very short, it informed him that she had remarried, to a local property developer called Edward Bevan. She assured him that Bevan would be a suitable stepfather for Florence, and hoped that he would be able to find a new wife for himself very soon. Percy was shocked to the core; this must be the ultimate humiliation, and he was surprised by feelings of jealousy. But mostly he was angry. For several days he locked himself away, instructing his landlady to tell anyone who asked that he was very sick.

Cayley recommended a solicitor, and in early 1886, Percy sued Aimee for divorce in an English court. He demanded compensation for the adultery, five thousand pounds, and that Florence be returned to his care in England immediately. The matter was entrusted to the solicitor, and Percy turned his attention back to his mathematics, a world where he had some control.

Sylvester's proposal that Percy be elected to the Royal Society had come to nothing. It had been blocked by Stokes, on the grounds that although the paper on seminvariants was undoubtedly important, his other work had not been sufficiently deep. This was a challenge Percy was certain he could meet head on. He was becoming aware of a way he could make an area of mathematics his own. The work in invariant theory continued, but he also published a paper on partitions. It was a vast unexplored tract, and he was standing at its border, looking across the unclaimed territory. He felt hope for the future.

There was occasional correspondence with the solicitor, some of it upsetting. Aimee objected to the use of her married name, and insisted all the papers were prepared in the name Leese; Percy noted with some satisfaction

that she did not appear to have adopted the name of her new 'husband.' That caused delay while new documents were prepared. Then Bevan objected to being cited as a co-respondent, on the grounds that he was legally married under Colorado law, and therefore could not be liable for any compensation. Finally, Aimee could see no reason at all why her daughter should not remain with her and her husband. The legal arguments crossed and re-crossed the Atlantic Ocean with a deliberate slowness until early in 1888, when the English courts granted Percy a divorce.

There was no compensation and Florence remained in Colorado. Only Cayley knew the truth about the divorce. The divorce was reported in the *New York Times,* on March 12th, as a lesson for any American woman who might be tempted to an marry Englishman and then divorce him in America: '*the point established is that to obtain a divorce valid here she must sue in the English courts to get it, the domicile of her husband being the controlling fact in the eye of the law'*. That the failure of his marriage had determined a point of case law was not a great comfort.

Percy told everyone else that Aimee's illness would prevent her from returning to England for a very long time. He decided that he would write to his daughter regularly, since the only concession he had managed to wring out of Aimee was a promise that she would tell Florence about her real father as soon as she was old enough to understand. But for many years he received neither acknowledgement nor reply to his letters to his daughter. He instructed his bank to pay one hundred and fifty pounds a year into an account set up in America for Florence. It was no substitute for real fatherhood, though.

Percy's mathematical career gathered momentum. He had a plan, of sorts. He tried to explain it to his mother on a visit to her in Brighton.

"Partition theory is not a popular topic among modern mathematicians. I have seen how to extend it, and I shall make it mine."

"How can you make it yours?"

"If I can publish significant results, then my name will be attached to them forever. 'MacMahon's conjecture', 'MacMahon's theorem', that sort of thing. It's how mathematicians achieve immortality."

At the beginning of the year he had been promoted to the rank of Major, in advance of a new post at the Royal Artillery College. His official title was 'Instructor in Electricity', but somehow most people seemed to think he was a professor of physics. He didn't try very hard to correct the error. At the end of the year, Sylvester had once again suggested an application to the Royal Society. The list of eminent signatories to this second application was sufficient to gain a 'resuspension' at the end of 1889, which meant that his application would be considered again by the committee of wise and famous scientists who decided who was worthy to be a member of the club. Percy was at last admitted to the Society in 1890. He felt that this was his year; in odd moments between working on invariant theory and symmetric functions, he had been playing with some recreational mathematics. A new puzzle had occurred to him: a chain of blocks connected by flexible tape, with a design printed on the edge of each block. They could be stacked in a certain way determined by the links, which could not cross, to reveal a complete picture on the edge face. After some prompting from Jocelyn, he had applied for a patent. This was granted after a few months, and he set about trying to find a manufacturer to take up the idea.

The Artillery sent him out to Bombay, before starting his new job, to advise on gunnery tactics. He enjoyed the trip on the *SS Rohilla*, and was able to return to India in triumph, of a sort, after the humiliation so many years previously.

It gave him plenty to write about to Florence. The memory of Aimee was fading, and it was starting to feel as though it had happened to someone else. Captain MacMahon, R.A., ex-husband, was another person, long gone. Now he was Major MacMahon, F.R.S., with important contacts, a serious job at a prestigious institution, and a substantial publication record. But despite all

that, and the meetings and committee work for the Royal Society, London Mathematical Society and the British Association for the Advancement of Science, the regular contact with Jocelyn and his family, and the many dinners with colleagues, there was still an emptiness that welled up occasionally. He wondered how he would fill it. Jocelyn's wife, Euphemia, sometimes tried to pair him up with an eligible young woman at a dinner party, but none of them appealed for very long. He often wondered what had become of Aurelia Hogarth, but his enquiries came to nothing. Nobody remembered her, and she was not known on the theatre circuit at all. He supposed she must have died, or gone abroad.

Jocelyn, unaware of the truth, surmised that his friend was simply upset by the long absence of Aimee and Florence. As a family man himself, he understood the joy and comfort a wife and childen could supply. So he made an effort to entertain his friend, suggesting further recreational puzzles for him to investigate. This seemed to work. Percy was fascinated by the visual aspect of the colourful patterns he was able to create, and spent many happy hours investigating them. The two friends applied for another patent for two games based on multicoloured triangles.

"We ought to be able to extend this into three dimensions, Jocelyn," he observed over brandy one evening.

"Yes, but tetrahedra won't fill space, so it'll need to be something with cubes."

From this simple exchange, Percy was started on an investigation that led him to into some real mathematics. It didn't take him long to discover the set of thirty cubes that can be made with six different coloured squares. He made a set and took them round to show Jocelyn.

"Can we do something similar to the twenty seven cube puzzle?" asked Jocelyn.

"What do you mean?"

"Well, with three colours, you can make a set of twenty seven cubes that you can assemble into a larger cube with a uniform colour on each face, and all the internal touching faces matching, too."

"I see. I'm not sure," said Percy, as he stared at the cubes. "If you pick any one cube out of my set of thirty, there's another that is identical except that one pair of colours have exchanged places, so you get fifteen associated pairs. That means if you take out one pair, there must be some that don't share any of the opposite colour pairs. If you see what I mean."

The two friends spent a whole evening experimenting, until they discovered that by removing one associated pair, a set of sixteen could be chosen from the remaining twenty eight, and those sixteen could be assembled into two double sized copies of the original pair. Percy was very excited by this.

When he got back to his new lodgings in Eglinton Road, he couldn't sleep. He was pacing his room, thinking about the cubes, when suddenly, unbidden and taking him completely by surprise, the solution to a completely different problem popped into his head. The paper he had just submitted on compositions of numbers had meant that he had been forced to do a lot of complicated algebraic expansions. At the time he had felt that there must be some general pattern, some master theorem that would simplify the business, but only now did it come to him. He marvelled at the workings of his brain for a short while, and then quickly wrote up the method.

The following morning, his notes still made sense, so he sent an addendum to the journal editors, promising to develop the matter in a later paper. At lunch in the Mess, Jocelyn was also excited. "I think we ought to patent the cube puzzle, too. I am sure it is totally original, you know. I've been through all the puzzle books in the library this morning, and there is nothing like it anywhere."

The next few months flew by in a veritable frenzy of mathematics. The patent for the cube puzzles was granted, and Percy gave a talk about them to the London Mathematical Society in the spring of 1893. The talk was reported in the magazine *Nature*, and a few days later Percy received an unexpected visit. It was doubly unexpected because he had only moved to a new flat in Shaftesbury Avenue the week before. After years of living near Woolwich, his expanding social life was becoming more centred on the West End of London, and Aimee was now a decade in the past. Time for a complete break, he had thought, and looked for better lodgings.

The surprise visitor introduced himself. "Good evening, Major. I am pleased to find you at home. My name is Journet, you may have heard of the firm my father founded."

"Pleased to meet you, I'm sure," said Percy, "but the name is not familiar to me. What business are you in?"

"We manufacture puzzles, Major."

"I see." Percy could instantly understand the purpose of the visit, but he let his guest explain.

"I always keep an eye on mathematical developments, as an interested amateur and a businessman. Your talk at the LMS, described in Nature, was very interesting. I wondered if you had considered the commercial possibilities?"

"To some extent. My colleague, Major Jocelyn, and I have patented the idea." Percy paused, wondering whether to mention the other two patents.

"I see. Well, that is good. My firm would be interested in manufacturing and marketing the puzzle, under licence, of course."

"Major Jocelyn would have to be involved. Perhaps you could meet us for a more formal discussion after I have spoken to him."

"Of course. Here is my card. Please let me know where and when to meet you."

The discussions took place a few weeks later, but two years were to pass before a marketable puzzle emerged. In the meantime, the paper on the Master Theorem was taking shape, and ideas in partition theory were coming thick and fast. Towards the end of the year, Alfred Braye Kempe told him that he had been nominated to be next President of the London Mathematical Society. The two-year tenure would start in 1894. There was no-one to share his excitement; for the first time in a long time he thought of Aimee, and missed her. When he considered it, it wasn't actually Aimee the woman he missed, but Aimee the companion. His friends at the Royal Society, and the LMS and the BAAS, were interesting, erudite and talkative. But they weren't companions. They were used to honours and accolades, expected them, in fact, so Percy wasn't able to express his amazement at his success to anyone. Not even to Jocelyn. He tried to put it in writing to Florence, a one sided effort, not without an element of catharsis, but ultimately unrewarding. So he smiled and buried himself deeper in his mathematics. The reformulation of partitions as distributions proved to be ripe with possibilities, and combined with the graphical methods he had found in Sylvester's old work of the mid-1850s, it seemed to Percy that he had discovered an entire branch of mathematics, in a sense. He wanted to discuss Sylvester's work, which existed only as a series of sketches and notes, but the great man was very infirm, and far to weak to remember what he had been thinking forty years earlier. So weak, in fact, that his duties at Oxford had been handed to a deputy, a chemist called William Esson. Percy had spoken with him on a few occasions in Oxford, but could detect no real enthusiasm for mathematics in the man. He confided in Joseph Larmor, a man generally regarded as difficult to get to know, but to whom Percy found it easy to talk, that he couldn't understand why Esson had been chosen for the deputy role.

"Politics, my dear fellow, politics," said Larmor in his soft Irish accent, "Oxford is riddled with politics."

It was traditional that the outgoing President of the LMS gave an address to mark the end of his period in office. Percy looked at the topics chosen by his immediate predecessors, "Collaboration in Mathematics" and ""What is mathematical knowledge?" and decided to break with tradition. In November 1896, before an audience of a dozen fellow mathematicians, he began his talk with a tribute to his friend and sponsor, Arthur Cayley, who had died the previous year. He had felt the loss of Cayley quite keenly. That year, like most years, it seemed, contained extremes. Cayley, the man who had helped him onto the path of mathematical research, who had seen to it that he met the right people, and who knew his darkest secret, had left him. But he had also met another soulmate.

At the ball held at the Royal Artillery Mess - an institution in a state of decline - to honour Lord Kitchener, the most extraordinary meeting had occurred. The ball was a huge affair, with over five hundred guests. The chef had managed to produce a fairly decent meal, and as the tables were cleared away to make space for the dancing, a replete and relaxed Percy had decided to mingle with the crowds.

Across the room, he spotted a figure with her back to him, tall, with long dark hair in ringlets. His breath caught in his throat. 'It can't be,' he thought, but he couldn't resist the urge to find out. Clutching his brandy glass, he pushed his way through the throng. As he got nearer, she turned around, and the green eyes were unmistakable. "Aurelia," he shouted. The woman looked across to see the source of the shout. Immediately she excused herself from the elderly man she had been talking to and walked quickly to meet him.

"Percy, my goodness, it really is you," she said, "Listen, keep your voice down. I'll meet you outside in five minutes."

In quiet darkness of the verandah, he watched as she came towards him.

"Aurelia," he said, "I thought you must be dead. I tried to find you, but no-one had heard of you."

"Percy, I am pleased to see you. But I am not Aurelia."

"I'm sorry, I don't understand. You are certainly Aurelia Hogarth."

"I mean, I am the person you knew as Aurelia, but that's not my name. It was a pseudonym, to conceal my secret life. My family, especially my father, knows nothing about that part of my life. I was only a child, after all. I'll take you back in to meet my father, Major Howard, in a moment, but promise me you will not mention how you came to know me."

Percy was confused, but agreed to comply with her request.

Back in the dance saloon, now cleared of furniture and throbbing with the music and the sound of a hundred couples dancing, formal introductions were made.

"Father, this is Major MacMahon, an old friend of mine. Percy, this is my father, Major Howard."

The two men shook hands. "Grace has not mentioned you before, MacMahon. When did you meet?"

So her real name was Grace Howard. "Before I went to India, sir, a long time ago. This is the first time we have seen each other since."

The old man was interested in Percy's Indian adventures, and seemed impressed by his subsequent successes. It was only when he thought to invite Grace to dance that he was able to find out, to his astonishment, that she had been only fourteen years old when he had met her. The singing and acting were childish adventures; Aurelia Hogarth had never existed.

"When your letters came, I couldn't admit to knowing who they were from. My mother assumed they were a mistake and simply threw them in the fire. I'm sorry."

"What's done is done. Fourteen. I can't believe you were only fourteen. It is good to see you again. Are you, um, married?"

"No, I live at home with my sisters and father. Yourself?"

Percy hesitated; what to say? The only people who remembered Aimee were Jocelyn and the late Arthur Cayley. Only Cayley knew the truth. But to lie would be unforgivable. He chose to equivocate for now.

"I used to be. My wife is no longer with us, I'm afraid.'

"I am sorry to hear that. How terrible for you."

He might mention Florence at a later date.

Thoughts of his new relationship with Grace lent a new brightness to his demeanour, remarked upon by Jocelyn on a number of occasions, and so his valedictory speech was full of optimism. The tribute to Cayley over, he launched into a confident exposition of his view that the whole classification of partition theory as a subset of number theory was misguided. He placed it firmly at the centre of his new theory of distributions, or combinatory analysis as he chose to christen it, and finished with the assertion that the subject was the key to uniting continuous and discrete mathematics. The audience applauded politely, as they always did at such events. Percy was very pleased. As he had been speaking, the outline of his great work had sprung to life in his head. He could see his immortality assured. The plan was made. Now all he had to do was carry it out.

CHAPTER FIFTEEN – A prestigious job

The telegram simply read, "Sylvester dead. Apply. Larmor."

The 'greatest living English mathematician' was how Percy had described Sylvester in his speech as retiring President to the LMS the previous year. Now he was dead, and Larmor was seriously suggesting that Percy should apply for his post of Savilian Professor of Mathematics at Oxford. It was a mad idea; nearly as mad as the book he was reading about an invisible man, by that fellow Wells. But when he told Grace about it over dinner that evening, she took the opposite view.

"Why mad? Look at you. You were youngest ever President of the LMS..."

"Third youngest," he corrected her.

"Very well, third youngest. You're a Fellow of the Royal Society, you've just been elected to the Royal Astronomical Society, Trinity College in Dublin are going to give you an honorary degree, you have a splendid publication record, a distinguished military career..."

"Cut short," he interrupted.

"But still distinguished. People still talk about it, you know. You've got three patents, your new puzzle with the cubes goes on the market later this year, and you are a brilliant mathematician. At least as good as Sylvester was.'

"You are exaggerating."

"No I'm not. How many books has he written?"

"Well, none. But neither have I."

"True, but you will, and he won't. Not now." Percy was surprised by Grace's assertive tone. She continued, "So why shouldn't you be a Professor at Oxford?"

"You make a good case, I must say. I am very tempted. I'll talk to Larmor about it. In the meantime, I must get on and book my passage to Toronto for the BAAS meeting."

The BAAS occasionally met abroad, and the Toronto meeting promised to be a grand affair. As a council member, Percy was expected to attend, and although the expenses were considerable, it seemed too good an opportunity to miss. He also entertained the idea that he might visit Florence, now fifteen years old. She had finally written back to him some five years previously, after discovering a cache of his letters during the confusion caused by her stepfather's fatal accident in 1892. They had corresponded regularly since then, and so he knew that the family had moved from Colorado to San Francisco, where Aimee was working as a pianist and singer in a hotel while Florence finished her schooling. But when he started to investigate the possibility of a visit, it was clear that he would have to travel after the conference had finished. It would be difficult to get the extra leave from his duties at the Artillery College. It was with a heavy heart that he wrote to Florence and told her he would not be able to make the long journey down the West Coast after all.

The post of Savilian Professor of Geometry was advertised in May. Percy had been working on his application for several weeks, encouraged by an enthusiastic and occasionally aggressive Grace.

"My goodness Percy," she complained, "you are usually so confident. Why are you so uncertain about this? I don't understand."

But Percy could not explain adequately. Despite his success, and the accolades, he still felt like an interloper. He knew that this was just his perception, but there was a gulf between the intellectual and emotional. He submitted the letter, and waited. On the 8th July, he received a telegram from the Electors, both staunch Oxford men, advising him that William Esson had been chosen for the post. He could scarcely believe it; Ernest Hobson, his other rival, was clearly better qualified than Esson, with a book and years of

tutoring at Cambridge to his credit, but the Electors had gone for the Oxford candidate.

Larmor sent a letter expressing his sorrow at the result. Percy replied immediately:

> *My dear Larmor,*
> *I am so pleased at your letter of sympathy.*
> *Hobson knows that had I been successful my pleasure would have been marred by his being unsuccessful - It would have been a real pleasure to me to have congratulated him. As it is we have been defeated by a man who I think never ought to have been a candidate. However, I must now settle down more seriously to my military work as long as I remain in the army and not be disturbed anymore by dreams of a great position which are clearly never to be realised.*
> *I think that on the whole my work has met with more recognition than I could have hoped for.*

Later that month, he took the train to Liverpool, and on 22nd July sailed on the *State of California* to Quebec. The voyage was peaceful, despite the best efforts of the North Atlantic Ocean to disrupt it. During the days he was able to work on several papers at once, which helped take his mind off the disappointment that still fluttered around his brain. The evenings were spent in pleasant conversation with fellow travellers, nearly all of who were scientists of one sort or another bound for the same conference. By the time the party disembarked in Quebec, Percy felt greatly refreshed and revived, as if a new chapter of his life was about to start. Perhaps being rejected by the traditionalists of Oxford was not so bad after all. Perhaps his work being praised but largely ignored was not so bad. His time would come, he felt sure. His relationship with Grace was blossoming, and although he was tempted to ask her to marry him, there was the problem of Aimee and Florence. The deception that had worked so well now turned and bit him. He knew he was

free to remarry, but no-one else did. Somehow the combinatorial problems seemed so much more tractable.

An idea had come to him at sea, an extension of the plan he had conceived after his LMS presidential address. Since no-one else seemed interested in pursuing combinatory analysis, he would write the definitive book on the subject, and claim it for himself. The first memoir on partitions was being published in the *Philosophical Transactions*, and he had made good progress with the second during the voyage. The return voyage should see it finished, and that would form the foundation for the book. He would be eligible to retire next year, and then he could devote himself to the task without the distractions of teaching and marking and staff meetings.

There were two retirement celebrations. The first was a fairly raucous affair organised by Jocelyn in the Artillery Mess, with music by Zavertal, including a slightly off-colour version of Jocelyn's 1890 operetta "Love's Magic." Percy was worried that Grace might have been offended, but she roared with laughter along with the men, and joined in with several ribald comments of her own.

The second was more subdued gathering at the Royal Society, where the food was better but the company more restrained. At this, Grace was a perfect lady. "I'm an actress," she said later, "I just play the part the company demands."

Jocelyn came to call a few weeks later with good news. "Journet are finally going to get our, well, more your, cube puzzle on the market. It'll be called *Mayblox*. I've registered the name with the appropriate authorities on your behalf."

CHAPTER SIXTEEN – Long Melford

I closed my notebook. I sat back to review what I had written, and the events of my sudden return to the present floated through my mind. As I had stepped through the shimmer, I had immediately regretted losing my nerve. The sudden noise of the twenty-first century, the awful smell of the traffic and the heat almost made me retch. I turned round, suddenly resolved to go back, but the shimmer had gone. I walked back to the junction of Magdalen Street and Chesterton Lane, but the modern world surrounded me all the way. I even went right back to number thirty one Hertford Street, a place I had left only a short subjective time ago, and now, confusingly, both familiar and alien. I waited around for a while outside the house, with a torrent of feelings running through my head. Relief at being back in my own time, regret at not having had the nerve to have stayed longer, excitement at what I had found out, and then concern about how long I had been away. I jogged back down into the town centre, and went into a newsagent to sneak a peak at the date on a newspaper. It seemed to be the day I'd left, much to my amazement. There didn't appear to be a clock in the newsagents, so I ducked into a bank to check the time since my watch was in 1923 and my mobile phone had run out of charge. Of course, I hadn't made a note of the time I had crossed the wrinkle, but I guessed it must have been mid-afternoon, four o'clock perhaps. The time now was a quarter past four.

As the bus trundled its way back to the Babraham Park and Ride, I began to wonder whether I had dreamed the entire episode. But my missing watch and the strange little Bakelite plug grafted onto to my laptop power supply, plus a pocketful of old money, suggested I had really met Percy. I was buzzing with excitement by the time I reached my car, but the drive home gave me time to think. As the tower of the Holy Trinity church in Long Melford

came into view, I had realised that I could neither tell anyone about my adventure, nor use any of the material in the thesis. I had no documentary evidence for any of the stuff Percy had told me, and in any case, he had not actually discussed any of his mathematics with me in any detail. I hadn't asked him, partly out of fear that I would expose my lack of ability in that regard, and partly because it was already well documented.

I had already written about how his work in ballistics with Greenhill had led him into the study of partition theory by way of invariant theory. But I now understood his motivation for choosing to study partition theory; it was something he could claim for himself. As a strategy for achieving success, Percy had clearly thought it largely successful, although I had detected some bitterness toward the wider mathematical community. I think it was because despite the overt acclaim given to his work, particularly after the publication of his books in 1915 and 1916, no-one appeared to be taking up the challenge. The medals and honorary doctorates he had received were welcome, particularly as he had not attended any university himself, but the lack of interest from other mathematicians in pursuing the problems he had identified took the edge off the success. I couldn't think how I would be able to incorporate this insight into my thesis. Fortuitously, a few weeks later I came across a letter he had written to the scientist Ronald Ross, the man who had discovered that mosquitoes were the vectors for malaria, in which Percy was very frank about the reception his work had received over the years. Taken with the remark he had recorded in another letter to D'Arcy Thompson that I already had, that to be a professional mathematician one had to have a chair in mathematics at a university, I felt justified in appearing to speculate about Percy's inner life in the thesis. This seemed to me quite daring, since the prevalent view is that the history of mathematics is a history of ideas, and the personal life of the mathematician is of little or no interest, unless he manages to get himself shot at an early age like poor Evariste Galois. Even then, the

tragic story is a footnote, often garbled, to the mathematics. Or take Gauss, one of the most famous mathematicians of our era. He managed to have two wives, suffer becoming widower twice, and father several children. In later life he was apparently a melancholic fellow. What was the mathematics to him? A comfort? An escape? I wanted to know what motivated Percy to have the ideas; I wanted to see how the mathematics fitted into his 'ordinary' life. Because motivation is what drives people to do things, and I had often stopped to consider my own motivations.

Why had I become a teacher? I can remember talking all kinds of nonsense at my interview, about wanting to communicate the excitement of mathematics to children, and to provide them with opportunities to grow and develop - a lot of psychobabble, really. I really just wanted to join in the staff room social life, about which I had heard a great deal. I never really enjoyed the teaching, and I certainly don't think I ever motivated anyone. The social life failed to live up to expectations, too, so I was glad to escape back into the cosy world of office work, where you don't get sworn at all day, and nobody spits on the stairs.

I dare say that one of Percy's motivations was the desire to solve problems, eventually, but that's not why he started. He had been backed into a corner by his injury, and saw a life devoid of the military glory enjoyed by his father and brothers. Mathematics, Cayley, and Greenhill had provided him with an escape route, and the ideas came by accident. As an opportunist, he saw a way to achieve fame and a little fortune, and had used his social skills to network with all the right people. Of course, it wasn't all plain sailing, and his choice of mathematics could have been better. Mathematical physics or astronomy might have earned him a knighthood, and a better crack at immortality. I had sensed his disappointment at not getting the Savilian Professorship, which I think had made him feel that despite his apparent acceptance into the community of English mathematicians and scientists, he

wasn't really one of them, and was doomed always to be something of an outsider. I understood how he felt; I have always felt peripheral myself. I recalled my surprise at the dressing down I had received from two different Oxford professors, at two different talks I had given about Percy in the early days of my thesis research. On both occasions I had merely repeated Percy's comment about the unsuitability of Esson for the Savilian post, and had been given long lectures, during which my tea had gone cold and I'd missed the best biscuits, about what a truly excellent fellow Esson had been, and how I'd no business casting such scurrilous aspersions on his abilities. My protests that I was merely repeating a remark written down over one hundred years ago made no difference. I think it was then that I realised I was never going to be a true academic, and that I would never really understand what it meant to be an 'Oxford man.' I guess Percy must have come to much the same conclusion.

But now I was parked outside my house, in the wrong clothes, with funny money and no watch. I sat there for a while, cross with myself for having lost my bottle in 1923. But it turned out reasonably well. I completed the thesis, passed the viva with only minor corrections required, and enjoyed dressing up for the degree ceremony. That makes it sound much easier than it was. The endless proof reading, the obsessional concern with font sizes, punctuation, page numbering and a thousand other tiny matters drove me to distraction. I spent hours formatting and reformatting the bibliography. In the end, I began to feel that the whole thing was a testament to my computer skills rather than anything else. But the final bound book of two hundred and fifty pages was a very satisfying object to handle.

But still there was a feeling of something unfinished about the work. Getting the doctorate wasn't the intellectual apotheosis I had imagined. I had expected to burst into the world anew, reborn as a better person. But it turned out to be all crescendo and no climax. Life merely staggered on in the same old way. My appreciation of the depth of my ignorance seemed to have been

enhanced by the whole process. Like Percy, I had chosen an obscure and unfashionable topic, so after a few congratulations, and a tiny burst of excitement at the degree ceremony, the achievement was forgotten, the certificate added to the pile accumulated over the previous thirty years.

CHAPTER SEVENTEEN – Florence

Percy leant on the ship's rail. It was now late September 1904, and the journey had been a long one, from Liverpool to New York with the White Star Line, and then a week later, a local ship via the Panama Canal to San Francisco. The official reason for the journey was an invitation to speak at a meeting of the American Mathematical Society, and meet with fellow mathematicians. But his eager acceptance of the invitation was because he wanted to see Florence. He had missed the opportunity nearly a decade before, and he wasn't going to make the same mistake twice. Grace had encouraged him; over the years, the full, sad story of his failed marriage to Florence's mother had been dragged out of him. When the letter from the AMS in California had arrived, it was Grace who had seen the possibility of laying some ghosts to rest. Percy hadn't needed much persuasion. At fifty years old, he was suffering an intrusive awareness of his own mortality. The death of his father, over thirty years before, had been upsetting, but as a loss, not as a harbinger of personal doom. The deaths of his brothers George and Ernest, both in 1892 and both under the age of forty, had not given him cause to worry about himself, but the death of his mother just three years ago had brought his own death to the front of his mind. He wanted to see what kind of woman the baby he had last seen twenty one years ago had become, before it was too late.

The skyline of San Francisco was outlined against the darkening sky, with tiny flashes of red as the setting sun behind the ship reflected from windows. Despite his official status symbols, the two honorary doctorates, the Royal Medal, the various other posts he held or had held, he felt inside no different from the nervous sixteen-year-old gentleman cadet of the early 1870s. Then, as now, he would put on great show of confidence, but the impending

meeting with Florence was making his stomach churn. He lit a cigar and watched as the harbour slipped closer and closer.

The following evening, he dressed for dinner with his usual military precision, looking forward to the distraction of a meeting with his American hosts, and some good brandy to follow. As he was about to set off for the restaurant, there was a knock at the door of his room that coincided almost with him placing his hand on the doorknob. The suddenness with which he opened the door elicited a small cry from his visitor.

A trim young woman, dressed fashionably in a hat with a half-veil covering her eyes, stood in the doorway and looked him up and down.

"Are you Major MacMahon?" she asked, with a noticeable American accent.

"I am, young lady," he replied, "but I don't believe I know you."

"Yes, you do, Father," said the woman, "May I come in?"

Percy stepped aside as Florence walked past him into the room, and then turned to face him as she removed her hat. Percy studied her face, trying to see the mewling child of two decades ago. But there was no trace in this confident young lady; he could see her mother's eyes and lips, and himself in the shape of her jaw. For a moment, the twenty years he had missed crowded in on him, and a tear prickled in his eye.

The silence seemed to go on forever as they studied each other. Finally, Percy broke the spell. "It is very good to meet you at last," he said, "I was about to go to dinner with my hosts, but I'll send them a message to say I can't come."

"I don't want to put you to any trouble. I know we were due to meet anyway on Sunday, but I couldn't wait."

"After twenty years, it won't be any trouble, I assure you. We can dine here in the hotel."

The tall middle-aged man and the stylish young woman at a table by the wall in the hotel restaurant did not cause a stir among the other diners, although Percy felt that everyone must be aware of them. Florence was not a shy woman, and meeting the man her mother refused to talk about filled her with questions.

"Why didn't you come to Colorado?" she asked over the first course. Percy tried to explain, and finished with, "That sounds weak, doesn't it? Putting my career before my family. But it wasn't like that. I had no way to make a career in America. Of course, things are different now, now that I am established, invited to speak at meetings of the AMS, that sort of thing, but it's too late, isn't it? You are a grown woman, a career woman, you no longer need a father, and I can no longer be one. But I can be a friend, and a support. Tell me about your plans for the future."

"My dental practice is doing very well, my husband is well. I am successful, blessed with your brains and my mother's looks. She likes me to keep her informed of your doings, you know."

Percy had learned in various letters about Florence's move to San Francisco to study dentistry in 1900 and the recently formed College of Physicians and Surgeons, and her marriage to Edward Henry Allen, a fellow student, in 1901. She had graduated in 1902 from the College, the first woman in California to gain a doctorate in dentistry. Percy had been very proud, not least because the money he had paid every year had been sufficient to fund Florence's college education and the setting up of her practice.

"I am sure she does," said Percy, "But the past is gone forever. I don't want to relive some parts of it. Especially not that part." The conversation was suddenly interrupted by a voice from the doorway.

"La La!"

Percy turned to look at the young man waving and calling. "Is that someone you know?" he asked.

Florence didn't look up, but said, "I'm afraid so. It's Archie Hein. I was at college with him. He's harmless, but very talkative. He was well known for asking hundreds of questions after every lecture. I'll try to get rid of him."

The young man was at the table before Florence could move.

"Hello, La La. Fancy seeing you here. Does your husband know you're out cavorting with a strange man? Sorry, old chap, no offence meant, just a joke, you know. I was at college with La La, in the same class. Sorry, we haven't been introduced. I'm Archie Hein." Hein paused for breath and stretched out a hand to Percy.

Percy put his napkin on the table and stood up, towering over the loquacious intruder. He shook the proffered hand.

"Pleased to meet you, Mr. Hein. I'm Major MacMahon, Florence's father."

Hein looked surprised, and then sheepish.

"I'm sorry, sir. I didn't mean to intrude. A pleasure to make your acquaintance, I'm sure. I'll leave you to your meal. Sorry, La La, I'll see you another time, perhaps. Goodbye." He scuttled away.

"My goodness," said Percy, sitting down again, "What an odd fellow. What was all that 'La La' business?"

"That was what the fellows at college used to call me. On account of my singing."

"So you take after your mother, then. She used to sing all the time."

The conversation moved on to less controversial topics, and the couple entertained one another with anecdotes. Florence was very amusing about the antics of her fellow students at the College, including the talkative Archie Hein, the accident prone Peters, always locked out of his cupboard, and the stationery fiend Miss Worthington, with her endless supply of paper and freshly sharpened pencils.

"So there were other women on the course?"

"Very few. Out of sixty-some students there were three of us, myself, Miss Worthington and Miss Von Zesch. I think Peters was quite keen on her, but after the molten zinc incident, she refused to speak to him. It was very entertaining."

Florence refused Percy's offer to see her safely home, and promised to meet him again at the hotel after breakfast on Sunday, as they had originally arranged. Percy watched her push through the revolving doors of the hotel and step into a waiting cab. He stood in the foyer looking out into the night long after the cab had disappeared from view. Sleep was a long time coming that night, and by the time he fell asleep Percy had rehearsed his talk for the AMS several times.

For the first time in his life, Percy found it hard to concentrate on mathematical business on the Saturday. His talk, on groups of differential operators, was politely received, and his hosts were very generous with their praise of his accomplishments, but he hardly took it in, and could remember nothing of the other matters discussed. His journal for that day was very sparse.

When Sunday morning came he took great care with his toilet, and spent half an hour grooming his moustache. He was at great pains to eat delicately at breakfast so as not to spoil the effect. The coffee was served just as he saw Florence enter the room. He had pushed the chair back and started to rise when another woman followed Florence into the room. His jaw dropped, at least in his head. Externally, he showed no sign of the physical effect that the sight of Aimee Rose Leese had upon him. The sudden emptiness in his lower abdomen, and the chill in his chest, surprised him. He hadn't seen his ex-wife for more than two decades. In his mind, she was still a fresh twenty year old, so the plump middle-aged Aimee was both familiar and strange. She looked at him in silence for a few moments as Florence settled herself into a chair, signalled to a waiter and ordered more coffee for all of them. Aimee's first words to Percy after two decades were very mundane. "Hello, Percy. How are you?"

"I am well, thank you. And you?" He tried to keep his voice even.

"Likewise."

The conversation stopped. Although Percy had rehearsed many times what he wanted to say to Aimee, should he ever see her again, now that the time had come, it all seemed rather pointless. What did he care now why she had abandoned him? Did it matter what the reason might have been? The lies she had told no longer hurt. It was all history now, and could not be changed. Even trying to understand the reasons behind her actions seemed futile; since it would never happen again between them, there was no obvious lesson to be learned.

Florence broke the awkward silence as her parents just stared at each other. "Do sit down, Ma, and have some coffee."

Florence's accent had been a surprise on Friday evening, but to hear her call Aimee 'Ma' struck Percy as quite alien. He, and his brothers, had always called their mother, 'Mother', even seeming to pronounce the capital 'M'.

"Well," said Florence, when everyone was seated and had a filled coffee cup before them, "have you two nothing to say to each other?"

"There is nothing more to say," said Percy, "what's done is done. Why go over it again. There is nothing to be gained, is there?"

Aimee gave a little nod, but Florence said, "It is important to me. I want to know what happened."

"It was me," said Aimee, "And my mother. She never really took to you, Percy. She was used to the high life: travel, diplomacy, politics, and fine parties. That was the way to live. She saw you as a failure, I think. No chance of glory or honours as a soldier. What could a mathematician do? Just scribble, incomprehensible scribble. I'm sorry, Percy, I really am, I can see now that she was wrong. In the two years since she died, I have had plenty of time to think about it, and I know she poisoned me, but I can't change it. I'm sorry for all the hurtful things I said at the divorce hearing." She turned to face Florence. "Ruby, my sweet, there's nothing to know. I was young, I found America

exciting. You can't imagine that, you've been brought up here. But England is small and cramped and London is crowded and dirty. There's no sky, no horizon. Here, I felt free and open. You haven't had a bad time. My Ed, God rest his soul, was a good man, a good stepfather to you." Aimee stopped, and dabbed at her face with a handkerchief.

"You are clearly a fine, independent young woman, Florence," said Percy, "don't waste time worrying about the past. Look to the future. You have your Edward, whom I have still to meet, and a good career. Our past tribulations cannot change your future one jot. Let us finish our coffee and you can show me the sights of San Francisco."

Florence looked disappointed, and Percy wondered what she had expected from this engineered encounter. Aimee said she couldn't join them, since she was working in the evening and needed to sleep. After she had gone, Percy and Florence left the hotel to walk around the city.

Percy asked, "Why does your mother call you Ruby?"

"I don't know. It's just a pet name. I think she once had an idea that we would be a double act. Rosa and Ruby MacMahon, the California Nightingales, that sort of thing. Sometimes I use it, too. It's better than La La." She laughed, and pointed out the College building on the corner of Fourteenth Street.

"You haven't married again," said Florence, more as a question than a statement.

"No, it is not possible, although I would like to marry Grace."

"Why not possible?"

"I can't be married in the Church of England as a divorcé."

"That's absurd. People here do it all the time."

"Perhaps, but I live in England, and society is more, how shall I say, tightly structured. In any case, Grace has her heart set on a big wedding, or not at all. But I'm not here to talk about my problems. I want to know about you. I've missed twenty years and I want to catch up."

Florence ignored him. "If you were a widow, would that be allowed?"

"What are you suggesting? No, I don't want to discuss this any further."

By now they had reached the Bay, and Percy stared out across the Pacific. Florence decided she had pushed the discussion far enough, possibly too far, and started to tell Percy about her childhood in Colorado, and the terrible accident that had widowed Aimee and deprived Florence of a father for the second time. Percy began to understand why his separation from Aimee was so important to Florence. He, too, had been deprived of a father, first by duty and then by death.

The day passed quickly after that, and by the evening Percy was quite tired from all the walking. Nevertheless, he allowed himself to be persuaded to go to dinner in the hotel where Aimee worked as a pianist and singer. Percy was surprised to learn that she used 'Rosa MacMahon' as a professional name, given the fuss she had made about not being referred to as MacMahon in the divorce papers twenty years before. Her voice and her playing were good, and he remembered the evenings in Nightingale Terrace, before Florence was born, when Aimee would entertain him with modern songs in their front parlour. As he watched her, relaxed after a bottle of good red wine and a couple of large brandies, he fancied he could see the twenty year old Aimee beneath the changes wrought by time, and his eyes felt moist.

He was pleased to be alone in his hotel room afterwards, and was glad that he only had a couple of days left in California before his return trip to England. Most of that time he spent with Florence and Edward. He did not see Aimee again, which left him feeling simultaneously grateful and sad. On the return voyage, he came to the conclusion that the past is a very bad place to visit. He resolved to look only forward.

CHAPTER EIGHTEEN – Another marriage

Grace was keen to hear all about San Francisco, and Florence, and with her usual skill managed to draw out from him more than he had intended to reveal about his innermost thoughts.

"Then let us get married in a civil ceremony," she said, "I think Florence is right. It is absurd for us not to marry."

So Percy began to search for a home suitable for a married couple, and it soon became clear to him that his Royal Artillery pension would not be adequate for a married man. Subtle enquiries among colleagues at the Royal Society made it plain that academic posts at universities were few and far between. Despite his publication record, and the honours and medals, he was still not 'one of them.'

"I don't know what to do, Grace," he confessed, as they relaxed after Christmas dinner in 1904. "I'm not a university man, really, and although they're all very polite, I'm not going to get a chair."

"There's more to life than academia, Percy. Why not ask around at your club?"

Percy had been allowed into the Athenaeum Club about eighteen months previously, courtesy of George Darwin, and he enjoyed it immensely. He had discovered a hitherto unsuspected talent for billiards, and had even taken a bit of instruction from one of the other members, Charles Cavendish, a champion of several years standing. The fellow had given Percy several good tips, and had a bit of sport with him, too.

"Well, MacMahon, there is only one last secret I have to tell you, but it'll cost you a guinea."

"A guinea, C. C. I'm intrigued. What can it be?"

"A guinea, MacMahon."

"Very well. Here's your money."

"Thank you," said Cavendish, smiling as he pocketed the coin, "The secret is, my dear fellow, always to chalk your cue before you play the shot."

Percy laughed. "Surely that's obvious. Hardly a guinea's worth."

"Let's see. Here come Ward and Darwin for a game. Now Darwin is an amateur, but Ward will be champion one day, mark my words. Watch them carefully."

The two men recharged their glasses and observed the billiards game.

After a while, Cavendish said, "Well, did you notice?"

"Notice what, precisely?"

"Ward is winning. Before each shot, he lines it up, stops, chalks the cue and then takes the shot. But Darwin, he takes his shot, and then stands and chalks his cue the entire time Ward is playing. By the time he is ready to play, the tip of his cue is slick with compressed chalk."

"I see, I see. Well, a guinea well spent, I think." Percy tried to steer the conversation around to posts that might be about to become available, knowing that Cavendish knew everything about everyone. He seemed to spend most of his time in the club, although it was rumoured that he did have a wife and home somewhere in the shires.

"Are you driving at something, MacMahon, with this line of questioning? Has your lady-friend started making demands, old fellow?"

Percy stared at his drinking companion.

"My dear MacMahon, everyone knows about you and Grace Howard. You can't keep anything secret round here, especially not from me. Let me tell you what I think. Miss Howard is keen to get married, and you need a bigger flat. Your little bachelor residence is nowhere near big enough for a wife, especially a wife like Miss Howard who loves to entertain. But a military pension won't run to it, so you need a source of extra income. Am I right?"

"Almost, except that it is me that wants to get married."

"No accounting for human nature. Well, I suggest you go and have a word with old Chaney."

"The Board of Trade fellow?"

"Yes, I hear he is thinking of retiring and is looking to train up an heir."

"Thank you for the tip. That's the second time this evening."

"But I won't ask for a guinea this time," said Cavendish, smiling.

CHAPTER NINETEEN – A proper job

Percy had been working at the Board of Trade for only three months when Henry Chaney died in February 1906. The Treasury were very quick to promote Percy to Deputy Warden of the Standards in place of Chaney, doubling his salary. A rather smug Percy conveyed this news to Grace over dinner.

"That is splendid news, my dear," she said, "so we can proceed with our plans. I will confirm the date with the registrar. Next February."

Percy wrote to Florence as well. He was determined to make a difference to the work of the Standards Department, and he told Florence about his trip around the country to investigate the costs of certifying glassware, and his ideas for introducing modern technology. 'The previous incumbent,' he wrote, 'was a fine chap, but rather old-fashioned.'

Florence's reply, a month later, was totally unexpected.

'You may have read in the newspapers about the earthquake. We are lucky to be alive. Ed's quick thinking saved us. On Wednesday, just before dawn, we were woken by the bed shaking in a most alarming way. We could hear the crockery falling from the shelves in the kitchen, and all the windows in the apartment were rattling.

"It's an earthquake," shouted Ed, "Grab some clothes, get your coat, we must get out." We quickly put our coats on over our nightclothes, I scooped some more clothing into a bag, and Ed pulled the blankets from the bed as we ran out of the apartment and down the stairs into the street.

As we got outside, the noise was tremendous, a sort of roaring shriek, like a giant grinding wheel. Then suddenly it stopped and for a few seconds there was utter silence. Over towards the Bay we heard a slow metallic sound that increased in volume until it stopped with a final huge bang. I found out later

that it was one of the huge metal tanks that hold the gas for the lights collapsing. Our neighbour from the apartment below, Tom Inchferry, was standing a few feet away from us as we looked down the street at the twisted tramcar lines and the spouting water from the broken water mains. Ed turned to speak to Tom, and as he did so, there was a great noise and thousands of bricks crashed down upon poor Tom, killing him instantly, right there beside us.

Ed pulled me into the middle of the street, as people ran past us, crying and yelling. A priest ran past, calling out, "The ferry, the ferry, get to the ferry."

I had to shout at Ed to make myself heard above the noise, "Ma, we have to find Ma."

"We pass the hotel on the way to the ferry down Market Street," he said, "Come on." We ran to Market Street, where we saw men, women and children crawling from the debris of the shattered buildings, some of which were on fire. As we came to the hotel, on the corner of Fifth and Market Street, flames were already roaring from many of the windows. We saw three men on the roof, screaming and leaping about as the fire burst through. A military officer with a small company of soldiers was watching and it became clear that the men could not be rescued. Rather than let them be roasted alive, the officer ordered his soldiers to shoot them dead, which they did in front of the whole crowd.

The entrance to the hotel had collapsed, and as we got there a policeman and several others were struggling to pull free a man trapped by his legs. But he was stuck fast, and as the rescuers watched the flames began to burn his feet. He screamed, and called out to the policeman, "Kill me, kill me." The policeman hesitated for a few seconds, but the man's cries became more horrible, so the policeman made a note of his name and address and then shot him dead through the head.

"Your Ma can't have survived in there," called Ed over the cacophony, "Come on, we have to go."

I was in a daze as we got to the ferry terminal. It was pandemonium, thousands of people trying to get on the boat, clawing at each other and pulling at their clothes. Ed kept a firm hold on my hand and pulled me through a gap in a fence, and then we were on the ferry. As it pulled away, we could see many people still on the quay, and behind them the sky was red as the fires took hold all over the city. One man on the dock was beating his head on an iron pillar, and I could hear him crying out, "This fire must be put out, the city must be saved." It was the most awful experience I have ever had.

On the other side of the Bay, we stopped in a public park, with hundreds of other people, and huddled under our blankets. "Ma is dead, isn't she?" I said. I felt numb and tired.

"I think she is. You saw how bad the hotel was hit. I'm sorry." Ed was looking grey and his faced was streaked with dirt. "Let's rest for a while, and then we'll go to my parent's house in Walnut Creek."

I slept for a while, with a bag of clothes for a pillow, holding tight to Ed. It was late afternoon when we set off to walk to Walnut Creek. Behind us, the sky glowed red and a great column of smoke rose high into the sky. We could hear the noise of the fires raging in the city across the bay. A man in a cart gave us a lift as far as Lafayette, but it was after midnight when we knocked on the door of Ed parent's house.

"Oh, my," cried his mother, Sally, as we came in, Oh, my, oh, my. You're safe, thank the Lord. Let me get you some food. Have you had anything to drink? George, George, put some water on for coffee. I'll get bread."

I hadn't realised how hungry and thirsty I was; we hadn't eaten all day, and had only a swig of water from the cart driver. George (Ed's father) was the first to ask after Ma. I couldn't speak, but Ed told them about the hotel and the dreadful events we had witnessed, and that Ma was most likely dead. Sally burst into tears straight away, and that set me off too.

We have since made some enquiries with the police, and they have confirmed that no-one survived the hotel blaze. So I have to tell you that Ma is dead. I am sorry.

My practice has been burnt out, and will take a year to rebuild. So I shall take the opportunity of the enforced holiday to come to England. I will telegraph with details of my ship in due course.

Your loving daughter, Florence.'

Percy put the letter down. His brief encounter with Aimee two years ago had convinced him that he had no feelings toward her at all, so he was surprised by the wave of sorrow that washed over him. He had not wished her dead, and certainly not in such a violent and frightening way. India had shown him plenty of violence and he knew only too well the fear that knotted the bowels when faced with unavoidable terror. He smelled the smoke and closed his eyes to see the darkness and feel the heat that must have overwhelmed Aimee as she lay in her bed in the unfortunate hotel. The images Florence had conjured stayed with him all day at the office, and he had to work very hard to concentrate on the minutiae of merchants' complaints about short weight of coal and overpriced stamping of beer glasses.

At dinner with Grace, it was the first time he had allowed her to handle an actual letter from Florence.

"Oh, Percy, this is awful. I read about the earthquake, but I didn't make the connection. Poor Florence. She must be absolutely distraught. But I am very excited at the prospect of her visit."

"She has her husband for support. He's a sturdy fellow, very resourceful. In any case, there's very little we can do from here. I shall telegraph tomorrow. It's all I can do."

A few weeks later, the unspoken understanding that they would now be able to marry in church was made explicit when Grace received a letter from the

Church of St. John the Evangelist in Kilburn confirming that 6th February 1907 had been reserved for the wedding.

Florence and Edward arrived in the middle of June and moved into a rented flat in West London that Grace had organized for them. When Florence learned of the forthcoming wedding, she immediately extended the lease.

The wedding was a grand affair, with Grace's sisters as bridesmaids, and Percy's twenty-one year old nephew, William Percy Dartray, known as 'Dash', as best man. That Florence and Edward were able to be there was a pleasure Percy had never expected in his wildest dreams.

At the wedding breakfast, Dash confessed to his Uncle Percy that he had found the Mayblox puzzle fascinating.

"That's splendid news," said Percy, puffing on his cigar and sniffing his brandy with obvious pleasure. "It was old Jocelyn over there who first put me onto it. You have an interest in those sorts of puzzles, then, young Dash?"

"Yes, I enjoy them immensely. Do you have any more?"

"Jocelyn and I did patent another puzzle idea, using coloured triangles, but we didn't manage to find anyone interested in making it. Next time you visit, remind me, and I'll show you. I have it in mind to expand the idea some day, but I'm too busy at the Board of Trade for the present."

"Sounds fascinating. I look forward to it, Uncle."

The couple took a honeymoon in Scotland, where the mountains reminded Percy just a little of the mountains of the North West Frontier, although greener, wetter, and much less dangerous. Grace was not so enamoured; she preferred the company of people, and missed the bustle and excitement of London life. She was pleased to get back to the noise and clamour of the city, with its narrow skies and warmth.

They settled into a comfortable routine. Percy would go off to the office most days, while Grace lunched with her sisters and her friends, and looked for a home nearer to the centre of the city. The house in Cambridge Gardens that

they had rented for the start of their married life was adequate, but not suitable for entertaining, and Grace loved to entertain. The flat she found near Victoria station, in Carlisle Place, was much more suitable, with its large dining room and adjoining high ceilinged drawing room with a bay window.

The housewarming party Grace organised was a glittering affair, and the newly engaged cook, a friendly woman in her mid-forties named Emma Saddington, produced a very memorable meal. May Perfect, a somewhat lugubrious young woman employed as a parlour maid, lived up to her name and provided a standard of service usually only found in the most select establishments. Grace was very pleased with her choice of staff.

The party was attended by most of Percy's friends, including Larmor, Eddington, Baker, Turner, and a bright young mathematician from Cambridge called Godfrey Hardy. He was keen to become a Fellow of the Royal Society, and spent most of the evening canvassing support for his application, much to Grace's irritation.

"Politicians," said Percy, making the word sound like a curse. The assembled company turned to look at their host. "Not very bright, I fear," he went on. The other mathematicians and scientists were keen to hear tales from the outside. Percy was the only one among them who actually worked in the world outside of a university, who had a foot in both camps, as it were.

"For example," continued Percy, "only the other day I thought I would explode trying to explain to Mr. Churchill why the national standard stamping fee for beer glasses was fair. A delegation of manufacturers from the North, Durham and places like that, came down to demand the right to vary the charge locally. He would not, or could not, understand my argument, and then he said he was minded to accede to the request from the delegation for a reduction, but needed more information. It is so frustrating."

"That's the skill of the politician," said Larmor, "He looks as though he's made a decision in favour of the appellant, currying favour with voters, but also

seems eager to make sure it is the right, objective, decision. Whereas he hasn't actually made any decision at all."

"And by putting off a decision, I suppose he's hoping the problem will go away," said Percy. This remark was more prescient than he could have guessed. A few weeks later the government increased the tax on alcohol, so that the publicans changed to selling beer in smaller glasses that did not need a government stamp, and the problem just evaporated. Percy put the extra data he had collected at Churchill's request into a folder and sent it away to be filed.

"Any more stories from the heart of government this week, old man ?" asked Larmor, who had come round for dinner one evening. "I heard about your stamped glasses problem from Baker."

"Where do I start ?," said Percy, lighting a cigar to go with the post prandial brandy. "Some joker wanted to make the cubic inch the only legal measure of volume, and one thousandth of an inch the only legal measure of length. Proposed then to define weight by taking a cubic inch of water at 122 degrees Fahrenheit as the definition for 250 grains. Barmy. Where do you encounter water at 122 degrees on a daily basis ?"

"In your bath ?" suggested Larmor.

"You like a very hot bath, then," said Percy, "But the chaps who proposed it were deadly serious. They're worried about metrication, you see. Afraid it might be compulsory."

"Well, I can see why adopting the metric system might be a good idea."

"It's already legal. No reason why you can't use it. But the costs of converting all the weights and weighing machines, all the distance markers at the roadside, the whole of industry and commerce in fact, would just be huge. And to what advantage ?"

"Easier to teach, I should imagine."

"I think learning the imperial system is good training for the mind. Plenty of opportunity to practise mental calculation."

"That is one of your strong points, of course. Any further gems ?"

"Short weight on coal deliveries. The railway companies take the tare weight of their trucks when they are new, and don't change them. After a while, the trucks are wet and dirty, so the same total weight contains less coal. Then a fair quantity falls off during shunting, which the railway men pick up and resell. Everyone blames everyone else, so I've set up a study. Then there's the sausage wrapper scandal."

"Spare me," laughed Larmor, "What of the mathematics ?"

"Well, I've been working on Simon Newcomb's playing card problem, and invented a new adaptation of a Ferrers' diagram. I've called it a zig-zag graph. And then there's voting. A couple of interesting problems there. Did I tell you about the letter I received from Parker Smith?"

"The Scottish MP?"

"Yes, the same. Interesting chap. Had some excellent conversations with him in Glasgow at the BA meeting a few years ago."

"So what's the letter about? You're not going into politics are you?"

"Perish the thought. The government's getting itself into a bit of lather about voting methods. The last lot were well and truly trounced at the last election, and there are concerns that the system may not be fair."

"That means the current incumbents are afraid they'll get badly beaten next time."

"I'm sure you're right. They're setting up a Royal Commission to look into proportional representation, and they need some mathematical advice. I'm flattered they thought of me, but I really don't know if I've got the time. What with the sausage wrapper business looming, and my interferometer being installed. Are you interested in helping them out?"

"No fear," said Larmor, reaching for the brandy. "Tell me about the interferometer first."

"Tutton invented it a decade ago. It uses light to measure length. He's building one to install in the Standards Department. Tricky job, though. The apparatus has to be isolated on shock absorbers from the rest of the building, otherwise traffic passing by outside upsets the readings. You can come and see it when it's finished."

"I'll hold you to that."

CHAPTER TWENTY – Elections

Although he had written to Parker Smith claiming that his duties would not allow him to devote any time to the proportional representation problem, he couldn't help tinkering with it. He had already been working on an old problem, known popularly as the *scrutin de ballotage*, which asked for the probability that the winning candidate in an election would always be ahead during the counting. Parker Smith's problem was not the same; given an electorate divided between two parties, what proportion of the seats in a parliament could each of the parties expect to win?

Parker Smith had explained the problem in his letter to Percy like this:

> 'You can state the problem this way.
> 'Imagine a bin full of balls of two colours, white and red, in known proportions, say 53% white and 47% red. A set of boxes of uniform or varying sizes are filled with a shovel from this bin, and then the balls in each box are counted; in how many boxes will white balls be in the majority?
> 'The ordinary man who has not considered the matter will say, in the same proportion as the whole number of balls. A moment's thought however will shew that the chance is that each box will contain balls of the two colours in nearly the same proportions as the bin and therefore that white balls will be the majority in nearly all the boxes - say in ninety out of every hundred. In other words the white balls will have an enormous majority in the House of Commons and the red party will be nearly wiped out at the polls.
> 'That is the case with Unionists in Ireland, Wales and Scotland just now. In the last Parliament it was the same with the Liberals in London and the South of England.
> 'As a matter of fact the actual results are not so bad because the balls are not uniformly mixed throughout the bin; in some parts one colour in other parts the other predominates.

> 'If you selected your hundred balls by drawing them singly at random out of the bin, you would of course get nearly the same proportion as the whole number of balls, i.e. 53:47. That was more or less the case in the old pre-reform Parliament and explains why the House of Commons in the old days represented the country at least as accurately as it does now.'

After a fair bit of calculation, Percy was able to provide a formula for the probability that a particular sample contained a proportion of voters different from the overall mix of the electorate. He met Parker Smith for lunch near the Houses of Parliament.

"MacMahon, good to see you." Parker Smith shook Percy's hand firmly. He had only the merest hint of an accent, and his dour appearance hid a sharp mind and a quiet sense of humour that appealed to Percy, whose own approach to humour was of a more robust, military nature. Parker Smith took off his tiny oval spectacles and polished them with a cloth he extracted from the top pocket of his tweed suit. "I thought you weren't going to work on my proportional representation problem."

"I wasn't, and I certainly can't do anything official. But..."

"You couldn't resist the challenge of a long and complex calculation," said Parker Smith, completing Percy's sentence.

"Why do I think you were relying on that all along ?" Percy smiled at his tormentor. "You're a sly old dog."

"I'm an experienced politician, and the son of a mathematician. I used to be able to do a fair bit of calculation myself. So I understand you, and I understand how to get what I want. Don't be offended. You are the only man who could do this calculation."

"No offence taken. Let's order some food, and then I'll tell you what I have discovered."

The lunch was pleasant, and Parker Smith was very content with the results of Percy's work. At the Royal Commission on Systems of Election later in the year, he was able to report, "I have been going into the mathematics of it, if you are willing to take it from me, and I have had the help in working this of my friend Major MacMahon, who is one of the leading mathematicians of the day, and he gives me this as the formula: that if the electors are in the ratio of A to B, then the members will be at least in the ratio A^3 to B^3. The implications are clear, I believe."

Percy's prowess as a calculator, and his good nature, were put to use by Hardy a few years later. Grace came into their sitting room with the evening post. "There's a letter here for you from Trinity College, Cambridge, and I don't recognise the writing."

Percy took the envelope from her and slit it open carefully. "It's from Hardy," he said.

"That odious man? What does he want?"

"He would like me to go to Trinity to meet his protégé, Ramanujan. The chap he brought over from Madras."

"The Hindoo Calculator? I've read about him in a newspaper, I think."

"Apparently, he's a very interesting fellow. An autodidact, I gather. But he has a natural gift for numbers. Hardy thinks he might have some interesting results in partition theory."

"When does he want you go? Not tomorrow, please. You know Julian and Euphemia are coming for dinner."

"I had not forgotten that. He doesn't specify a date. 'At my convenience', he says."

A few days later, while Grace was entertaining her sisters, Percy took the train to Cambridge. He walked from the station to Trinity College, savouring the atmosphere. He observed the students hurrying from place to place, clutching papers and notebooks, some laughing, some engaged in earnest

conversations, and imagined a different life for himself. He quickly realised the pointlessness of that line of thought. He was who he was, and and there was really nothing to suggest that a degree from Oxford or Cambridge would have given him a better life, or more recognition. Almost as if it were trying to make him feel more positive, the sun broke through the clouds and lit up King's College chapel as he passed, the great stained glass windows glinting and flashing a kaleidoscope of colour. He turned into Trinity just as the great clock struck the hour, first in the low notes and then again in the higher register.

Hardy greeted him with enthusiasm at the door to his rooms, and bade him come straight in. "This is Ramanujan," he said, indicating the dark, round faced man sitting uncomfortably on an overstuffed armchair by the window. Ramanujan stood up and offered his hand. Percy towered over both Hardy and the Indian genius. "*Kaalai vanakkam*," said Percy, shaking the proffered hand firmly, "*nalamaa* ?"

"I say, I didn't know you spoke Tamil," said Hardy, before Ramanujan could reply.

"My first posting was Madras," explained Percy.

"I am very well, thank you," replied Ramanujan in English, "but I feel the cold. Do you know Madras well?"

Hardy busied himself making tea while Percy and Ramanujan reminisced about life in the heat of Madras.

Eventually, Hardy interrupted the conversation. "This is all very interesting, but let me explain what Ramanujan and I are trying to do in partition theory." Percy detected that Hardy appeared a little put out by the connection he had made so quickly with Ramanujan.

Hardy outlined the the work they were doing in trying to develop an asymptotic formula for p(n), the number of unrestricted partitions of an integer n, and Percy undertook to produce some data for them to test their hypothesis,

by calculating directly the values of p(n) up to n = 200. "It may take some time," he said.

"It doesn't pay to hurry," said Ramanujan.

Outside, the great clock began to strike again. "I must be going," said Percy, "It has been a pleasure to meet you. *Poittu varén*."

He began the calculations on the train home.

When he had finished the work a few weeks later, he wrote a note to Ramanujan. He was surprised to find the the shy Indian at his door the following day. "My dear fellow, you have caught me unawares. I wasn't expecting a personal visit. Come in, come in. Would you like some tea ?"

Ramanujan explained that he had some Indian friends who lived at the boarding house where he had stayed after his arrival in England, and would be visiting them later, but he couldn't wait to see the final list of values of p(n).

"Here it is," said Percy, handing it over. "I've arranged them in groups of five, and there are some interesting patterns you may notice."

When Grace returned home in the late afternoon from a shopping expedition with one of her sisters, she found the two men sitting side by side at Percy's desk. The contrast between the tall older man and the young, dark Indian struck her as being about as far apart morphologically as two men could be.

"Have you had tea ? Have you eaten ?", she asked, fully aware than once Percy had wrapped himself in mathematics, he was apt to forget such matters.

"Some tea would be most welcome, Mrs. MacMahon," said Ramanujan, but he refused food. Later, Percy explained to Grace that Ramanujan was a strict vegetarian, and preferred to prepare all his own food.

The two mathematicians paused from their work to drink the tea, and Ramanujan explained, mostly for Grace's benefit, how Hardy had been the only mathematician to have taken his work seriously, and had arranged for him

to come to England, but that he felt a little intimidated by all the people Hardy had introduced to him.

Percy had some advice. "You should join a few societies. That's what I did when I started out in this game. Best advice old Greenhill ever gave me. 'Join up,' he said, 'and make your presence felt.'"

"But how do I do that?" asked Ramanujan, "Hardy has not suggested it."

"No, well, he's not really a sociable person. He sees only the intellect, and doesn't appreciate other human qualities. I'll put you up for the Cambridge Philosophical Society, and have a word with the secretary at the Royal Society. We can't have you closeted up with Hardy all the time."

Then they fell back into mathematics, and Percy told Ramanujan about his great project for a definitive book on the subject of combinatory analysis.

MATHEMATICAL INTERLUDE - COMBINATORY ANALYSIS

After his two year term as president of the London Mathematical Society in 1896, Percy had given his valedictory address to a small audience. He had outlined a programme of development, that would create a new discipline of combinatory analysis from the fields of permutations and combinations, partition theory and symmetric functions, currently classified in the different mathematical disciplines of combinatory analysis, number theory and equations. He had hoped that his fellow mathematicians would leap at the idea, and that there would be a surge of interest in the subject, with himself as the master. But after the polite applause and the congratulatory remarks at the traditional drinks reception following the talk, nothing happened. Everyone went back to their existing lines of enquiry, and left Percy to develop his new field alone.

It was Grace, several years later, who suggested a book. "Bring it all together in one place, my dear," she said, one evening a few years before their wedding. Percy had been examining a new book by a German mathematician called Netto.

"Not a single mention of any of my papers. How can he write a book on combinatory analysis and not mention anything I have done?" Percy had periodic episodes of despondency and anger, almost always directed at his mathematical colleagues. Grace was sure it was something to do with his old head injury, which sometimes throbbed very badly and caused him to retire to a darkened room for several hours.

"Then you must do it yourself," she said, "If you organise your papers into a book, then it will be yours forever. Even if it's not appreciated now, there will come a time when mathematicians will recognise the contribution you have made."

"I may be dead by then," said Percy, sounding particularly morose.

"But if you don't do it, no-one will ever know. The papers will be buried in those journals in dusty old libraries where no-one can find them."

Percy was impressed and inspired by Grace's perspicacity. He thought of Sylvester, who had never written a book, and of Baker, working away in the library at St. John's College, trying to assemble the great man's papers into a volume of collected works. The result would not show the coherence and logic of Sylvester's work. Convenient for scholars, perhaps, but not a true reflection of Sylvester's purpose. Somehow, Percy could not see anyone labouring over his papers as Baker was labouring over Sylvester's, and even if they did, would they see the grand design behind them?

"You're right, Grace, you're absolutely right. Thank you, my dear," said Percy, feeling invigorated again.

Nearly two decades after he first set out the scheme in his valedictory address to the LMS, the first volume of *Combinatory Analysis* was published by the University Press at Cambridge. Copies were sent out for review, although Percy was warned that it could take months, even years, for a review to appear in a learned journal. In fact, the first review appeared in the *Mathematical Gazette* just a few weeks later. Grace couldn't help reading it out to Percy at breakfast. It had been written by a friend of Percy's from St. John's College, George Mathews, who was lecturing at Bangor in North Wales.

"I hope George hasn't overdone it." said Grace, "Listen to his first sentence, 'Major MacMahon is a past-master in every kind of symmetrical algebra and this work will be welcomed by all who enjoy tactic permutations, the theory of forms, and so on. It is full of originality and elegance in the best sense of the term.' High praise indeed. I am married to an elegant past-master. Splendid." Percy made a very bad job of trying to look modest.

A second, anonymous review appeared at the end of the year in *Nature*, and a third reviewer in *Science Progress in the twentieth century* hid behind the

nom-de-plume of ‘C’. Percy wrote to the editor, Ronald Ross, with an oblique request to identify the effusive ‘C’, but Ross was silent on the matter. The comment that particularly pleased Percy was in the penultimate paragraph of the six page article: ‘There is one regret that may perhaps be expressed, I hope, without ungraciousness; it is that the work has been done in the author’s study and not in the centre of a living school of mathematics. It is, I believe, a loss to England and to mathematics that Major MacMahon has not directed a great school of research.’

“There you are,” said Grace, “you should have directed a school of mathematical research.”

“Indeed, but as the mysterious ‘C’ goes on to say, the teaching of mathematics in England is not well organised. Had I got the Savilian chair a decade ago, then it might have been possible. But as an outsider...”

“You’re not an outsider. Look at the honours and degrees you’ve been awarded. They accept you as one of their own, surely.”

“I wish that were true. But I came in late, and not through the usual route. I’m not a Wrangler. They tolerate me, but more out of politeness I think.”

“Oh, Percy, for an elegant past-master you do talk the most arrant nonsense sometimes.”

The review in the *Comptes Rendus*, by Cahen, seemed to Percy to be both depressing and hopeful at the same time. On the one hand, Cahen asserted that, ‘one will not be able to find a better qualified guide on these questions than Major MacMahon.’

“That’s good,” said Grace, “he recognises you as the master.”

“Yes, but then look at the next remark: the subject is not fashionable and many people will resent the effort expended on pointless problems.”

“But then he goes on to say, ‘why are they pointless ? Is it because they speak of games of chess and cards. These are nothing but representations. If

one speaks of arrangements of molecules, the theory immediately takes on a more serious character although it is basically the same. Even if there are no applications now, there will be in the future.'" Grace read the quote in the French in which it was written.

"Your French is faultless." said Percy.

"Don't change the subject. It means you are ahead of your time. You just have to wait for everyone else to catch up with you."

The second volume was published a year later. The best review was in the *Journal of the Royal Society of Arts*, a small irony that Grace found rather amusing, and it compared Percy to Fermat, Pascal, Euler and even Sylvester. When Percy had explained who the first three of these were, Grace was even more impressed, and insisted on another party to celebrate.

It was at another of Grace's entertainments, at which she reprised her role as the fairy queen from the 1880 pantomime of *Puss in Boots* to hoots of laughter from everyone, including the normally sour Hardy, that John Steggall approached Percy.

"Admire your two books, MacMahon. I've got a suggestion for you, though," said Steggall, sipping at his brandy.

"Thank you. A suggestion for what ?"

"Another book. An introductory volume, to precede your *magnum opus*, at it were."

"I'm not sure I follow your drift," said Percy, taking a long draw on his cigar.

"Well, a number of people I've spoken to have told me that they find it quite hard to follow your arguments, not being entirely familiar with symmetric functions."

"Yes, I've had a number of similar comments myself. The idea of general distribution seems to cause some trouble, too."

"Quite, quite. So how do you feel about such a project ? I've got some extensive notes of the issues that have been raised, and some ideas about what you should write."

So it was that in 1920, the seventy-one pages of *An introduction to Combinatory Analysis* were published. Percy wrote, 'some of my mathematical critics have found that the presentation of the general problem through the medium of the algebra of symmetric functions is difficult or troublesome reading. From a general point of view it seems to me that there is advantage on the one hand in explaining a complicated if not difficult matter to an untrained mind, and on the other in propounding a simple theory for the benefit of those who are highly trained. In this way certain vantage points may be reached which are not commonly attainable by the usual plan of addressing students in a style which is in proportion to their attainments. The advantage which has been spoken of accrues both to the writer and to the reader. The writer for example is likely to be led to points of view of whose existence he was previously unaware or aware of only subconsciously. In attempting what is here proposed it is inevitable that much must be written that will appear to the reader to be self-evident and unworthy of statement. The intention is by a quick succession of such statements to arrive at facts which, by a quicker progression, would be difficult or troublesome to grasp. It is in analogy with a succession of likenesses of a person taken at small intervals of time such that little or no difference can be detected between any two successive pictures but between pictures taken at considerable intervals there is but a mere resemblance.'

Percy had Grace to thank for this last analogy. During his time as a teacher at the Royal Military Academy and the Artillery College, he had soon realised that the cadets, on the whole, needed step by step help to solve problems. Rarely could they see the whole path from problem to solution. He hadn't expected to encounter the same problem with his peers.

The book was a surprising success, and a review in *Nature* in 1921 helped to boost the sales. Percy was particularly amused by the reviewer's comment that his theories would help to elucidate the formation of muddy puddles. "Only a chemist would see that as an application of combinatory analysis," he remarked to Larmor at a Royal Society dinner.

"She may well be correct. We can never know what will be useful in the future. Our understanding of the world, the cosmos, everything, in fact, is very incomplete. There are those who were certain that physics had discovered all the major phenomena, and then Einstein came along..." He left the sentence hanging.

Percy, feeling positive and confident, turned his attention to the other book he had been working on.

CHAPTER TWENTY-ONE – Cambridge again

Grace was very startled. Percy had returned early from a London Mathematical Society meeting. That was unusual enough, but he had gone straight to the drinks cupboard, poured himself a large brandy and was now sitting in silence, staring at the carpet. Grace settled herself silently into the armchair opposite and waited until Percy had consumed half the brandy.

"Do you want to tell me what the problem is ?" she asked.

"Hardy," he replied. "He gets the Savilian professorship, a post I should have had, and now he is arguing with me at Council meetings."

"Arguing about what ?"

"Politics. Just a resolution about participating in the formation of an international union. He's so anti-German. But it wasn't the German mathematicians who started the war. All I wanted to do was leave the door open, for the future. But no, Hardy has to have his own way. Well, so be it. I'll resign. If the Council want Hardy, Hardy they shall have. But not Major MacMahon." He finished the brandy in one gulp, and got up to refill his glass.

"Don't do anything you might regret, dear."

"I shan't regret it. I shall be retiring from the Board of Trade this year. If I give up my Council duties, and probably the BA as well, I shall have more time to finish the pastimes book, and work with Dash. Perhaps we'll move out of London."

"That sounds rather melodramatic. Where would we go ? Sleep on it. You'll feel better in the morning."

But the feeling of no longer being part of the 'club' didn't go away. Retirement from the Board of Trade was a mixed blessing. Not having to deal with the day to day minutiae was welcome, as was no longer having regular

contact with the arrogant, slow witted politicians. But Percy missed being important; he hadn't realised how much of a buzz he got from having his opinion sought, how good it was to see 'we must have Major MacMahon' written on a memo.

He threw himself with great enthusiasm into working on repeating patterns, encouraged by Dash and his new wife, Doreen. The collaboration required weekly trips to Southsea, where Dash had a parish. Grace was pleased to see Percy working, although she suspected that deep down all was not well. She often caught him staring into nothing, his pen poised over the paper, a half finished drawing or calculation awaiting his attention.

The book, *New Mathematical Pastimes*, was only a partial success. The publishers could not print it in colour, despite many hours of negotiation and pleading. The success of his three previous books carried no weight with the accountants at the Press, whose sole object was to minimise costs and maximise profits. Although he could appreciate this standpoint intellectually, aesthetically and emotionally it was distressing. To Percy's eye, the finished appearance of the book was flat, and conveyed nothing of the visual excitement of the coloured patterns that he and Dash had created. Sales were brisk for a few weeks and then slowed to a trickle. A second printing was not justified, the publisher wrote.

"Where are you going tonight ?" asked Grace.

"Royal Society of Arts. I'm presenting my paper on repeating patterns for decoration. Now where is my box of lantern slides ?"

The audience of mainly artists and art historians listened attentively as Percy outlined in as nontechnical way as possible the calculus of patterns he had been developing with Dash. The applause was polite, and the chairman of the session fulsome in his praise, but from the discussion it was clear to Percy that it was unlikely to have much of an impact on the daily work of the art world.

"So what did they say ?" asked Grace at breakfast the following morning. "You are usually quite elated after a talk, but last night you were very quiet."

"Well, it was all very civilised, as you'd expect, but it didn't inspire them. No-one expressed any desire to pursue my ideas. Martin Conway - Sir Martin - didn't really understand what I meant by a repeating pattern, and Sir Francis Piggott said that designs that had evolved over time were more agreeable than the ones I had assembled. I ask you, how can he tell the difference ?"

"Calm down, my dear. Drink your coffee. I'm sure they meant well."

Percy paused for a moment, and stared at the plain, unadorned ceiling of the morning room. "And that Dr. Hankin..." he began again, "with his, 'Major MacMahon's patterns have no aesthetic value', and lines 'not coming to a dead end.' What was he on about?"

"Well, they are artists. You can't expect them to appreciate a mathematical approach to their subject. If art could be calculated, well, they'd have nothing to do, would they? They're bound to be a little suspicious if they think you are going to replace their gifts with equations."

"But I was trying to show them that there are more patterns possible than they can imagine. I was trying to awaken them to a world of infinite possibilities, to expand what they can do."

"Changing the world is a big task, Percy. You'll have to be patient."

"I'm 68 years old. I don't have much time left."

Grace could never tell whether Percy was being humorous when he made remarks like this. She said, "Don't talk like that, dear."

A few weeks later, a letter from Henry Baker caused another depressing conversation. "You seem down, dear," observed Grace during afternoon tea.

Percy gave a wry smile, but Grace wasn't able to see it under his moustache. "What's happened? Tell me," she said.

"I've lost heart on the patterns. I had letter from Baker this morning. Not a real letter, just my letter to him with a note scribbled on it. In pencil, mind. Pencil."

"What did the note say that was so upsetting ? Henry has always been supportive, and last time he was here he seemed very interested in your patterns."

"Perhaps. But I wrote to tell him about extending my researches to three dimensions."

"The pyramid you discovered ? The one that old Mr. Hubert is making up for you ?"

"Humbert, not Hubert. Yes. My spacefilling pyramid, the one I was going to use to create three dimensional versions of my tiles."

"So what did Henry say ?"

"He scribbled, in pencil, 'this is Schönfliess' cristallsysteme, page whatever'."

Grace raised her eyebrows. Percy looked at her, expecting her to appreciate the import of this remark, but realised quickly that he would have to explain. "So it means that it's all been done before. Nothing new to discover. I went to the British Library. Looked up the reference. Spot on. Everything already known." He slumped back in the armchair, and Grace had the feeling that her husband had somehow shrunk.

The pyramids were delivered a few days later, but Percy didn't even take them out of the box. He paid off Mr. Humbert, and quietly packed away his puzzle pieces, the coloured triangles and squares which had become so familiar to Grace, spread out over his desk, forming and reforming into a kaleidoscope of bright shapes.

There were other, more mundane tasks to see to, and very soon the episode seemed to have been forgotten. There was good news from the college, where several students had signed up to take Percy's course in combinatorial

analysis, and good news from his club, where he was declared billiards champion for the second time. Hardy wrote to him, a very polite letter, informing him that he would be awarded the De Morgan medal the following year without doubt.

"About time, too," said Percy, "this is the fifth time I've been up for it, you know." Grace could tell he was very pleased.

For Grace, the hardest part about leaving London was the feeling of no longer being central. All her life, she had been at the centre of a great social whirl, with parties two or three times a week, lunches, shopping trips and friends constantly visiting. Cambridge seemed so quiet. The house was pleasant, and not far from the town centre, but the wives of the professors, where they had them, seemed so old, although in many cases they were actually younger than she was.

Percy, on the other hand, was very excited. Grace was glad to see him in such excellent spirits. He enjoyed being able to walk into St John's College, to meet the academics on a daily basis, lunch and dine with them and talk mathematics. The planning for his course on processes in combinatory analysis took up many of his afternoons, when he would take a large pad of paper and several pencils across the road and sit by the river.

"You are like a young boy again," observed Grace one lunch time as Percy prepared for an afternoon's lecture writing, "although the course won't start for another year, will it ?"

"I feel rejuvenated, indeed. And as any military man will tell you, you cannot plan too much or too far ahead."

"Well, I am pleased you're so happy. You've got back your old bounce." She smiled at him wickedly.

"Yes, not bad for a pensioner, even if I say so myself."

So life was pleasant, and Grace managed to create something of a social life for herself, although her Cambridge parties were much more low key than

the ones she had hosted at the London flat. Percy managed to attract a regular set of callers, and even brought home the odd student for some private tutition, including a strangely garbed foreign chap one particular afternoon. He had quizzed Percy mercilessly about his military career and his early life, but had disappeared suddenly after a few days, never to reappear.

The most exciting event of 1924 was the trip to Toronto.

The International Congress of Mathematics was scheduled for August of that year, and Percy volunteered to go as a representative of the BAAS. He also managed to get the Royal Society of Arts, the University of Cambridge and the Royal Society to sponsor him.

"A representative of four organisations, we'll qualify for a better class of accommodation," he announced to Grace.

"We?" she said, raising her eyebrows. "Am I to come too?"

"Of course. I'll be seventy this year. It's probably the last time I'll be able to go on a trip like this, and with most of my expenses being defrayed by the great and good, we can easily afford to travel together, in style. It's common practice for wives to accompany delegates. They lay on special programmes of activity, trips to see the sights, that sort of thing, while the men listen to endless boring talks. We'll be top table. I've agreed to speak on behalf of the British National Committee of the International Mathematical Union at the closing ceremony."

"It's settled then?"

"Well, yes. I've booked our passage already. We're sailing first class from Liverpool."

"I can't argue with that. When do we leave?"

"Second week in June."

"That's rather early. Surely we could wait until mid-July."

"We could, but there's something else."

Grace looked him in the eyes, but said nothing. After a pause, Percy continued. "We're going via San Francisco."

"To see Florence?"

Percy nodded. "It's probably my last chance."

"I don't like the finality of all this 'last chance' thinking, but I would certainly like to meet your daughter again after all this time, and I suppose I do understand why you want to do this, really."

Grace enjoyed making the preparations for the voyage. The life aboard ship was very much to her taste, a chance to reprise the social life she had loved in London. Percy became more and more subdued as the vessel neared its destination. He had last seen Florence twenty years before, when she was a feisty young woman. Now she was a middle-aged woman, divorced, with a grown son.

The news of the birth of George MacMahon-Allen in 1908 had been a source of sadness for Percy.

"I'm a grandfather, Grace. Another child I can't help to bring up."

"Don't be so negative. Why are you so hard on yourself? It wasn't your fault that Aimee absconded with Florence. You did your best. It was Aimee who withheld your letters to Florence for nearly a decade. You've kept in contact. You provided her with an education, and set her up in business. Florence isn't angry with you. You've no reason to berate yourself."

Percy was forced to agree, but there was a gulf between the intellectual and the emotional responses to the situation that he couldn't bridge.

"It's the MacMahon way, it seems. My father was hardly ever at home. He was fighting in the Crimea when my sister died, and I was born, and he didn't see me until I was nearly two years old."

"And I don't suppose anyone thought that was unusual. Men lead different lives. They always have, and they always will."

Grace held his hand tightly as the ship docked and they peered over the rail, looking for Florence.

"I won't recognise her, you know," muttered Percy.

"But she'll recognise you. In fact she has, look." Grace pointed to a woman on the dockside waving a bright red scarf. Percy saw it was Florence immediately; a bit heavier, perhaps, but immaculately turned out in a fashionable coat and hat. At her side was a tall young man.

"That must be your grandson, George," said Grace, "He looks just like you did at that age. My goodness, it's uncanny. I wonder if he'll be like you. I can't wait to meet him."

Florence was clearly very excited when they finally met after all the rigmarole of disembarkation.

"Father," she said, flinging her arms around Percy's neck and burying her face in his chest, "Your hair's gone white. You look so distinguished. Oh, I'm so glad you came. And Grace, how wonderful to see you again."

Grace glanced at Percy and raised an eyebrow. Before she could speak, Florence carried on, the sentences spilling out of her.

"This is George, your grandson. He's nearly seventeen, and just about to go to college to study mathematics. He's inherited your brains, Father."

George remained silent, but shook his grandfather's hand firmly. As he did so, out of the corner of his eye, Percy thought he saw another familiar face in the crowd. But then Florence swept them outside to a waiting taxi and on to the hotel.

"I'm working as an actress now, you know, for the Goldwyn Company. They're making film about a dentist, based on a novel by a fellow called Frank Norris. I'm giving them advice about dentistry, and I've got a small part."

Florence kept up a continuous flow of chatter all the way to the hotel. Grace was evidently very impressed with this elegant and garrulous woman. As soon as she and Percy were alone in the hotel suite, which comprised two

enormous rooms and a spectacular bathroom, all decorated in the very latest Art Deco style, Grace said, "Well, she's still a very lovely person, very friendly, and so interesting. A film star, no less. What happened to the dentistry practice? George is very quiet. Perhaps you could talk to him; I assume he's joining us for dinner."

Percy nodded, still troubled by the face he thought he had spotted in the crowd on the pier.

George did not, after all, eat with them at the restaurant.

"He's busy studying for an examination," explained Florence, "To get into college. You can talk to him about it tomorrow, dear Father, if you want. I do believe he has read some of your papers."

"What happened to the dentistry practice, Florence?" asked Grace.

"Ah," said Florence. "Long story. After the divorce, we tried to work the practice together, but, well, it was tough. Then Ed split up from his floozy, and he started getting very morose. Wantd us to try again, but I wasn't going to have any of it. I told him, there was no way that I would have him back. He started drinking, and the patients began to complain, and go elsewhere. By the time we agreed to sell the practice, it was almost worthless. There wasn't enough money to set me up again, so I had to think of something else. Actually, I'm working three days a week at another practice, doing the film consultancy and working a little as an actress. I'm saving to set myself up again, in a year or two's time."

"You should have said," interrupted Percy. "I could let you have some capital."

"I know you could. But I don't want you to. I'm grateful you financed my college education, and set me up to start with, but I'm a grown woman now. I have to do it myself. I have to show George that self-reliance is best. I can't come back to Daddy every time I get into trouble. You carved out a career for

yourself in the face of adversity, and I want to do the same. Just because I'm a woman, doesn't mean I can't make my own way."

Percy nodded, and said, very quietly, "I understand. But I will be there for you, always. Well, as long as I live, at any rate."

"Yes, I know, and I know you still feel guilty about my childhood. But it wasn't your fault. It wasn't Ma's fault. We all do the best we can, all the time, with the information we have to hand. Hindsight is a corrosive thing, Father."

Florence entertained Percy and Grace extremely well for a week, showing them all the sights of San Francisco and its surrounding countryside. Percy was able to talk to George about mathematics, and was favourably impressed.

"The lad has a good grasp of numbers. He was very interested in partitions, and the cube puzzle. I must send him a set of *Mayblox* when we get home. I wish I'd thought of bringing a box. I showed him my old range finder calculation, too."

A couple of times, while they were visiting some interesting location in the city, Percy thought he glimpsed that familiar face again. But as soon as he looked, it disappeared. Eventually, when he had a few minutes alone with Florence, he asked her about it.

"Florence, my dear, you are going to think your father is a foolish old man, and perhaps my eyesight isn't quite what it used to be, but I was trained to observe my surroundings carefully when I was in the Artillery, so I'm quite used to noticing things, especially unusual things…"

Florence interrupted him. "My goodness, spit it out. What is it?"

"Well, on three occasions now, once at the pier when we disembarked, once in the park where you showed us where you spent the night after the earthquake, and once at viewpoint overlooking the Bay, I thought I saw someone, a woman, who looked a lot like your mother. It's hard to say, really, because she'd be in her mid-sixties now, if she were alive."

Florence said, rather too quickly, "Sixty-five."

Percy had expected his daughter to laugh, or dismiss him as a silly old fool. Indeed, either, or both, of those reactions would have been a comfort. But she just looked him, seemingly studying his face, as if seeing him for the first time. The silence went on for an uncomfortably long time. Percy felt obliged to break it, by saying, "I'm sorry, I know it's foolish. I shouldn't have mentioned it. Forgive me. Let's talk about George, a fine chap, got a good brain…"

Florence interrupted him. "It's not foolish, Father. It's true. I'm sorry, I couldn't warn you. I told her to keep out of the way, out of sight."

Now it was Percy's turn to be silent. He looked into Florence's eyes for what seemed like hours, but was really just seconds.

"Do you mean to tell me?" he said, his voice low and quiet, "Are you saying? Aimee, your mother, is alive?"

"Yes, Father."

"But you wrote to me. That letter, with the awful stories of the disaster, the hotel was destroyed. No survivors."

"Yes. When I wrote it, it was true. But a couple of weeks later, Ma turned up at Ed's parents' place. She'd not been in the hotel, she'd been with someone, a man, I don't know who, she wouldn't say. Still won't say, actually."

"So you knew when you came to England, to the wedding. Why didn't you tell me?"

"You wanted to marry Grace. There was no point in telling you. Officially, Ma was dead. She's listed as dead in the City records. She's known as Betty José now. She reinvented herself, had a sort of rebirth, after the earthquake. She tells everyone she's Italian – which she is, almost. Everyone thought she was dead, so she decided to start again, with a clean slate, as it were. She was able to lose a lot of baggage."

"She was always good at that," said Percy, and immediately regretted it. "I'm sorry. That sounded bitter, and I'm not, not any more."

"Good. You shouldn't be. It's a waste of time. When I told Ma you were coming to visit, and bringing Grace, she just wanted to see you. To look at, really, not to meet. I told her to be careful, not to be seen, but, well, you know Ma."

"Not really. It's forty years since she left England, and me. I have no idea what she's like. But it doesn't matter. Don't tell Grace. I don't think I want to know anymore."

"Very well. Ma will be going back to San Diego tomorrow. She still plays piano in hotels, you know. And teaches music."

"Good. I'm glad she's settled. Now we'd better get back to the others. Remember, not a word to Grace."

"I promise."

CHAPTER TWENTY-TWO – Bognor Regis

I took to carrying a small emergency kit with me. It comprised a purse containing all the pre-1930 money I could find, or buy on eBay, some early twentieth century electrical plugs and, as ever, my trusty Leatherman. But despite several trips to Cambridge, the shimmer seemed to have disappeared completely. So I very nearly gave up carrying the small zippered bag wherever I went. But not quite.

It was a year later, perhaps two, with the excitement of the viva and the award ceremony a distant memory, an adventure that had happened to someone else, that I decided to revisit Percy's grave in Bognor Regis. I dug out the plan showing where the great stone cross was, and used my new satellite navigation gadget to get me to the gates of the cemetery. I walked slowly between the headstones, reading some of the more legible names quietly to myself.

The grass was damp after a short shower, and the sky was still grey and gloomy. I found the spot easily, in contrast to the first time, when I had completely failed to find it, and had been forced to phone the local council for directions. "You can't really miss it," the woman in the cemetery department had said, "It has a six foot stone cross on it."

"How do you know that?" I asked, "Have you visited it?"

"No, of course not. It's written here on my record. Major P. A. MacMahon and Grace Elizabeth, his widow, plot 3506, six foot cross on plinth."

"Well, thank you. That's very helpful."

I recalled that conversation as I stood in front of the cross for the second time. At first, I didn't notice anything amiss, but then the words, "Grace Elizabeth, his widow" rattled in my head. They weren't there. I bent down to examine the plinth and the inscription more carefully. The words, 'In loving memory of Major Percy Alexander MacMahon, Royal Artillery, F.R.S., D.Sc.,

died on Christmas Day 1929 aged 75 years' were very clear. They looked as if they had been freshly cut. I couldn't see any sign that the rest of the inscription had been erased, so I wondered if there had been some damage to the grave during the ten years since my first visit that had resulted in a new plinth being made. But who would have paid for it? And why would Grace have been missed off? I pulled out my mobile to phone the council and ask. Oddly, there was no signal. Before I could swear about the cellphone network, I was aware of a movement to my left, someone stepping off the path and coming toward the grave.

I turned my head and a little gasp escaped my lips. For there was Grace herself, just as tall and elegant as I remembered her. She was wearing a long black wool coat, and a small black pillbox shaped hat with a stiff half-veil. At first, she didn't seem to notice me, as if I was not quite visible. Quite without thinking about it, I said, "Good morning, Grace." She didn't seem to hear me, but she must have been seventy years old, and so possibly a bit deaf. I took a few steps towards her, and she stopped with a little cry. "My goodness," she said, "where did you spring from?"

I glanced behind me, and saw just a few metres a way the telltale shimmer. "I know you, don't I?" said Grace, "You're that foreign student who visited us in Cambridge in '23 or ' 24, aren't you? What are you doing here? I'm sorry, I've forgotten your name."

"I didn't mean to startle you. Yes, it was 1923 when I visited last. I've, er, been back in Portugal since then. Paul. Paul Garcia." I tried to answer all the questions at once.

"Yes. Paul. I remember now. How did you know where to come? Poor Percy only passed away two months ago."

"I heard from a colleague in the London Mathematical Society." That would fit nicely, as Percy's death had been reported to the Council in mid-January 1930. "I am very sorry. Please accept my condolences." I was

suddenly seized by an attach of *chutzpah*. "Might you have time to talk to me, do you think? When you've finished here?"

"Yes, I suppose so. I was just on my way back home. Come with me now."

So a few minutes later I found myself in the front parlour of a bungalow called 'Springfield' on Normanton Avenue, with a cup of tea, sitting in the same armchair I had occupied in 1923 Cambridge. I asked about Percy's mathematical papers. I knew that he had willed them to his nephew, but I was hopeful that Grace might still have them in her possession. I was disappointed.

"All Percy's papers are with his nephew, Dash, in Hampshire. It was Percy's wish that he should have them, as he is the only one in the family with any interest in mathematics," explained Grace, "and he took them away shortly after the funeral."

"Are you coping on your own?" I asked, remembering how my own mother had been after the unexpected death of my father. Her stock answer to that question had always been, 'I miss the sex', a remark designed to shock. She had always been cross at the holier-than-thou attitude of her septuagenarian peers; "They all pretend they were bloody virgins," she complained, "but I was there during the war, too, and I saw what they got up to."

Grace was not interested in shocking anyone. "I miss him terribly," she said, "Because old ladies become invisible to everyone except their husbands. And when he's gone, well, they might just as well not exist. I have some friends down here, and Doreen, Dash's wife, still comes to visit." I nodded, not expecting her to say anything more to me, a stranger to her mostly. She could not know that I had already known when I first met her that Christmas Day 1929 would be a horrible experience for her. She went on, "But I think it was a mercy really."

The last four years had not been especially happy, Grace told me. There had been a series of minor rebuffs, none of which, on its own, would have been

very important. The accumulation, however, along with an increasing awareness that his powers were fading, seemed to prey on Percy's mind. The De Morgan medal had been the last triumph, but Hardy had managed to spoil even that celebration, by not being there.

"He thinks my work is irrelevant," said Percy after the very low key ceremony at which the medal was presented, "And I think he believes I am irrelevant. Useful as a computer, but otherwise an historical curiosity."

Grace poured more tea, and another shower pattered against the bay window.

"And then there was Toronto," said Grace. "You know I accompanied Percy to a meeting of the International Mathematical Congress in Toronto in 1924?"

I nodded.

"What you may not know is that we went to San Francisco first."

"Actually, the Major did tell me about that. To see his daughter, he said." It seemed appropriate somehow to refer to Percy as 'the Major' with Grace.

"You know about Florence. Well, she was very important to him. He's remembered her in his will. She gets the royalties from his books. It won't make her rich, but it shows he cared.

"Anyway, he was very subdued for a long time after that trip. Something bothered him. It might have been that young chap, Fisher, I think it was. He pointed out an error in *Combinatory Analysis*. He'd meant well, of course, and had been very friendly and even effusive about Percy's work, but knowing about the error seemed to overshadow all that. Percy wrote to Fisher, if that's the right name, afterwards, and thanked him for correcting the mistake, but he was very fed up about it."

I didn't tell Grace what I knew about Aimee. Percy had sworn me to secrecy.

The lecture course in Cambridge didn't go well, either, Grace told me. The course was not well attended, and after a couple of years it was quietly dropped. Percy continued to work, and publish the odd paper, but he found it harder and harder to concentrate. A trip to London, in 1926, to give the Rouse Ball lecture, his last public appearance, was an immense effort. In 1927 he suffered from a series of chest infections, and Grace's tall, handsome soldier became a stooped, wheezing old man.

The move to Bognor Regis provided some respite from the chest problems, but he became ever more forgetful, and this distressed him terribly. Very few of the London or Cambridge mathematicians made the journey to Bognor, and those that did only came once. Dash was the only regular visitor, and his wife Doreen.

Grace told me all this without making eye contact. When she did finally look up, she said, "Do you think his work was important?"

"Oh, yes, Grace, I am sure of it. In years to come, his books will still be read by mathematicians, and his results will be of great value. I am certain. He was a great mathematician and a good man. Thank you for talking to me."

I was close to tears myself as Grace came to door and bade me farewell. I walked slowly back to the cemetery, hoping to find the wrinkle and return home. There was a light drizzle, and the grass around the graves was very green and lush. I crossed the gravel path and made my way to the stone cross, towering over me on its plinth. I looked down, and the inscription was once again complete: 'Also of Grace Elizabeth, widow of the the above who died March 20th 1935. Peace Perfect Peace.'

EPILOGUE – Woolwich again

I had thought that the meeting in the cemetery would be my last encounter with Percy and Grace. I stopped going to Cambridge, apart from shopping trips, and let my Cambridge University library card expire. The thesis sat on my bookshelf at home, rarely consulted. I still had plans at the back of my mind to investigate the connection between Percy's calculus of patterns and the conventional classification scheme, but although the papers remained on my desk throughout several office space reorganisations and extensive tidying phases, I made no progress.

I continued occasionally to check genealogy websites to see if any descendants of Dash and Doreen had surfaced, and to search for traces of Florence. But there was nothing.

Then one limp day in summer I found myself in London with time to kill. I had travelled down into the city for a statistics conference. The second day of the event finished at lunchtime. Crowds of strangers, especially statisticians, and a cold buffet, are excellent appetite suppressants, so I left just after twelve thirty. For some reason, I decided to revisit the sites of Percy's homes in Woolwich. I had been there some twelve or thirteen years earlier, when I had got into trouble for loitering outside houses in a suspicious manner. The house where Percy and Aimee had set up home was now under a nineteen sixties housing estate, but the house where Percy had first lodged after Aimee had decamped to Colorado still stood. That first time, I had been walking up and down outside the place for a few minutes when a window on the first floor had been flung open and I had been hailed.

"Oi, what d'you want ? Are you from the council ?"

"Uh, no, sorry," I replied, "Lost." And I walked quickly away.

This time, I walked past the housing estate and on down to Eglinton Road, the site of the second place Percy had lodged. Number 231 was an

unremarkable Victorian terraced house, now divided into two flats to judge from the doorbells. I took a picture of it with my new mobile phone. How I wished I had had such a gadget when I had first met Percy and Grace in Cambridge. I hadn't learnt my lesson by the time I encountered Grace in Bognor. Almost the first thing I had done after that meeting was upgrade my phone.

I walked back to the site of the first lodgings in Cyprus Villas, took another picture, and decided to return home. The sky was darkening and the temperature had dropped, making Woolwich seem even less inviting.

Once again, the wrinkle caught me unawares. The sun seemed to burst through the cloud cover, and the sky was a miraculous blue. Then I noticed the thunder of the traffic had stopped, and on my left, instead of the blocks of flats, was a row of large three storey town houses set back from the road. Nightingale Terrace, I thought. I had only ever seen the old map showing the houses, so their sheer physical size was a surprise. I stood outside number nine for a few minutes. What should I do? Knock? Take a picture and sneak off? Wait and watch to see who would come or go?

I took the photograph, being careful not to let any of the passers by see my anachronistic gadget. I waited outside for perhaps fifteen minutes, and then I was seized by a rare determination to make best use of the opportunity, the same uncharacteristic courage I had experienced when I had first met Percy in Cambridge. I knocked firmly on the large black painted door using the brass lion's head provided for the purpose. After a few moments, the door was opened by a small girl in a black dress with a white pinafore, and little white mob cap with a lacy edge. A maid, a real maid; I had never seen such a thing before. She clearly felt the same about me. She looked at me for a few seconds, at my standard business suit from Marks and Spencer and my unknotted bow tie, and then said, "Can I help you, sir?" She used the same

strange singsong voice used by women working at the cosmetics counter in a department store.

"Yes, is, er, Major MacMahon at home?"

"Major MacMahon?" she echoed, a little shrilly. I realised my error immediately.

"Captain MacMahon, I mean. Is Captain MacMahon at home?"

"No, sir, he's at the Academy."

"I see." I hesitated for a moment. "Is Mrs. MacMahon at home?"

"She is, sir. Who shall I say is calling ?"

A flash of inspiration overtook me, and I fished about in my pocket for my little card case. I handed over a card, home made by me, with 'Dr Paul Garcia' printed on it. It wasn't quite up to the usual Victorian *carte de visite* standard, but I hoped it would do. The maid looked at the card, clearly unimpressed, and asked me to wait. The door closed and I stood there, wondering if this was the maid Emily that Percy had mentioned as having brought the news of his father-in-law's death. When the door reopened, the maid said, "The mistress will see you in the morning room. Follow me, sir."

I stepped into cool, dark interior, and followed the girl along a passage towards the back of the house. The ceiling was high, and the walls were papered with a large floral design. An Afghan style runner softened our footsteps. "You must be Emily," I said, surprising myself by speaking my thoughts.

"Yes, sir," she said, pausing for a moment to look back me. "How do you know me?"

"The Captain mentioned you when I last saw him," I said, almost truthfully. She opened a door and stood to one side.

"The mistress is in here, sir."

"Thank you, Emily," I said, smiling, and stepped past her, wondering what sort of explanation I could give for my presence. Inside, a woman was

standing by the window, silhouetted against the window by the bright sunshine. The room was lined with bookshelves, and in the centre stood a huge oak desk, covered with papers and opened books. I guessed that this room served as Percy's study. Through the double doors into the next room, I could see a grand piano. That would be Aimee's, I thought. She was reputed to be an accomplished musician and singer.

"Mrs. MacMahon?" I asked.

The woman turned to face me, and my heart almost stopped. I knew what she looked like, of course, from the photograph I had received from a descendant of her mother's family, but to see Aimee Rose for real, standing in front of me, was breathtaking. Until that moment, 'breathtaking' had always been a cliché for me, but now, for the first time, I understood completely. She was about the same height as me, and with her red hair framing her face, she was even more striking than her photograph suggested. I hadn't expected her hair to be red, but given her Scandinavian ancestry I suppose I might have guessed. Looking at her firm jaw and the slight bump in her nose, decorated with a light sprinkle of freckles, I could see why Percy had fallen for her. She had the same green eyes as Grace. It was clear she was several months pregnant, too, which would make the date some time in mid-1882. June or July, I estimated, from the size of the bump. Suddenly I was aware that I had been staring in a most unseemly manner, as a result of my breath having been taken. I exhaled as Aimee broke the silence.

"Mister, er," she looked down at my sad little card, "I beg your pardon, Doctor Garcia. You know my husband?" Her accent was indefinable; not quite American, a slight Italian lilt and a bit of London.

"Yes, I will, I mean, I do, I mean I know of his work, his mathematical work." This was not a great start. I had got myself all confused by the tenses again, and of course as early as mid-1882, Percy had not actually published very much and was not yet known as a mathematician. He wasn't due to join the

L.M.S. for another eighteen months or so. Aimee detected immediately that something was not quite right. She looked at me with her head tilted a little to one side. I wondered if she could hear, or even see, my heart thumping in my chest.

"I see," she said rather icily, "are you a mathematician yourself?"

"Yes, and no. I study the history of mathematics, and I know the Captain, your husband, is also interested in such matters."

"Is he? I rarely discuss my husband's work with him." Something about her manner, the tone of her voice, the way she looked at me, I couldn't really pin it down, made me uncomfortable. Somehow, I could sense the disaster to come, although from Aimee's perspective it was still more than two years away. I tried to move the conversation forward.

"I was hoping to have a word with your husband, but I suppose he is teaching at the Academy at the moment. Perhaps I should call another time. I don't want to tire you unnecessarily."

Aimee glanced down at her swelling belly. "Don't worry about that. The sickness has passed. You are very observant for a man. Most of my husband's colleagues haven't noticed. They are very dull men, mathematics instructors. Apart from Julian, but then he is already married. Do you know Captain Jocelyn as well "

"No, I have heard of him , but I have never met him."

"Such a polite man," said Aimee, sounding, I thought, rather wistful. "Such a fine musician, with those long hands. Mathematicians are supposed to be good at music, but poor Percy cannot play anymore. His injury, you know." She stopped suddenly and looked out of the window. There was another brief silence and then she said, rather sharply, "My husband will not be back for several hours, and I am expecting my mother at any moment." I got the hint, thanked her for her time, and was shown out by Emily. At the door, I asked, "Emily, is your mistress well? She seemed a little tense."

"She is well, sir. I can't think what you mean. Good day." She closed the door very firmly.

I decided to wait in case Percy came back. I walked a little further down the terrace, and loitered. I enjoyed the horse drawn traffic, and the different smell of the nineteenth century. After a while, a woman appeared and knocked at the door of number nine. I guessed she was Aimee's mother. She was dressed exactly like one of those Victorian photographs of middle-aged women, tightly laced, with a large hat and skirts that swept the ground. The only difference was that she was in colour, rather than sepia.

When Percy did appear, a couple of hours later, he was in the company of two other men, all three of them in the uniform of artillery officers. I walked past them and said, "Good day, gentlemen." They all looked at me and nodded, and then Emily opened the door to admit them. As they entered the house, I looked back and saw Emily staring at me. I moved on quickly, disappointed at the outcome of the encounter. As I was cursing myself for being so foolish and not taking full advantage, I was suddenly assailed by the smell of diesel fumes and the noise of London traffic. Teetering on the kerb of the A205, the twenty-first century surrounded me, and the nineteenth closed itself off behind me. I couldn't see any telltale shimmer, and although I jogged back a good hundred yards, I was trapped firmly in my present.

On the way home, having walked under the Thames through the Woolwich foot tunnel and caught a local train to Stratford where I picked up a mainline connection, I reflected that I had met most of the important people in the story: Percy himself, Grace and Aimee. Only Florence was missing, unless I counted a six month bump. I looked at the picture of the house I had captured on my phone, and wondered what Aimee's icy mood had meant. Was she already plotting her escape to America, even as Florence was growing inside her? I wished I'd had the nerve to accost Percy before he had gone into the house. But he wouldn't have wanted to discuss the state of his marriage with a

total stranger; I knew he hadn't even discussed it with his close friends after the break up, and the little he had told me, as an old man, suggested he hadn't anticipated what Aimee would do.

Could it have been prevented? If I had somehow managed to tell him, would he have been able to change something and keep Aimee? I couldn't decide, as the train rattled out of Stratford station, past the old match factory, now converted to expensive flats, whether that would have been a good thing or a bad thing. I could see Percy's whole life so clearly, laid out like one of John Ogilby's seventeenth century route maps, with little stubs of side roads indicating where he might have taken a different path, and hazards and significant landmarks drawn in. If I had had the courage to talk to him, could I have saved him from any of the disappointments? Or would I have destroyed his successes?

It was clearly a foolish speculation. But I felt as though I wanted to save Percy from disappointment, as a parent wants to protect a child from upset. It reminded of the ache I felt for my grandmother, who lost a son at the battle of El Alamein in 1942, and suffered inconsolable grief until her own death in 1975. Understanding of my grandmother didn't come to me until a quarter of a century after her death, far too late for me to offer the help it was so clear she had needed. Now it was too late for me to help Percy. I had left him back in 1882, with all the heartache ahead of him.