

# The INDIA ROAD



PETER WIBAUX





# *The India Road*



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**PETER WIBAUX**

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## Prologue

*In the name of God, Amen.*

*In the year 1497, did the king, Dom Manoel, first of this name in Portugal, send out to discover four ships, which went in search of spices. The Captain-General was Vasco da Gama, and of the others, in one his brother Paulo da Gama, in the other Nicolau Coelho.*

So begins the informal diary of the expedition, the only surviving account of the journey to Calicut. It was a hot, July morning, a Saturday. Tradition held that the evening before departure should be spent in prayer, and so it was on this occasion. Captains and pilots had spent the night at the little chapel of Santa Maria of Bethlehem, ten minutes' walk from the *Cais Novo*, or New Quay, where the fleet was berthed. Apart from the higher-ranking saints, captained by the Gama brothers, there was a smaller saint, the *São Miguel*, and the inevitable supply ship, which would be sacrificed along the way. Men and victuals would be distributed across the other vessels at the time when both had disappeared in sufficient quantity.

In the end, the voyage took two full years and laid waste to half the crew. The hand of death came down evenly on officers, seamen, and soldiers; as usual, the deportees were the hardest hit. Of the four ships, only two returned, limping back to Lisbon, the few remaining

carpenters and caulkers working day and night to keep the vessels afloat. The diary of Álvaro Velho ends abruptly midway through the return journey, just shy of the Guinea coast, where the author may well have perished.

This is the story of a journey made possible by men who read the stars, played the games of politics and war better than anyone today, and dared to risk the future of an entire nation for Marco Polo's pot of gold. It is the story of the rise of a small country, with a population of just over one million people, onto the world stage. It is the reason why both the Chinese and Portuguese words for tea are *chá*, and why key in Kikuyu, a major tribal language in Kenya, is the Portuguese word *chave*. It explains why the Indian word *vindaloo* bears a striking resemblance to *vin d'alho*, the wine and garlic marinade of the Madeira Islands, and why the Portuguese for seasoning, *tempêro*, appears in Japanese as *tempura*.

Any successful journey has two parts: planning and execution. For each month Vasco da Gama spent at sea, twelve months of preparation had taken place. When the royal pilot Pero de Alenquer blew his whistle on the flagship on that hot July morning in 1497, leading the fleet into the vast waters of the North Atlantic, he knew that the great adventure had begun twenty-five years before, in the mind of the Perfect Prince, then a young man of seventeen.



## *The Perfect Prince*

On August 25, 1471, a young man looked out from the window at the North African dawn. He saw the souhks of Asilah, quiet now after the battle, faint plumes of smoke rising here and there from the pillaged wasteland. Despite the thrill of the day before, the adrenalin pump still churning, this new dawn brought with it a leaden weight. His gaze turned west in the direction of the Atlantic, toward home. Responsibility; leadership; vision. So much lay on his young shoulders. And after the events of the day before, so much more was expected.

John was a proud son, Crown Prince of Portugal, the only male heir of Afonso the African. There had been a baby brother, born in 1451, who died at the age of one, and an older sister, who had recently entered a convent in Aveiro. On that bloody August Saturday, the prince had ridden into the ancient Moorish city beside his father with an army of thirty thousand men. Over the previous week, he had watched helplessly as Moors and Christians skirmished on the beachhead, the Atlantic gale opposing the landfall of the invading

fleet. But he had learned the value of maritime artillery. Two decades later, the Portuguese took that lesson east, battering enemy positions in Mogadishu and Calicut.

Three years later, John still kept the twisted sword that he had used in those bloody hours when, with his father at his side, he had scythed and thrust a red trail from the walls of the opulent city to the final moments at the keep. The Berbers who survived had been left to the bloodlust of the soldiers. Then as now, the ravages of rape and torture spoke louder than emotions of mercy, the primeval flames of human nature erupting in the oxygen of religious fire. John watched as Afonso's reign declined, and understood that soon he would be called upon to step up to the throne. He did not share his father's obsession with the North African crusade; his vision was loftier, and it harked back to his great-uncle, Henry the Navigator.

The young prince was the great grandson of King John I, who had started Portugal's Atlantic expansion by taking the strategic port of Ceuta, opposite Gibraltar, in 1415, forty-six years to the day before the conquest of Asilah. And he was a direct descendant of John of Gaunt, whose daughter, Philippa of Lancaster, had wed the Portuguese king, cementing the oldest alliance in Europe.

By 1474, John was already known as the Perfect Prince, and the following year he was named regent. He was well aware that his father had allowed the nobility to become a parallel power to the monarch, and in particular that the House of Braganza had established itself as a serious rival to the king. The arranged marriage between the Perfect Prince and his first cousin Leonor of Braganza did little to heal the widening rift. Even the birth of their first son in May 1475 was not enough to stop the conspirators who sought to undermine John's ascent to power. He saw his marriage the way most nobles did, as a strategy to promote political alliance. But the young regent soon understood that his new spouse, although young and beautiful, was also cool and

calculating. John realized that Leonor followed her own agenda, heavily influenced by her father and brothers, to keep the monarch weak.

My weakness will be their strength, the Perfect Prince reflected, and their strength will become my undoing. I must find force in those who support me, since it is my own uncles and cousins who plot my demise.

The youngster learned quickly as he watched his father make yet more mistakes, ending with a prolonged absence in France that only served to fortify his opponents at home. “When I am crowned, they will seize their chance. I must strike first, and I must hit hard.”

And all the while he pondered the lessons learned from Prince Henry, the navigator of the oceans. The Perfect Prince knew that the future of his small kingdom was not in North Africa. It lay to the east: in the Indies, in the Celestial Empire, in Marco Polo’s Cipango, and in the riches of the spice trade. For his dream he needed scientists—astronomers to guide his ships. He needed priests and lawyers, wily men who could win a kingdom with the stroke of a pen or conquer a foreign land with a well-placed clause. And brave men: captains, sailors, prisoners. But only some would do. No nepotism, no effete nobility, no favorite sons. The hard men, the second sons, the ambitious, clever, and ruthless ones, who would fight to the ends of the earth to fulfill their king’s orders. And he needed spies.



## *The Boy from Seville*

The old center of Seville stood proud in the warm spring morning. Around him, Pero da Covilhã felt the bustle of Andalucia; the monumental cathedral, still unfinished, was surrounded by gypsies selling produce, Arab storytellers, and bearded Jews from the *Juderia*, trading silver and gold.

He walked west to the Guadalquivir, the river shimmering in the bright sunlight. From here ships navigated down to Cadiz, the old Phoenician stronghold, now the Atlantic gateway of Castile. But Pero was no Spaniard. His lord, Juan Alfonso de Guzman, first duke of Medina-Sidonia, had brought him from the Portuguese border six years before as a footman, delighted at the smarts of the eighteen-year-old from Covilhã. Here in the melting pot of Andalucia he had honed his skills, learning the lightning patter of the Sevillian, the Arabic dialects of North Africa and Iberia, and the Hebrew of the New Christians.

The city had been an education for Pero; here he had grown to be a man, learning to use the floret and the sword and to navigate the

intricacies of Spanish diplomacy. Medina-Sidonia was at odds with the supporters of Ponce de Leon, and whenever the groups met, fighting broke out. Pero's looks and wit had sought him favor with some of the duke's hot-blooded young courtesans, who found excitement and mystery in the arms of this young man and in turn helped make him wise beyond his years.

The energy that radiated from the warm Sevillian nights, the dark-haired gypsy beauties dancing to the rhythms of flamenco guitar, accompanied by the haunting songs of love, loss and betrayal, seemed to echo his own disposition to laugh at the ironies of life.

Pero neared the Medina-Sidonia palace, walked past the guard, crossed the shaded Moorish patio, and approached the mezzanine. Through the open windows he could hear the sounds of a clavichord and lute and the laughter of women. Turning through the horseshoe arch into a granite stairwell, he took the steps two at a time and then followed the long corridor. The carmine tapestry on the floor showed the Roman goddess Diana guarding a hunting party with horses and falcons. Don Guzman had recently passed away, and his younger son, Henry, greeted the twenty-four-year-old from his chair, signaling for Pero to approach. He stood, and waved away his portrait painter. Pero strolled to the window, feeling the breeze waft into the warm room.

“Don Pero, our brother John shall be traveling to Lisboa. He will present you at the court, to King Afonso the African. You are a young man with a destiny that surpasses the skirts of Seville and the skirmishes with the Marquis of Cadiz, attractive though both may be.” Henry smiled. “Your discretion and valor, together with a cold disregard for the betrayal of a fellow man, may surely find favour with the one they call the Perfect Prince.”

The young man's face flushed at the accuracy of the duke's character sketch. “Sir, I am your most loyal servant—command and I shall follow

your bidding!” he protested. “But if it is your wish that I leave your service ...”

Pero had heard of the young prince of Portugal, a rapidly rising star who did not share the medieval values of his father, Afonso. While the old king sought glory on the battlefields of North Africa, his son, John, was more preoccupied with Portugal’s Atlantic destiny and studied the lessons of his great-uncle Henry with diligence and excitement.

The duke placed a hand on the young man’s shoulder. “You misunderstand me. You are like a brother, and I would have you stay. I know of your loyalty, and I value your trust.” He paused, frowning. “However, your position here is not welcomed by all. Be it your youth and wit, my ear for your advice, or even,” he said, with a twinkle in his eye, “the ire of a disgruntled spouse, you have a wealth of friends here beyond your expectations.”

Pero knew the duke was right. His nationality would never allow him near the court of the Catholic Kings, where fear of intrigue with their Portuguese cousins precluded any higher access. His thoughts wandered to his homeland, and the tales he had heard of the Perfect Prince, who at nineteen was young enough to be molded, and yet in 1471 had been knighted by his father in the mosque at Asilah after the town had been taken and the temple converted into a Christian church. The young prince’s ambitions matched his own, and there is a certain pride that comes from serving an able man, joining vision with direction and strategy with success.

For Prince John was destined to push the Atlantic adventure to a dizzying height, combining science, politics, and adventure in a heady brew that was to take his small country to the confines of Africa, India, and Brazil, all within a generation: twenty-five years that would shatter the Venetian monopoly on trade with the East, break the chokehold of Islam on the spice trade, and open the gates of the Western world to globalization.

What Pero could not know was the part he himself would play in the grand scheme of things, as a master spy for the Perfect Prince. But destiny has a way of weaving its own web, and the bright young man, his handsome head filled with grand thoughts as he walked away, looked west in anticipation.



## *The Spy*

The spy awoke early in the warm April morning and rose from the bed, gently disengaging his arm from the beautiful woman sleeping at his side. From the window he could see the famous River of Ships, the giant naval arsenal where guilds of smiths, smelters, armorers, carpenters, and a myriad of other craftsmen built the caravels that sailed forth from the Tagus.

Today he dressed in finery for his meeting with the Perfect Prince. He left silently, instructing the servant to rouse his lady friend, present her with flowers, and transport her to the gardens in Ajuda, where she had arranged to meet her sister. Though her husband was in Tangier, Pero was prudent in his assignments and discreet in his commitments. Smiling to himself as he thought of the night before, he directed his steps to a house by the city walls where a rendezvous had been arranged with King John II of Portugal.

As the spy rode east, he reflected on how far he had come since his younger days in Seville. His tall frame had filled out with the years; his

dark hair was now accompanied by a razor-thin beard. The fingers that held the reins were square and strong: country hands, with thick wrists like vines. And just as the dusty grapes become a fine claret, so too his head atop the broad shoulders was fine featured, with a determined chin and dark Arab eyes that danced with intelligence.

Following Pero's service as a squire for Afonso the African, for whom he had fought the Spanish at the battle of Toro, the young Prince John had become king, evermore tasking the young squire in consolidating his power against a series of disgruntled nobles. After the new king stabbed his brother-in-law to death and poisoned the Bishop of Évora, he sent Pero to stage the execution of a third conspirator who had escaped to Spain. Pero held a public execution of the man's effigy in Guarda, which so frightened the traitor that he killed himself shortly thereafter. The Perfect Prince, for whom ruthlessness was a virtue and guile a trump, delighted at this ingenious ruse. Since that day, Pero had engaged in the most delicate missions for his king, collecting information from well-placed sources, for espionage has always been the key to preparation. The spy had all the required qualities; his services had foiled conspiracies within and fostered conspiracies without.

And now, in April 1485, John was again summoning Pero to service. He walked around the old city gate at Alfofa and along a path bordered by orange groves. The house was low, with bright, whitewashed walls, blue pilasters at the corner pillars, and a roof of terra-cotta tiles.

In the center of the darkened room stood the man whom Isabella the Catholic called simply "El Hombre." The Perfect Prince was then only thirty years old, but already his beard showed streaks of grey. He cut a fine figure, tall and well proportioned, with a long face framed in straight brown hair. His face was ruddy, contrasting with the otherwise pale skin, and his overlong nose was slightly crooked. But it was his eyes that held men in fear, for they showed hairline veins of blood; and when the king became choleric, the whites would fleck carmine.

John smiled and greeted Pero warmly. "Good squire, how glad I am to be in your company!" He extended his hand, which the spy kissed, bending perfunctorily, for the king was far more of substance than ceremony. "You know my physicians, Rodrigo and Moses. This is D. Diogo, the noble bishop of Tangier."

Pero smiled. "Ah, Tangier, a city where God's work is in much demand. I am honored, Bishop. Such abnegation from those who serve in that Moorish province!" Pero nodded to the physicians; like other eclectic wise men who surrounded the king, they were also eminent mathematicians and cosmographers. His heart beat a little faster, for he knew that John once again had singled him out for adventure.

"We wish to improve our sea expeditions, concerting these with knowledge obtained by the Venetian route."

It was well known to the Portuguese that for almost two thousand years, since before Nearchus and Alexander, the all-important European spice trade relied on the alternating monsoon of the Indian Ocean. Roman coins found in India and the writings of Pliny were clear evidence that the trade routes between Aden and Malabar had been well established for millennia.

"We wish to learn more of the routes of the monsoon, and of the navigation between East Africa and India. How remember you the Moorish languages of your Sevillian youth?"

"It has been some years since I put my Arabic to use, but I was often told I could pass for a Moor." With his close-cropped beard and tanned complexion, his listeners agreed that, with a little cosmetic alteration, Pero could certainly look the part.

"Diogo Cão returned last March, having sailed down the southwest coast of Africa to below the mouth of the Congo, and reached 13 degrees south. We see ourselves nearing the most southerly African cape and sailing east and north from there into the Indian Ocean. Of which we know nothing. We shall need to be ready when that time comes."

The king planned to send his spy east, on a land journey fraught with danger. Pero would be disguised as an Arab; he would travel through lands governed by the Moor and the Turk. Any slip would be fatal. John's previous mission east had got no farther than Jerusalem. The Perfect Prince, ever careful in his preparations, planned an initial dry run to North Africa. It would serve to test Pero's skills for this new mission, and provide him with the cover story he needed: his role as a Berber merchant seeking commercial opportunities in the Indies.

"As a first step, we will send you to Tilimsan." The king turned to the tonsured clergyman. "Bishop?"

D. Diogo cleared his throat. "The king wishes you to go to the Maghreb, to the capital of Berberia." The bishop went on to explain that the empire of the Almohadas was divided into three states. Ifrikia to the east, including Tunisia and part of eastern Algeria, governed by the Hafsias dynasty; in the center Maghreb Al-Ausat, the kingdom of Tremezem, encompassing all western Algeria, controlled by the Abd-el-Uaditas Berbers, and Maghreb-el-Acsa in the west, corresponding to Morocco, ruled by the Merinidas people. He lingered on the geopolitics.

Never a patient man, John interrupted. "Ah, enough of political history, good Father. Our Pero was never one to lose himself in foreign lands; he will have them eating out of his hand before Saint Silvester."



## *The Astronomer*

The musty classroom near the Bairro Alto was sparsely furnished, with only a few desks and chairs. By the door was a slate board on a stand, covered with sketches and mathematical symbols. The teacher Abraham, a mathematician and astronomer of repute, had worked in Sagres with Henry the Navigator, and studied Ptolemy, the Arabs, Venetians, and Genovese. He corresponded little with his fellow academics in the Italian republics, Flanders, or Spain, but was regularly informed of their progress through the king's spies. John II was both ambitious and forward-looking, and together with his advisers had devised the strategy for an Atlantic empire. The siege of Ceuta in 1418–19 and the campaigns of Tangier and Asilah of John's father, Afonso the African, had severely drained Portugal of men and resources, depleted from fighting the Berbers in the Maghreb in the name of the holy cross.

Four men sat in front of Abraham that day in the University of Lisbon. All hand-picked, all seasoned in the African adventure. Pero

de Alenquer, known as “the Pilot,” listened as the scholar explained the intricacies of celestial cosmography, map-making, and global navigation. On a table were two charts: the first showed the world through Venetian eyes, with a large land mass of Europe, the Mediterranean sea and North Africa, and the Asia of Marco Polo.

“This map of the world provides us with the current view of world geography. Unfortunately, it has three problems.” Abraham paused for effect. “They are called west, east and south.” The men laughed; having already charted part of the West African coast, sailing barques and caravels with Eanes and Cintra, they could see the errors in the chart.

“Toscanelli believes the route to the Indies is to the west.” The astronomer smiled. “The Perfect Prince has already dismissed Columbus from court, and the Genovese adventurer now seeks the patronage of the Catholic Kings. Our Spanish friends would do well to seek a western passage, whilst we steer east.”

The teacher examined the group in front of him: a captain and three pilots, all experienced travelers, men whose seafaring feats were well known. One of the pilots, Escobar, had explored the route to Sierra Leone and was well acquainted with the West African coast of Guinea, having sailed east some three hundred fifty leagues to Elmina.

The discussion shifted to currents and winds, for these were a major key to the success of the Indian endeavor. Escobar, who had sailed with Cão, described the journey to the Congo. “Our caravels made plain sailing to Cape Verde, and we anchored at the old town of Praia, sheltered by the fortress, and replenished provisions. On land, I used an astrolabe to take the weight of the sun and confirmed our latitude as fifteen degrees north.”

“And what of currents and winds?” the astronomer asked.

“Favorable down the west coast of Africa. The northeast trades blow true until equatorial latitudes, and the current from the Fortunate

Islands carries us south. We sailed down past Sierra Leone, and at ten degrees, the waters divide.”

“How so?”

“The Canaries waters make a turn to the west; Cão ordered our ships to follow, hoping to avoid shallows and reefs, squaring south and east at sea.”

But the currents and the winds had pushed them farther west, and the captain had ordered the two caravels to tack to windward, making once more for the African coast. The ships had approached the coast and hugged it south and east, making a heading to São Jorge da Mina, but progress was slow.

“And after Elmina?” Captain Dias asked.

Escobar was silent, his face clouded with memories. Consulting his log, he picked his words carefully. “After the Gold Mine of St. George, navigation is increasingly difficult. We headed south by southeast, keeping the coast in sight, and for perhaps a hundred and fifty leagues were becalmed.”

In this area of the Gulf of Guinea lie the doldrums, which will challenge any progress. No wind blows, or else it is both weak and inconsistent.

“Astrolabe readings placed us around the equator, sometimes a few degrees north, others a few degrees south.”

Abraham looked at his charts. His collection was vast, though inaccurate. His sources were some of the greatest Jewish cartographers from the Balearics and Catalonia—men like Jacome of Maiorca, Jehuda ibn Verga, and Abraham Zacuto, and more recently the celebrated cosmographer Martin of Bohemia. Like him, most were Sephardi Jews.

“Let me take you back in your journey, pilot. When Cão headed west after Santiago, how far did he go?”

“After Cape Verde? Hard to tell exactly, maybe a hundred leagues,

perhaps a hundred and twenty.” The pilot glanced at Alenquer, embarrassed.

His colleague gave Abraham a practical account. Alenquer explained that when out of line of sight, the pilot had little chance to accurately measure progress along the parallel, depending on rudimentary time estimates with the hourglass, Genovese needle, and dead reckoning. Abraham the astronomer understood that the Portuguese sailors were helpless to determine longitude at sea. He made a mental calculation. “Hmm, maybe to the twenty-fifth meridian, then. And how was the wind? And the current?”

“A lot better than in the Gulf! A good southeast wind, and a favorable drift, headed west.”

“But the wrong way!” said Captain Dias scornfully.

Abraham turned his blue eyes on him. “Maybe, captain, maybe.”



## *The Mathematical Junta*

The University of Lisbon stood on a hill overlooking St. George's castle to the east and the majestic estuary of the Tagus to the south. Abraham gazed at the shimmering blue water and marveled at the wide inland expanse, almost three leagues across, and the narrow connection to the Atlantic. From the west, two caravels were running the nor'wester into the *Mar da Palha*, the straw sea. The large anchorage opposite the capital of Portugal was easily the best natural harbor between the Mediterranean and the North Sea, sheltered from the Atlantic by a twenty-fathom trench. Easy to navigate, easy to defend.

The astronomer was waiting for the other members of the Mathematical Junta. King John had brought them together to oversee the science of the sea voyages and to review expeditionary plans brought to him by adventurers from Venice, Genoa, and elsewhere.

Since its creation in 1290, the university had attracted eminent mathematicians from all over Europe. On the Junta sat Jewish exiles such as Ibn Verga of Seville, Vizinho, physician to the king, and

Martin Behaim, known as the Bohemian. Together, they were a formidable group; Verga had written on astronomy and penned books on navigational science. He was an expert in the use of the astrolabe, the quadrant, and other wondrous instruments that held the key to steering by the heavens.

For the common sailor, it was close to magic; if you could read the stars to describe today, then surely they might be used to foretell tomorrow! No wonder these magicians, who juggled numbers like rabbits from a hat, were known as astrologers—for where is the difference between time and space when it comes to telling the future? But for the pilots and captains, the devices were a key element for positioning at sea, and the mathematicians were often sent to sail with the fleets; Vizinho himself had done so in Guinea in 1485 at the behest of the king.

By measuring the solar elevation, which the Portuguese sailors commonly termed weighing the sun, it was possible to determine the ship's latitude. This operation required great accuracy, both in timing, given the sun should be at its highest point in the sky, and in measurement, given the ship's roll. As a ship moved closer to the equator, the measurement became increasingly inaccurate, with the sun beating down directly overhead.

The mathematicians had worked out a set of tables to be used according to the day and the year, and these were fiercely guarded according to the king's instructions. The Munich regiment, as it was known, calculated these declinations at sixty points to the north of the equator. The Junta had also worked on the use of the North Star, and in particular the guards, as the two brothers of the Ursa Minor were called.

A tall bearded man walked into the room, looking approvingly at the shelves filled with scholarly volumes. "Shalom, Abraham, good morning."

“My dear Vizinho, come, sit,” the teacher greeted him warmly. In the hallway, the booming voices of the Sevillian and the Bohemian could be heard. They were speaking in Latin—Behaim with the harsher tones of northern Germany, Verga in a rapid Andalucian staccato that brought a smile to the two men in the room.

The four sat at a long table, and Abraham poured each a cup of spice wine as he recounted his conversation with the pilots. “The king wishes to send his squire Dias on a voyage, with plans to sail further south than the Congo, perhaps even to the Cape of Storms.” He stood, stooping slightly, and took a few frail steps toward the map, wisps of white hair framing the almost childlike face. The astronomer traced a finger down the African coast.

“You are familiar with the hardships of Cão’s journey, the tales of woe, hunger, and suffering as the caravels battled south against currents and trade winds.” The teacher sipped the red wine pensively, then continued. “The pilot Escobar described how Cão sailed west off the Guineas to avoid the doldrums, and how they found a propitious westerly breeze. Of course, they did not know how far west they were, and feared that they might never return. So they turned around.”

He smiled sweetly, but his pink cheeks and embroidered skullcap were deceptive in their innocence. They concealed a sharp mind and a scientist’s intolerance of fools. “We know the theory of Ptolemy, that the seawater in warmer areas near the equator will expand and flow toward the poles. That theory is clearly wrong.”

He took a globe and slowly spun it. “We know about the ocean circulation in the North Atlantic, and we are certain that there is a rotation pattern. This is the reason for the preferred route to the Azores, southwest to Madeira, followed by a northerly route home.”

Vizinho nodded. “I appraised the plans of Columbus three years ago, at the command of the Perfect Prince. This is how the admiral proposes to go to the Indies, south using the trades via Madeira and the

Canaries. We do not endorse his calculations and cannot support his conclusions, but I too believe there is a gyre, driven west by the trade winds and sent back by the roaring forties.”

Abraham smiled, but this time with the fever of science in his eyes. “We may postulate an Atlantic circulation in the south, a mirror of our patterns in the north.”

A quirky Prussian accent: “Zymmetry?” The Bohemian dipped a quill in the inkwell, and drew two vertical lines on a parchment, the top one for Europe and the bottom for Africa. No one knew how long that lower line might be. To the left, he carefully added two large circles, one above the other, two wheels spinning in opposite directions. Symmetry has always been part of the beauty of mathematics, and of nature itself.

“Yes, we see it in the winds north and south of the equator, in the ocean current, the temperatures both of water and air, and most importantly in the angle of the sun,” the Sevillian Bin Verga added. His quick mind had grasped the concept immediately. “Our clever Abraham is saying we can use the bottom circle like we use the top.”

The teacher’s blue eyes shone. “Indeed, if there is a passage to the east below the African continent, we can use the circle to get there, or perhaps part of the circle only.” Abraham felt pleased to share his theory with such distinguished scholars, men to whom ideas were the fuel of life, and knowledge the engine of progress.



## *The Golden Palm*

The Pilot Alenquer, Captain Dias, and the others once again sat in the small room at the University Houses, the window open to the warm summer breeze. Prince Henry had donated the houses in 1441 to replace rented accommodations, together with instructions for teaching the seven liberal arts. Henry had underscored the arts of “aremetic,” geometry, and astrology. Now Abraham came in, talking softly to Martin Behaim. The teacher’s step was shortened by the stiffened gait of age, and he rested his arm on the younger man, as much for company as for balance.

“My friends,” Abraham said, “we are nearing the end of our time together, and soon you will set sail. We have given you our knowledge so you can build our world. After today, there will be only one more lesson. Martin?”

The young astronomer stood and spoke in his strange, high-pitched voice. “My name is Behaim, also known as Martin of Bohemia. We today are discussing tides.” The grown men glanced at each other

with hidden smiles, like schoolboys remarking on the funny Germanic accent.

“Ze tide is principally based on the moon and sun, and as you know a good spring flood can lead you into a bay with ease, just as an ebb will lead you far out to sea. Coastal navigation is much more than knowing the wind. And how wital is ze tide for naval engagement?” he looked at each of them in turn, his furrowed eyebrows aiming comically at the roof. Alenquer met the gaze of the penetrating blue eyes, and waited.

“Ze tide flux and reflux has been known for a thousand years. The Phoenicians knew about it in Cadiz—they had worked out the conjunction of the moon and the sun. Of course to the east there was no need, because there is so little tide. Also like my native Baltic Sea.” He smiled, looking insanelly at Abraham, and roared with laughter. “No wonder those Romans and Greeks thought they were reaching a sea of monsters and devils, but of course zis were ze Portuguese!”

The men fell prey to his charismatic delivery; clearly this was a man who carried his science lightly, so comfortable was he with its depth.

Martin went on to describe the timing of the moon’s thirty-day orbit and how the relationship with the earth’s twenty-four-hour rotation delayed the tide by forty-eight minutes each day. He spoke of tidal prediction and explained how the wheel of hours—divided into quadrants, each with six hours and eight directions—could be used to tell the tide.

“At midday, ze sun is to ze south, at three PM it is at southwest, at one-thirty in the morning it is at north by northeast. As you can see on my wheel!” He whipped out an hour rose from under his robes, a manic grin on his face.

Abraham sat back, enjoying the show.

“But you cannot see it in ze sky,” he shouted, “because it is ze deep, dark night. So you vill use ze guards, but you all know that, because you are great sailormen, ja?” he pronounced the word *gu-ar*ds and the

men laughed heartily and nodded. The Portuguese sailors had long known that the two brighter stars on the far side of the Little Bear were ideal for fixing the Arctic pole.

Alenquer knew the constellation as the *Buzina*, or horn, with the mouthpiece carrying the North Star, while the two guards stood at the sound hole. The guards were used for telling the time at night, though of course that applied only if you sailed close to the meridian. Going west or (as he hoped) east was an altogether different tale, unless you knew how far across you were.

Behaim was now rolling forward like a mighty ship, telling them about tidal delays. "From the Barbate in Andalucia up to Galicia and the Biscay, count six hours flood and six hours ebb as follows: northwest and southeast, low tide. North and south, half-flood; northeast and southwest, high tide. East and west, half-ebb. And this you have through the strait of Ceuta down the Barbary Coast, whether the moon be full, new, or half." His words came in staccato fire. "And when the moon and the sun are in conjunction," he pronounced the word exquisitely, drawing smiles, "which you may calculate mit your naval techniques, the high tide will have ze sun at southwest and at northeast. After that, for each day you must use the rose, one *quarta*, of which there are thirty-two, for each day. So you must count ze age of ze moon, like a small child!" once again he laughed uproariously, strands of hair flying in various directions, the robe flapping against his skinny legs.

For a while he continued, explaining about the tides down the West African coast, how at the mouth of the Senegal and the other great rivers the tides were known to be contrary, with the high tide at northwest and southeast. Precious words, carefully noted by the pilots, confirming and extending their own observations. These men were responsible for accurate navigation, which assured the success of the mission and the safety of the crew. Large river estuaries were routinely entered and presented some of the greatest sailing hazards.

The geography of Africa was so poorly known that every potential passage needed to be explored. Always, it quickly became clear that the seawater freshened and they were not entering an eastern sea. However, the chance for fresh water, fruit to allay scurvy, and the taste of fresh meat held an irresistible allure.

There would have been mutiny if the captains did not put in at certain ports, particularly those where the men knew from sailors' yarns that sexual favors awaited them. The punishment for women on board was death, the unfortunate lady being cast overboard and the culprits lashed. Though by the very nature of men, girls were occasionally smuggled on board, retribution was as severe as was the captains' tolerance during shore time.

The Bohemian lowered his tone and spoke almost mystically. "So finally I tell you about the Golden Number." For his audience, as for all men of their time, gold and magic were subjects of fascination.

"Since the Greek Meton, two thousand years ago, we know that every nineteen years there are two hundred thirty-five lunations, and that *within each nineteen-year cycle, ze novilunes occur in ze same days of the month, if we number the years sequentially*. Please, examine zis!" Ever the performer, he whipped the glove off his left hand and held up his arm, inches from Dias's nose. The men had thought the glove was just another Bohemian eccentricity on a hot June day, but now they saw that Martin had numbers written all over the palm of his hand. Looking at their gaping faces, Behaim once again roared with glee. "One on ze tip, one on each knuckle—look! For ze thumb, she has only three, but ze others, zey have four each, even ze pinky. Maybe, he is not so small!" he beamed and wagged his painted little finger dangerously close to Alenquer's nostril.

"So three for ze thumb, add four times ze others, hmm..." He pretended to calculate. "So, nineteen! Now I give you ze formula: change one thousand for twelve, one hundred for five, twenty for one,

and then you count.” The men looked at him blankly. Abraham was frowning in concentration.

“So I explain. We are in 1486. So ... twelve for one thousand, twenty for four hundred, four for eighty. Zen you must add ze six. And ve get?”

Alenquer said, “Forty-two, Professor.”

“Ach, do not call me Professor, I am crazy astronomer schoolboy mit finger paint! But on ze first part, you are correct!” He gave the pilot his mad look. “So you cycle nineteen on your hand, you will need to go round twice, and will end at ze tip of your index finger. Golden Number is four! Now, look at this table.” Once again, from under the robes a prop emerged, this time a manuscript table, which he unrolled. Twelve double columns had the months of the year, and in each double column, the left side had the Golden Number, the right the day of the month.

“Let us take this June; with our Golden Number Four, the new moon, the novilune, is on the twelfth, and by counting ze age of ze small child, you may know ze rest. We are finished here, sailors!” the eccentric German beamed. “Come Abraham, let us refresh ourselves with your cinnamon wine! Pilot, I give you now my table, but you must never call me zat name again!” He gave Alenquer a look of complicity. “You see, ven you tighten the noose of formality, you choke ze imagination!”



## *The Caravel*

Captain Bartolomeu Dias was the superintendent of the royal warehouses, and had been a naval commander in the expedition to the Gold Coast in 1481, led by Diogo d'Azambuja. Like Azambuja, he had been both a corsair and commander of merchant vessels in the Mediterranean Sea, two faces of the same coin. Now he was master of the *São Cristovão*, appointed by the king in October 1486. For this, the crown granted him an annuity of six thousand reals "in consideration of services to be received."

Nine months hence, the last preparations for his great trip south were nearing completion, a fleet of three caravels with a mission of extending the discoveries of Cão to the very ends of Africa. On that journey, Cão and his officers had been playing a card game aboard, which the captain trumped with the manille of spades. Tossing the ace in the air, he laughed. "That promontory shall be christened Montenegro!" It was his last landmark, past the thirteenth southern parallel. By tradition, and by devotion, the name was unusual. Although

some places were named after events, the majority was christened after saints. South of Catumbela, the Swamp River, Cão had passed a bay on March 25 and promptly named it Angra Santa Maria. Because keeping time at sea was all important, such toponyms accurately recorded the progress of an expedition; since place names matched saints' days, this added to the reliability of the captain's log.

The last part of the astronomical preparations would take place on board the São Cristovão, docked at Belém on the western approach to Lisbon. The captain and pilot welcomed Abraham and Vizinho and assisted them with the scientific tomes and astronomical instruments. The caravel was a new type of ship, invented by the Portuguese, drawing on knowledge acquired from the Arabs, and had been little used prior to Dias's journey. The captain showed the astronomers the three masts, each bearing a huge triangular sail.

"She displaces about fifty tons and has a lateen both on the mizzen and main," Alenquer said. "And as you see, she has only one deck. This is the stern castle, from whence the vessel is governed and where all astronomical observations are made."

"Cão sailed in a barque, but these new vessels are much more maneuverable, especially sailing to windward," the captain said.

*How small these ships are*, thought Abraham. One ton was the size of a barrel, six feet tall and four feet across, nothing! What courage, to put to sea in a walnut shell like this one and brave the wild Atlantic.

It was late Sunday afternoon, with the sky above bright and clear. The date was August 12, two weeks before the expedition was due to leave, and after the tide turned at half past five the caravel sailed west on the ebb, the astronomers aboard. Provisioning and stowage below decks was almost complete: spare sails, anchors, sheets and instruments, foodstuffs—sacks of flour, barrels of biscuit and salt pork, fish, wine, oil and vinegar—for the long journey. There was a gibbous moon, but a spring tide, a good choice both for sailing and observing the stars.

“Before we set sail today, let us discuss the route,” Abraham said. They spread charts of the South Atlantic on the table. “You may recall some close questioning on my part when pilot Escobar described Cão’s journey south from Guinea.”

Alenquer interrupted. “Indeed, you asked about the western route.”

Now it was Vizinho who spoke. “We have discussed this at length in the Mathematical Junta, and performed some calculations. We believe that the journey south must be carried out as a mirror image of the journey north, as a great circle, arcing against the hands of the clock. This will allow you to head south in the mid-longitudes, perhaps two hours west.”

Dias looked at him with suspicion. “If you’re wrong, this poses a great risk: we will all perish.”

Alenquer, more adventurous, said, “When we navigate the Azores leg home, we’re sailing from the bulge of equatorial Africa, and because of the span of the nine islands, an error of five degrees in longitude still allows us to sight the archipelago. If we overshoot, the winds and currents carry us there, and if we fall short, it’s clear from the flotsam on the water. Also, there is the anomaly in the Genovese needle.” He was referring to the shift in true north known to occur in the Azores area, which did not allow the measurement of longitude, contrary to many beliefs, but did indicate the proximity of the volcanic islands. “But in the South Atlantic, where will be the islands to guide us? How will we know how far west to go?”

Abraham again spoke. “We have devised a method, but it requires a most skilled pilot, such as yourself.” Alenquer looked down, for like many great men, he was modest about his achievements and uneasy with compliments. “We have called it the sawtooth. You agree that sailing a straight course west along the South Equatorial Counter

Current, you may only use the hourglass, correct?" The sailors nodded dubiously.

"The hourglass is as fickle as a woman," Dias scoffed. "What it says is not what it means—it can be as misleading to a sailorman as the siren's song."

"Of course," said Abraham, "there are only two instruments that may be trusted on board, the compass and astrolabe."

"And the pumps," said Dias, for all vessels shipped water no matter how well caulked they might be, and particularly after a storm, all hands often manned the pumps until damage could be repaired. The astronomer felt that the captain was anxious to shift the conversation and move on from the consideration of an alternative route. After all, Cão had used a far less maneuverable vessel and made it halfway down the Angolan coast. Why should Dias risk this expedition on such whimsical notions?

Abraham looked at his colleague, and both turned to Alenquer, who seemed to be the more serious of the pair. "We believe you can significantly improve your accuracy in sailing the parallel by zigzagging a sawtooth. Do you remember Behaim's hour rose? Each quadrant has eight divisions, spanning eleven and one-quarter degrees. To know how far west you go, sail along one of these, and if you can keep a true course you will know how far you went from the latitude." The mariners looked at him quizzically.

Abraham drew some lines and angles on a paper. "Geometry is the secret. Imagine you are at the equator. If you sail southwest for seventy leagues, you will have completed a right-angled triangle of about fifty leagues south followed by fifty west. You will know how far south you are by weighing the sun. If you measure your latitude position at the end of the leg as three degrees south, you will be three degrees further west." He smiled. "The beauty of it is, as long as your course was true southwest, it doesn't matter that you do not know the distance you

traveled. You then head north, or better still, if wind permits, you make your heading one of the six bearings between north and west until you again reach the equator, completing one full tooth of the saw!”

After a pause, Alenquer nodded. “Yes, this can be done. We avoid the errors of measuring speed, since we know latitude and bearing.”

Vizinho had brought with him a precious gift, a partial translation of the *Almanach Perpetuum*, written by his teacher Zacuto in 1478. In the book were tables of the declination of the sun, together with the ephemerides—the paths of the planets and stars. The combined power of the two elements meant a huge improvement in navigational accuracy; certainly the difference between success and failure, probably the difference between life and death. The group spent part of the night and all the next day using navigational instruments to take readings of the stars and the sun, and performing calculations using the tables in the almanach.

As the astronomers disembarked, Abraham was under no illusion that their mission had been only a partial success. It seemed unlikely that Dias would follow their proposed southern route, but their contribution to improving navigational skills for the expedition might contribute to its success. “I will recommend this pilot to King John,” he said, “as a most competent and learned man.”

Vizinho nodded. “And when it is time for the eastern adventure, tell His Majesty that he will need a commander worthy of his pilot’s skills.”



## *The Cabin Boy*

Álvaro walked into the *Bairro Alto*, the high quarter, and followed the narrow streets, leaving behind him the great sweep of the Tagus, flashing blues and oranges in the sunset. Sensible folk did not willingly venture into this part of town after nightfall. The *Bairro* was full of color and life, as all such neighborhoods are, but the combination of sailors, soldiers, whores, and desperate men made for a heady mixture. The tavern was dirty and dimly lit, already crowded, and smelled of sweat, fried fish, and bad wine.

“Wine, *patrão!*” the soldier called out. Álvaro had heard that the king was sending Dias south, following on from Cão, in his push to round the end of Africa. He was in the bar to sign up, for the master of one of the vessels was drinking here tonight. He spotted him sitting in a corner, legs either side of a rough wooden stool. In front of the master was a plate of fried fish, tiny horse mackerel no longer than a pinky finger. On his right was a young woman, and both of them were eating heartily, using their hands to take the fish, eating them whole

with chunks of bread mopped in the oily plate. He saw the master take some powder from a pocket and sprinkle it on the food.

*Paradise pepper from Africa, I'll bet,* he thought to himself.

As Álvaro was making his way across, an old drunk bumped into him. The soldier was a coarse and brutal man who abused anyone who crossed his path and most who didn't. He grabbed the weaker man by the throat. "Look what you did to my wine, fool," he shouted. The old man trembled. "My apologies, sir, I was distracted. Let me buy you another cup to drink," he said in a conciliatory tone.

"I'll have two for my trouble, old man."

"I'll have nothing left!"

The grip tightened. "And you won't have a broken head!"

The man sighed and headed toward the counter. Álvaro pushed his way to where the master was sitting and greeted him, his manner now fawning. "Good master, you remember me from the journey with Cão? You are keeping well?"

Cão's fleet had taken six months to reach Mayumba Bay, a perfect harbor on the southern tip of Gabon. Cão had left the Congo, having weighed the sun at 6° 07' S and continued south, but a small party remained as an expedition of ambassadors to the Congolese king. Contrary winds and currents dogged the fleet as it sailed down the Angolan coast, the tropical forest thinning into savannah, the heavy rains gone.

"Álvaro, you old rogue! Trust you to show up just when I could do without you!" he glanced sideways and winked at the girl. "Look at him. Built like a shithouse, smells like a cesspit." The master roared with laughter. He was a heavyset man with a full beard. A gold earring hung from his right ear, and he had the dark complexion of twenty years at sea. The soldier turned and grabbed the two drinks off the old man without a word of thanks. He put his ruddy face inches away from

the trembling drunk, daring him to move away from the foul breath. “Shove off, *velho*—you got off lightly this time.”

“*Vai à merda*,” he added for extra humiliation as the old man went skulking off. Feeling better, he turned back to the table, hiding the hate in his eyes. Bending toward the master, he smiled through rotten teeth. “Red wine, to help with your fish, sir!”

“Mother of Christ, you being generous? What do you want?” The soldier’s reputation was solid: a mean, brutal man who saw only himself and had no interest whatsoever in the welfare of others. Thin-lipped, piggy-eyed, ruthless. The master had him in one line: tough and foul.

“Word is you’re shipping with Captain João Infante,” Álvaro said. “You need soldiers on board, experienced men. I’ve come to join up.” He drew himself up to his full height. “I’m in robust health and have oft spilled blood for King John. Mostly of others!” he grinned again, a lopsided grimace of black teeth. “I’ve planted corpses all over the lands of Africa.” The girl looked at him and shuddered.

If you weren’t with him, the soldier thought, I’d give you something to shudder about.

“Come to the dock next Monday at dawn. We’ll see about signing you up then.” The master’s dislike for the man was intense, but soldiers like this one were the hard cases they needed for what lay ahead. Cruel and amoral, Álvaro had no qualms about the abduction, torture, or killing of the local natives, and he discharged his terrible duties with perverse zeal. The master had seen him in the Congo and knew of his skills with sword, dagger, and crossbow.

Álvaro thanked the master, finished his drink, and tarried a while, planning the next steps. A fight had broken out: two sailors were arguing over a prostitute. As her pimp stepped in, fists flew, and soon a knife was flashing. The soldier seized a stone brick used to heat the bread and struck the pimp a roundhouse to the back of the head. The man dropped to the floor, poleaxed. The knife clattered to the ground.

The whore was long gone, and the two suitors were reconciled. They wanted to buy the soldier a jar, somewhere else, maybe eat some sardines at Antonio's on Rua da Barroca. They walked the two streets across and sat down. Felisberto, the older man, was enlisted on Dias's vessel. The younger was a caulker who worked in the *Ribeira*, the river of ships.

"I, too, am thinking of shipping, one of these coming years." He had the red face of a drunk, capillaries already hemorrhaging purple on the upper cheek. "I have five children and can't provide for them."

Álvaro knew exactly where the man's money went—straight down his gullet. A fool too, always ready to buy you a drink so he could shoot another. After three or four *bagaços*, the fiery grape dregs from wine fermentation, the drunk started lamenting once more. "My wife left me for another. I have only one son, and he is frail. My daughters are worthless—would I were rid of them!"

"If you have a pretty one, I'll take her off your hands," the soldier joked with a lewd grin.

This wretch clearly had no self-respect. "I would surely sell you my eldest—young and fresh, only fourteen."

Álvaro had kept some gold from his last voyage with Cão, smuggling it back from Elmina. The talk turned serious and a price was settled, conditional on seeing the girl herself.

Late the next morning Álvaro walked down to the *Ribeira*, where the craftsmen were busy in the shipyard. As the noon bell rang, a young girl appeared to bring her father his lunch. The caulker had arranged to meet on a corner at the rear of the yard, away from prying eyes. The soldier eyed the youngster approvingly; she was slim and pale with small, high breasts and a serious face framed by close-cropped hair. A small cloth of gold pieces was handed over, the father turned on his heels, and the uncomprehending girl was seized by the arm in an iron grip. Álvaro walked her away from the shipyard. She resisted once and

started crying, and the soldier backhanded her twice across the face. Her eyes were scared and red from weeping as the pair made their way through the warren of streets to his rooms.



## *The Second Caravel*

Álvares was leaning on the starboard gunwale of the *São Pantaleão*, waiting for the turn of the tide. Docked in front of his caravel was the *São Cristovão*, the ship of the Captain-General, and immediately behind, the store ship. A soldier, veteran of many expeditions, he knew that the store vessel, presently under the command of Pedro Dias, Bartolomeu's brother, would not return. Too many men died, the stores were consumed, and invariably the fleet shrank.

All the crew had been at dawn mass in Belém, said in the small chapel. The atmosphere was circumspect, and now women and children were gathering at the quayside, many in tears. They, too, knew the odds of not seeing their men again.

In the poop castle of the *São Cristovão*, Captain Dias spoke to his pilot, Alenquer. "Pilot, I have here a chart made by Ortiz, Master Moses, and the king's physician Rodrigo." Alenquer put down his dividers and set aside the compass and astrolabe he had been preparing on the table. Together, they unrolled the map. The west coast of Africa

was accurately drawn, known from Cão's days as far as Cape Cross in the middle of Namibia. Farther south the chart became more artistic, and East Africa was an educated guess. King John had great hopes that the spy, Pero da Covilhã, would provide better intelligence on that part of the route upon his return from the Indies. The lines on the map were crisscrossed for navigation, since on a plane projection a rectangular grid does not follow latitudes and longitudes because of the curvature of the earth.

"A good chart," Alenquer observed. "That, together with the almanach of the Jew Zacuto, will guide us to safe harbor."

Stowed below decks were three *padrões*, ten handspans in length, taller than a man: good ballast, and ready to mark new discoveries. Cão had erected one at the mouth of the Congo. The limestone pillar, twice the height of a man and erected to mark the landing, read:

*In the year 6681 of the World, and that of 1482 since the birth of our Lord Jesus Christ, the most serene, most excellent and potent prince, King John II of Portugal did order this land to be discovered and these padrões to be set up by Dom Cão, an esquire of his household.*

Diogo Cão had continued south and placed another *padrão* in southern Angola, at the Cape of St. Mary. But these new pillars aboard the fleet of Bartolomeu Dias were made of marble from Estremoz, unlike the limestone ones carried by Cão.

Álvaro stood watch as the *degredados* were brought on to his ship, shackled together. It fell to him and to the other soldiers aboard to guard over them. His commander, João Infante, ordered the escort to remove the chains and disembark.

"Deportees," the captain said, "you are here to do the king's duty.

Your shackles are gone, for now you are shackled to us. There are only two ways out of here: honor and redemption, or death.”

Álvaro remembered the words of King John: “What a waste to put an able-bodied man to death, with so many islands to colonize, so much dangerous work to be done overseas!”

Infante continued his speech. “You will be chosen for the most hazardous missions—your lives already belong to the state. Aboard this vessel I am second only to the Lord God Almighty. We rank: captain, master, pilot, bosun, purser, carpenter, caulker, barber, artillerymen, sailors, cabin boys, and pages. Behave yourselves, be pious and not venal, be respectful and obedient. Álvaro will enforce discipline.” The soldier grinned at them cruelly, showing yellowed and black teeth.

It was a good spring tide, the September equinox only two weeks away. The ebb was now running well, with a strong northwesterly breeze rippling the gleaming surface of the Tagus. An order from the *São Cristovão* was quickly repeated to the rest of the fleet. Gangplanks hauled, moorings slipped. Aboard the flagship, Alenquer drew two prolonged sounds from the pilot’s whistle that hung around his neck on a thick gold chain. On the shore women wailed, and gulls cackled excitedly overhead. The men hoisted sails on the mizzenmasts, and the mainsails furled as the caravels tacked to windward, carried west by a thousand million tons of water that the great estuary empties into the Atlantic over a spring ebb.

The water turned a deep green, the ships rocking more now as they gave port to the sandspit at the mouth. As they entered the Atlantic, the small fishing village of Cascaes a shining glitter of whitewash to starboard, the fleet set a course for the Fortunate Islands, from where the northeast trades and Canary Current would make for plain sailing down to Cape Verde.

Álvaro was one of a crew of about twenty-five, including craftsmen, who would carry out all repairs. A couple of men had sailed with Cão

and were well known to Álvaro from that previous journey. They huddled together belowdecks, husbanding their rations of wine.

“Not a bad ship, as they go. And a fair captain, so far.”

“We should put in at Mina, where we can trade some gold.” Pay was trivial on King John’s ships, and most men shipped for other reasons: some of the officers for fame and glory and the sailors for adventure, for smuggled spices and gold, or to escape from a debt, a woman, or a dagger.

“What will you trade?” All sailors had something stowed—borrowed, given, or stolen—that could be exchanged for gold, paradise pepper, and other valuable goods.

Álvaro’s laugh was chilling. “Ah, you may find out soon enough.”

“When I was at the helm over the first night watch, Pilot Martins was speaking to the master. He thinks the captain will not stop at Mina, only here in Guinea to pick up some negroes.”

Álvaro’s face turned ashen. “No stop at Mina? That’s impossible!”

His plan had been carefully crafted. In the weeks prior to sailing, the fourteen-year-old girl had been readied for what lay ahead, using the soldier’s brutality as the weapon of choice. For the first few days after he got her home, she was chained to his bed like an animal, fed little, and regularly beaten. He raped her, and forced himself on her in a variety of ways. Then he sold her sexual services to others, all in preparation for what was to come. For Álvaro planned to smuggle her aboard the *São Pantaleão* as a cabin boy, with the objective of selling her at Elmina. The fortress of the Gold Mine, São Jorge da Mina, was garrisoned by hard cases, ex-convicts and soldiers, who profited openly from gold and slaves. The Portuguese ran the slave trade throughout West Africa, but, as the soldier knew from experience, it was not the ship crews who captured the slaves. The local *sobhas* hunted down men and boys from other tribes to trade with the white man in exchange for European goods.

At Elmina, a young white girl would fetch a premium price, and Álvaro planned to put her ashore, then sell her for gold. The cabin boy would be listed dead or missing, and that would be that. After a few years in Mina she would most likely be dead anyway, from abuse, fevers, or venery. Now this changed everything!

Álvaro had shielded the young girl on board; she knew that at the first sign of trouble he would toss her over the side, blame one of the deportees for conspiring to bring her on board, and have him killed. A woman aboard the caravels, with the opportunity of sexual favors for the crew, would be executed on the spot if discovered. But with her slim body, close cropped hair and dirty clothes, she was indistinguishable from the young boys on board.

The only thing to do was to unload her in Guinea and sell her to the local chiefs for gold. A white girl would be a rarity, and he would certainly profit from the sale, though not as much as at Mina.

There would be less danger, too, he thought, of her being found out when the ships becalmed in the doldrums, which would inevitably happen after Guinea as they proceeded south. He had no human feelings for the girl, but he had no wish to kill her: he would lose his investment.

## *Dias Days*

*A*s the expedition passed the river Geba and reached Sierra Leone, the trades died off and the ships fell into the doldrums. The Canary Current dies here and turns into the North Equatorial, which flows west in a slow and diffuse fashion.

For days the vessels drifted, the supplies of fresh produce taken on board in the Canaries long gone.

“The only wind is inshore,” Álvaro told his mates, “but there are waves breaking offshore, in shallows of three or four fathoms.”

“And mists, which can wreck a ship,” another added.

“Out here the wind is weak and variable,” Álvaro continued grumpily. “Like an old man’s piss!” he spat on the deck.

The ship smelled rank as the biscuit and salted meat in the casks began to rot.

“Such a stench. The bilges are shipping water and are muddy with rotten meat, waste, and rats.” The man who spoke was a newcomer, a fisherman from Lagos.

“Don’t pray for a clean hold,” Álvaro told him enigmatically.

“But why?”

“You’ll know soon enough!”

*At least I have the gold now, and no worries for the girl,* the soldier thought. It had been easy to discuss his business proposal with the slavers, and on the second meeting he had brought along the girl. Inside the thatched hut, she was ordered to strip, her eyes wide with fright.

The tribal chief was a fat, dissolute man; he stared lasciviously at the firm young body, the pert breasts in stark contrast to the drooped offerings of his wives. Álvaro knew he had a deal, and sealed it with a cup of fermented palm alcohol. It burned as it passed his throat, and his grimace made the assembled blacks laugh uproariously. He took his bag of gold and smuggled it on board. Later, he borrowed some carpenter’s tools and prised open a small compartment hollowed out belowdecks. The gold safely wedged inside, he refitted the wooden cover, nailed it in place, and used the abundant dirt from the floor, mixed with spit, to smear the wood, giving it the same appearance as the surrounding fittings.

Captain Dias took on board two Negroes and four Negresses from the Guinea coast; strict orders were given to avoid conflict with natives and to gain confidence by means of gifts. The four Guinea women were to be landed at various places, handsomely dressed, with samples of gold, silver, and spices. These were used to indicate what the Portuguese sought to trade. The explorers thought the use of women would be less aggressive, seen always by local natives as an offering rather than a threat. And although the dialects differed, at least the ambassadors would be the right color, seen to be already accustomed to the pale, bearded strangers.

As they tacked south past the mighty Congo, progress slowed with the opposing trade winds, blowing steadily from the southeast, and the increasingly strong northerly current, running parallel to the coast. The

decision not to stop at Elmina had been badly received by the crew, which was hoping to resupply there.

The mariners were already short of food, with a good many suffering from scurvy and disease, and spirits on board were sinking. “*Angra do Salto*, captain!” a cabin boy shouted from the crow’s nest atop the mainmast. Captain Dias had ordered him up as a lookout, since the pilot reckoned this was a safe place to put in. It was a very unusual bay: the harbor mouth faced east, sheltering the fleet from the winds, the bay itself shaped like a clamshell, with a broad sand ridge running along its northern side.

The caravel of João Infante led the way into harbor, the pilot at the prow with two sailors taking soundings as they sailed in on the flood tide. Alenquer had made the fleet wait, remembering Behaim’s advice on the prediction of tides along the coast. Next to the shoreline was a small village, and in the bay, natives were fishing from wooden canoes. The mood of the crew had lifted with the prospect of fresh food and water, firewood, and perhaps other blessings. Alenquer and the other pilots weighed the sun using a brass astrolabe and consulted Zacuto’s almanach. After repeated measurements they placed their position at 16 degrees south, getting very close now to the point reached by Cão over four years earlier.

They stayed a few days here at Port Alexander, already at the limit of southern Angola, and the captain ordered two of the Negroes put ashore. The store ship was left behind, together with nine men, and the rest split between the two caravels, to replace the dead. The climate was more arid now, with desert winds blowing sandstorms from the south. The crew fished and the ships were repaired and caulked, preparing for the venture into the great southern unknown. Fresh meat was salted and taken aboard, traded with the natives who herded sheep and bullocks on the karoo.

Dias gathered his officers together as the fleet prepared to depart.

“We have awaited our autumn, and it is now the southern spring. From here onward our lives are in the hands of our Lord. From here we are heading off the chart. Alenquer, what is your counsel?”

“Captain-General, it was wise to wait for better weather. Nevertheless, it will be much colder to the south, as we can see from the waters.” The icy Benguela Current, which comes up from the Antarctic, suggested precisely that. And as it moves offshore, impelled by the southeast trades and the earth’s rotation, the coastal waters become even colder, upwelled from a depth of hundreds of fathoms.

“From here to Cape Cross, where Captain Cão died, we sail one hundred and fifty leagues. After that we do not know. The current to the north is strong, the winds prevail from southeast. We will tack all the way down, against the currents. I do not know, neither does any man, when we can turn east.”

The assembled group was somber. “No resupply, no fishing, no warmth as we make way,” said Infante, “and bad weather—no sun, no stars, no bearing. There will be much discontent in the crews, disease, fright, maybe mutiny.”

“We could trust Abraham the Astronomer.” Alenquer pointed west on the chart. “And do the ‘Guinea Turn.’ Out to sea, past the Benguela, riding the trades until wind and current turn us to the south. And then head east on a friendly wind.”

“Never!” shouted Dias hoarsely. “What do those bookish Jews know? I am not leading my men to their death, and my expedition to disaster, for some Jewish mumbo-jumbo!”

The other officers were perplexed. Dias had never spoken a word of his discussions with Abraham, and no one had any inkling of an alternative route. They looked at Alenquer expectantly.

Alenquer stretched out his neck. “Captain, those Jews, as you call them, came to us by order of King John. The declinations in the

*Almanach Perpetuum* of Zacuto have been perfectly correct so far—the book has been precious.”

Bartolomeu Dias turned pale with anger. “Pilot, know your place, or I shall know my duty.”



## *The Longing and the Leaving*

The little house stood high on the Sintra hills near the ramparts of the old Moorish castle. The ground and the leaves were wet, glittering in the bright November sun. They walked arm in arm up the narrow path, flanked by high stone walls. The ivy and pine trees were damp, and an old peasant widow, dressed in black from head to foot, walked past them carrying a large bundle on her head. As she passed, droplets of rain showered overhead even as the sunlight fell upon them. “See, my lords, the witches are combing their hair,” the woman cackled, then went slowly down on her way.

The spy turned to look at Florbella. Her eyes were swimming with tears. She knew why Pero had brought her to this place. The spy’s *namorada* was smart; sometimes her tongue could be even quicker than his. And besides, she had a woman’s sixth sense.

Pero held her close, gently lifted her chin, and kissed her. “Do not cry, my sweetheart, I’m sorry ...” he said.

She put a finger to his lips and silenced him. “Don’t speak. I know

you are leaving again, Pero. I knew it in my heart. That's why we came. Can you tell me where you are going? How long you will be gone?"

"This time it is not Berberia." He stroked her face. "I am to journey east, past the Holy Land. It will take some years, maybe two, perhaps more."

"Three years? I will hunger for you."

Her heart felt gripped by a cold hand, one that she could not escape.

"Our king has a master plan," the spy said. "I am only a cog in a wheel. Like any grand design, it is alive only in the mind of one great man. It is hard for others to see the whole picture. He has been working on this for ten years and has told me he needs still ten more."

"Twenty years? That's half a lifetime. It must be some plan." Florbella knew King John well enough to imagine a good part of the scheme. She guessed that the Indies would be Pero's destination, since it was well known that the Perfect Prince had colossal ambitions for Portugal, seeing it as a great maritime power, a global player.

"And of course it is dangerous? Otherwise the king would not send you," she concluded.

"It's a mission of espionage, fact-finding. It might be hazardous for many men, but I assure you I'll be safe. The Perfect Prince has chosen me for my experience, and for the languages."

Florbella knew she had guessed correctly. The trip to North Africa had all been preparation, a part of the plan. The king was not just intelligent and farsighted; he was also patient and meticulous.

*An unusual combination of attributes, the countess reflected. Normally, visionaries do not dwell on detail. That is left to the minions.*

But this king was like a great rolling ocean wave, ruthlessly dragging along anything in his path. Her man was right. Although Pero was of monumental stature compared to lesser men, at King John's side he was just a cog in the wheel.

“You must not worry. And you must tell no one. The greatest danger lies in foreknowledge.”

“I will remain silent, under any circumstances, I promise. I wish to hear no more, to know no more. In that way, who could I forewarn, even if I wished?” she smiled. “After all, the information that someone has gone east for two years is hardly critical intelligence. About as useful as a ship in the desert.”

“Or a eunuch in a bedroom?”

He could always make her laugh. Most men never realized that was one of the roads leading straight to a woman’s heart. For a time they sat together in the stone patio of the rustic cottage, sipping a goblet of wine, looking at the rolling hills and the thunderclouds regrouping on the horizon.

Then she smiled, a look of purpose in her eyes. Her hand reached down, and her fingers caressed his thigh. She was always amazed at how quickly she excited him, more like a young teenage boy than a grown man of forty years. Florbella loved his wit, his mystery, his proportion. The spy often wondered at how tangled he himself was, how after all these years and all these times he had allowed himself to fall in love with this woman who belonged to another man.

“How can I have news of you?”

“There is no way. You will need to believe that I am well. Because I will be. If anything happens and for some reason my return is delayed, I will write.”

“How would I receive a letter?”

“I have spoken to the king himself. Do not worry.” That was another thing she liked. He always seemed to have a solution. Always two steps ahead. That was why King John was sending him east. He did not want for good men, but Pero was the best.

The spy took his time, but now she was ready. Gripping him more tightly, she rocked back and forward. She moaned, and he whispered,

“*Vinde,*” as she arched her back twice, three times. The last arc was longer, and she let out an animal cry as together they felt the searing heat of release. For a long, long moment, they lay suspended in nothingness.

Pero reached up to the nape of her neck, blossomed his fingers like rose petals, and ran them down the curve of her spine. She shivered as if electrified, and goose bumps came up under her skin as his hand traced the beautiful curves of her lower back. She let herself down upon him then, burying her face in his neck and shoulder, her brown hair spilling like a river over his face and chest. The spy knew what was coming. The emotions of ecstasy and sorrow came out first as a gentle cry, but soon she was racked with sobbing. He gently stroked her hair, caressed her ear. He said nothing as he waited, tied to the mast, and let the storm pass. After all, there was nothing he could do.



## *The Banker from Naples*

The spy joined Afonso Paiva on the small ship headed for Barcelona. They had made their way by land to Valencia, two Portuguese merchants like so many others, pursuing the business of trade on the Mediterranean coast.

“It was wise to prepare our funds—these are dangerous times.” Pero had deposited four hundred cruzados in Lisbon with Bartholomew the Florentine, which he now redeemed in Valencia prior to embarking.

“Indeed, the correspondence we carry is perilous enough,” Paiva replied. “Letters from the king, secret charts, more than enough to be killed for in these lands.”

The spy was on board a Portuguese vessel, captained by Bartholomew Paredes, and felt relatively safe. On the day of Corpus Christi, the ship docked at the Catalan capital. Initially mistaken for Spaniards of Castile, Pero and Paiva were looked upon with the usual hostility, but as soon as it became clear they were from Portugal, the demeanor of the locals changed. “*Bom dia,*” came the greeting, the

words for good morning identical in both languages. To the Catalans, constantly seeking freedom from the Crown of Castile, the Portuguese were the ones who had gotten away and held their independence for centuries, despite the greedy eyes of the Kings of Spain.

Pero used his short stay in Barcelona to become reacquainted with the merchandise that might be purchased, essential to establish his cover for the journey east. In his trip to North Africa in 1482, the spy had traded the famous wares of Tlemcen, capital of the central Maghreb. He had marveled at the city known as the African Granada: magnificent palaces, mosques, and schools, surrounded by gardens and orchards and watered by a thousand fountains. It produced the best saddles and reins in the Maghreb, together with woolen and cotton bolts. Some of these he had been able to buy in Valencia, and having completed his purchases in Barcelona, he again boarded the small ship with Paiva, setting a course for Naples.

In the Neapolitan sun, Pero set off to find yet another banker, to cash yet another money order, previously deposited in Lisbon. The spy asked for directions in French. "The house of Cosimo di Medici, if you please?"

The reply, in broad local dialect, was difficult to understand. The two Portuguese proceeded in the general direction indicated, but soon ran afoul of the maze of narrow alleys. This time they secured the help of a small boy in exchange for a coin offered to his father. They were guided to an imposing establishment, admitted to a shaded patio, and made to wait.

The banker was in his fifties, with rolls of fat in his jowls and dressed in the fine clothes of a wealthy nobleman. Wine was poured as they sat together while the letter of credit was minutely examined, with particular attention to the wax sealing. "My good friends, everything is in order here." The Italian gave an order for the money to be brought to them, and asked them pleasantly in fluent French, "You must plan

to embark on much business, with such a sum. Will you bide here in Naples?"

The spy's reply was cautious. "We plan to travel to the north, and also to the islands." He gestured vaguely in a southern semicircle. "We are keen to strengthen our trading links in this region."

"Ah. South to Africa, or perhaps to Asia?"

Pero felt that Medici, who had many contacts with other businessmen, in particular those of Venice and Genoa, was showing more than a passing interest in their voyage.

"Alas, we have no plans on that front," the spy replied sadly. "Indeed," he continued, "we have some French and Latin, a little Spanish. It would be very difficult to trade the east without Arabic—I think we should leave that work to your own most serene republics."

As the financier watched the two men disappear, he pondered their true intentions. They had too much money, and there was a hard look in Covilhã's eyes.

*These men are unusual merchants*, he thought, sitting down to pen a letter to Alexandria. It would be written and ciphered, sent later in the day by carrier pigeon.

As the small barque once again turned south to Rhodes, the spy knew this was the last Christian outpost before Alexandria, the gateway to Islam and the East.



## *The Knights of the Hospital*

The barque bobbed up and down in the azure waters of the Aegean Sea, making its way under the stifling heat toward the limestone cliffs of the island.

The spy turned to his companion. “At last, there it is, the ancient fortress of Rhodes. It is to this region what Tangier and Asilah are to us, a buttress against the Moor.” The island was ruled by Pierre d’Aubusson, Grand Master of the Knights of the Hospital, who had bravely resisted the Turkish siege seven years before.

On the pier, two friar-knights warmly greeted the emissaries of King John. “*Benvindos*,” the elder knight spoke, welcoming his fellow Portuguese adventurers. As always when far from home, they anxiously asked for news. As they entered the cool rooms of St. Angel’s Tower next to the wharf, still chatting busily, the younger friar, Frey Fernando, exclaimed, “*Ai que saudades!*” tears brimming in his eyes. The spy smiled wistfully, knowing that in his many languages there was not one

with an equivalent word. A mixture of pain, longing, and love, that one word made you want to laugh and cry at the same time.

For a moment he thought of Florbella, and as the dark hand gripped his heart, he knew he would never see her again. She had found a way to reach him by letter in Barcelona: sent by carrier pigeon, the favorite courier of the Perfect Prince. Here was the hand of Ana de Mendonça, the king's mistress, who was Florbella's bosom friend. The spy read that her husband had returned on leave, but that Florbella was unwell, possessed by an intestinal sickness that refused to be cured.

During the brief stay in Rhodes it was time to review in detail the steps that lay ahead. Safe in a Christian stronghold in the company of Portuguese friars, Pero openly discussed his planned route, though he was more careful about the motives. The monks had important knowledge of the political situation in Egypt and Aden, which would be invaluable for the spy's journey.

The regional chessboard could change very fast, yet news traveled slowly and reports were often inaccurate. The first stop on their mission was Alexandria; from there Pero planned to head to Cairo, and then across the Red Sea to Aden.

The Venetian Giacomo had left word at the port, following the arrival of the racing dove. Used since the days of Persia and Carthage, these pigeons were the most reliable form of communication. The ciphered message alerted him to the arrival of two Portuguese men, dressed as merchants, well heeled, and vague about their purposes.

The judgment of their Neapolitan associate, Cosimo di Medici, was seldom at fault. He was a man schooled in the fine arts of diplomacy and deceit, part of a longstanding family tradition, and instinctively sensed the true motives behind complex situations.

As the news arrived that the King of Portugal was pushing farther down the West African coast, and jealously guarding both the lands and the secret of how to reach them from his European rivals, the

Italian republics were increasingly wary of the small western nation. One of their own, Ca' da Mosto, had even sailed down the coast of West Africa under Prince Henry of Portugal, but despite admiration for the Venetian's adventures, the Italian republics had made no further use of them at the proper time. And yet Alvise, or Luis as he was known in Portugal, had reached the Fortunate Islands, Cape Verde, and explored the Gambia River. He could certainly have instructed his countrymen on the West African route and on the Guinea turn, the highway home.

To further complicate matters, the wars with the Ottomans had made trade in the Adriatic and Mediterranean progressively more difficult and expensive. Since the day over a hundred years before when Sultan Bajazet had vowed to feed his horse a bushel of oats on the altar of St. Peter's, the strife between Christians and Turks had been forever worsening.

As a result, Venetians, Florentines, and others had established themselves in Lisbon and become bankers, shipowners, or traders in spices of paradise, pepper, and camphor. They were well aware of the preparations for Dias's epic journey to the southern Cape, scheduled for the summer of 1487. The spy knew that the coincidental arrival in Alexandria of Portuguese "merchants" would be eyed with suspicion. With the focus on the sea route, what did this party now seek by land?

The port area of the great city was a beehive of activity as ships from all over the Mediterranean put in to trade metals, leather, and woolen goods from the north and exotic spices and fine silks from the thousand-year-old caravan trails of the east. Anything and everything could be bought and sold, from red Lebanese hasheesh to African slaves, fine Samarkand cloths to nubile virgins for the hareems.

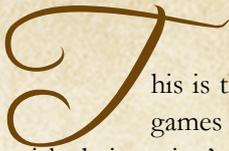
As Pero stood on the stone quay watching his goods being disembarked, he took in the oppressive heat and strong odors, a

mixture of spices, sewage, and fevered human activity. Giacomo and Bartholomew Priuli stood some distance away in the shaded archway of a low house. “Look, they’re unloading a cargo of horse leathers. And those amphors could be honey, or perhaps wine,” Giacomo told his brother.

“Watch the tall man!” Bartholomew gestured in Pero’s direction. Clearly this was the leader of the two. The spy was instructing the stevedores, directing the work. There was an unmistakable authority in his bearing that suggested both nobility and military skills.

“I suspect they carry more than ordinary merchandise, and since they will bide a while, for they must speak with the Naib, perhaps one of the Souk handymen could pay them a visit ...”

“Excellent! The tall one must be targeted. He will have maps, perhaps other documents.” Giacomo’s voice took on a cunning tone. “Then we will spread the word in the south, for that is where they are bound. You know how fond our Islamic friends are of the Portuguese—it should not be hard to arrange a courtesy visit.”



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