

# 1421

THE YEAR  
CHINA  
DISCOVERED  
AMERICA

GAVIN MENZIES



WILLIAM MORROW

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This book is dedicated to my beloved wife *Marcella*, who has travelled with me on the journeys related in this book and through life.



INTRODUCTION

OVER TEN YEARS AGO I STUMBLED UPON AN INCREDIBLE discovery, a clue hidden in an ancient map which, though it did not lead to buried treasure, suggested that the history of the world as it has been known and handed down for centuries would have to be radically revised.

I was pursuing an interest that had become a consuming passion for me: medieval history, and in particular the maps and charts of early explorers. I loved to examine these old charts, tracing contours, coastlines, the shifting shapes of shoals and sandbars, the menace of rocks and reefs. I followed the ebb and flow of tides, the pull of unseen currents and the track of prevailing winds, peeling back the layers of meaning contained within the charts.

The wintry plains of Minnesota started me on my research. It was not necessarily the first place you would think of to discover a document with such profound implications, but the James Ford Bell Library at the University of Minnesota has a remarkable collection of early maps and charts, and one in particular had attracted my attention. It had been in the collection of Sir Thomas Phillips, a wealthy British collector born in the late eighteenth century, but its existence had remained virtually unknown until the collection was rediscovered half a century ago.

The chart was dated 1424 and signed by a Venetian cartographer by the name of Zuane Pizzigano. It showed Europe and parts of Africa, and as I compared it with a modern map, I realized that the cartographer had drawn the coastlines of Europe accurately. It was an extraordinary cartographic achievement for that era, but not one of earth-shattering significance in itself. However, my eye was then drawn to the most curious feature of the map. The cartographer had also drawn a group of four islands far out in the western Atlantic. The names he gave them – Satanazes, Antilia, Saya and Ymana – did not correspond to any modern place-names and there are no large islands in the area where he had positioned them. That could have been a simple error in calculating longitude, for Europeans did not master that difficult art until well into the eighteenth century,

but my first, troubling thought was that the islands were imaginary and had existed only in the mind of the man who drew the chart.

I looked again. The two biggest islands were painted in bold colours, Antilia in dark blue, Satanazes in pillar-box red. The rest of the chart was uncoloured, and it seemed certain that Pizzigano wished to emphasize that these were important, recently discovered islands. All the names marked on the chart appeared to be in medieval Portuguese. Antilia – *anti* ‘on the opposite side of’ and *ilha* ‘island’ – meant an island on the opposite side of the Atlantic to Portugal; other than that, there was nothing in the name to help me identify it. Satanazes, ‘Satan’s or Devil’s Island’, was a very distinctive name. A greater number of towns were marked on the largest island, Antilia, indicating that it was better known. Satanazes had only five names, and featured the enigmatic words *con* and *ymana*.

My interest was now thoroughly aroused. What were these islands? Did they really exist? The date of the map, its provenance and authenticity were unimpeachable, yet if it was genuine, it marked lands in places where, according to the accepted history, no Europeans had ventured for another seven decades. After several months of examining charts and documents in map rooms and archives, I became convinced that Antilia and Satanazes were actually the Caribbean islands of Puerto Rico and Guadeloupe. There were far too many points of similarity between them for it to be a coincidence, but that meant that somebody had accurately surveyed the islands some seventy years before Columbus reached the Caribbean. This seemed an incredible revelation – Columbus had not discovered the New World, yet his voyage had always been regarded as an absolutely defining moment. It marked the point when, led by the Portuguese, Europeans had begun to embark on the great voyages of discovery, the long, restless expansion over the face of the globe that was to characterize the next five hundred years.

I needed further evidence to support my discovery and I sought the help of an expert in medieval Portuguese, Professor João Camilo

dos Santos, who was then at the Portuguese Embassy in London. He examined the Pizzigano chart and corrected my translation of *conlymana* to ‘volcano erupts there’. The words had been placed in the southern part of Satanazes, just where there are three volcanoes on Guadeloupe today. Did they erupt before 1424? In high excitement I rang the Smithsonian Institution in Washington DC. The volcanoes had erupted twice between 1400 and 1440 but had otherwise been dormant during the previous hundred years and the succeeding two and a half centuries. Moreover, there were no other volcanic eruptions in the Caribbean at that time. I felt I was home and dry; I believed I had found solid evidence that someone had reached the Caribbean and established a secret colony there sixty-eight years before Columbus.

Professor Camilo dos Santos gave me an introduction to the curator of the State Archives in the Torre do Tombo in Lisbon, and on a beautiful early autumn afternoon I began further research there, hoping for corroboration of my hunch about Portuguese landings in the Caribbean. To my astonishment, I came across something entirely different: far from the Portuguese having discovered those Caribbean islands, they were completely unknown to them at the time Pizzigano was drawing his chart. They were, however, shown on another, slightly later chart – drawn by some other, unknown cartographer – that had not come into Portuguese hands until 1428. In addition, I found a command issued by the Portuguese prince Henry the Navigator to his sea-captains in 1431, ordering them to go and find the islands of Antilia shown on the 1428 chart; had the Portuguese discovered them, Henry’s edict would scarcely have been necessary. But if the Portuguese had not discovered and surveyed Antilia and Satanazes, who on earth had? Who had provided Pizzigano and the other cartographers with their information?

I began more research, tracing the rise and fall of medieval civilizations that had long since crumbled into dust. In turn, I eliminated virtually every navy in the world that could feasibly have undertaken such an ambitious voyage in the early decades of the

fifteenth century. Venice, the oldest and most powerful naval power in Europe, was in disarray. The old Doge was ill, his powers waning, and his successor was waiting in the wings, determined that Venice should abandon its maritime tradition and become a land power. Northern European powers barely had the ships to cross the English Channel, let alone explore new worlds. The Egyptian rulers were mired in civil wars – there were no fewer than five sultans in 1421 alone. The Islamic world was also disintegrating: the Portuguese had invaded its North African heartlands and the once-mighty Asian empire of the Mongol emperor Tamerlane was in pieces.

Who else could have explored the Caribbean? I decided to see if there were other charts like the 1424 map, showing continents that had been surveyed before the European voyages of discovery. The deeper I dug, the more bombshells I uncovered. I was astonished to find that Patagonia and the Andes had been mapped a century before the first European sighted them, and Antarctica had been accurately drawn some four centuries before Europeans reached the continent. The east coast of Africa was shown on another chart, with longitudes that were perfectly correct – something Europeans did not manage to achieve for another three centuries. Australia appeared on another map, three centuries before Cook, and other charts showed the Caribbean, Greenland, the Arctic and the Pacific and Atlantic coasts of both North and South America long before Europeans arrived.

To have drawn maps of the entire world with such accuracy, these explorers, whoever they were, must have circumnavigated the globe. They must have been skilled in astro-navigation and must have found a method of determining longitude to draw maps with negligible longitude errors. To cover the enormous distances involved, they must have been able to sail the oceans for months at a time and that would have meant desalinating sea-water. As I was later to discover, they also prospected and mined for metals, and they were skilled horticulturalists, transplanting animals and plants right across the globe. In short, they had changed the face of the medieval

world. I seemed to be looking at a series of the most incredible journeys in the history of mankind, but one that had been completely expunged from human memory, the majority of records destroyed, the achievements ignored and finally forgotten.

These revelations were both astounding and horrifying. If I was to pursue them I would be challenging some of the most basic assumptions about the history of the exploration of the world. Every schoolchild knows the names of the great European explorers and navigators whose exploits have resounded down the ages. Bartolomeu Dias (c. 1450–1500) left Portugal in 1487 and became the first man to round the Cape of Good Hope, the southern tip of Africa. He was driven to the south of the Cape by a storm and when he found no land he turned north, rounding the Cape and making landfall on the east coast of Africa. Vasco da Gama (c. 1469–1525) followed in Dias's wake ten years later. He sailed up the east coast of Africa and crossed the Indian Ocean to India, opening up the first sea route for the spice trade. On 12 October 1492, Christopher Columbus (1451–1506) sighted land in the modern Bahamas. He has gone down in history as the first European to glimpse the New World, though Columbus himself never appreciated this, believing that he had actually reached Asia. He made three further voyages, discovering many of the Caribbean islands and the mainland of Central America. Ferdinand Magellan (c. 1480–1521) followed Columbus and is credited with the discovery of the strait between the Atlantic and the Pacific that bears his name to this day. His ship continued west to complete the first circumnavigation of the world, though Magellan did not survive to see the expedition's triumphant return to Spain, having been killed in the Philippines on 27 April 1521.

All these men owed a huge debt to the great figure of Henry the Navigator (1394–1460), the Portuguese prince whose base in south-west Portugal became an academy for explorers, cartographers, shipwrights and instrument makers. There, the design of European ships was revolutionized, navigational instruments and techniques

developed and improved, and impetus given to the great voyages of exploration and colonization.

As I ended my researches in the Torre do Tombo, a mood of utter confusion engulfed me. I spent a misty evening sitting in a bar on Lisbon's waterfront, looking out at Henry the Navigator's statue. His enigmatic smile was one I now understood. We both shared a secret: he had followed others to the New World. The more I brooded, the more intrigued I became. Who were these master mariners who had discovered and charted these new lands and oceans without leaving any trace of having done so, other than these enigmatic maps?

The identity of the master hand was revealed in a curious way. The coasts of Patagonia, the Andes mountains, the Antarctic mainland and the South Shetland Islands had all been drawn with remarkable accuracy on one chart. The distances covered, from Ecuador in the north to the Antarctic peninsula in the south, were immense; a huge fleet must have been required. There was only one nation at that time with the material resources, the scientific knowledge, the ships and the seafaring experience to mount such an epic voyage of discovery. That nation was China, but the thought of searching for incontestable proof that a Chinese fleet had explored the world long before the Europeans filled me with dread. An attempt to uncover the details of any event from nearly six centuries ago would have been daunting enough, but this one was made even more difficult by one massive, perhaps insurmountable, obstacle. In the mid-fifteenth century almost every Chinese map and document of the period was deliberately destroyed by officials of the Chinese court, following an abrupt reversal of its foreign policy. Far from embracing the outside world, after these momentous discoveries China turned in on itself. Anything commemorating its expansionist past was expunged from the record.

If I was to piece together the remarkable story of the Chinese voyages of discovery, I would have to look elsewhere for proof, but I

feared almost to begin. It seemed arrogance bordering on hubris to believe that a retired submarine captain could reveal a story many great minds had failed to unearth, but though I was a mere amateur compared to the distinguished academics in the field, I started with one crucial advantage. In 1953, when I joined the Royal Navy at the age of fifteen, Britain was still a world power with great fleets and bases to support them strung right across the globe. During my seventeen years in the Navy I sailed the world in the wake of the great European explorers. Between 1968 and 1970, for example, I was in command of HMS *Rorqual* and took her from China to Australasia, the Pacific and the Americas.

The coasts, cliffs and mountains early explorers had viewed from their quarterdecks were those I saw through a submarine periscope, with roughly the same perspective. I quickly learned that what is seen from sea level is not necessarily what is actually there. In those days satellite navigation was unknown; we had to find our way by the stars. I saw the same stars those great European explorers had seen and calculated my position by measuring the height and direction of the sun, just as they had attempted to do. The mariner's guiding stars in the southern hemisphere are Canopus and the Southern Cross. These stars played a vital role in the extraordinary story I was to uncover, and without the experience of astro-navigation I had gained in the Navy, this book would never have been written and the discoveries I made might have remained unrecognized for many more years.

A layman, no matter how distinguished in other fields, looks at a map or a chart and sees only a series of outlines that may or may not be the misshapen representations of familiar lands. An experienced navigator looking at the same map can deduce far more: where the cartographer who had first charted it had sailed, in what direction, how fast or slow, how near to or far from the land he had been, the state of his knowledge of latitude and longitude, even whether it was night or day. Given sufficient knowledge of the lands and oceans depicted on the chart, a navigator can also explain why what the

chart shows as islands could be mountain peaks, why what was then an extensive body of land might now be shoals, reefs and islands, and hence why some lands might have been depicted with curiously distended forms.

I had seen the maps, dating from the fifteenth and early sixteenth centuries, that show parts of the world then unknown to European explorers. There are inaccuracies – some of the lands depicted are unrecognizable, or misshapen, or in locations where no land exists – and because the picture they offer of the world contradicts the accepted history of exploration they have long been dismissed as fables, forgeries or, at best, puzzling anomalies. But I found myself returning to those early maps and charts again and again, and as I studied them and evaluated them, a new picture of the medieval world began to emerge.

My research confirmed that several Chinese fleets had indeed made voyages of exploration in the early years of the fifteenth century. The last and greatest of them all – four fleets combining in one vast armada – set sail in early 1421. The last surviving ships returned to China in the summer and autumn of 1423. There was no extant record of where they had voyaged in the intervening years, but the maps showed that they had not merely rounded the Cape of Good Hope and traversed the Atlantic to chart the islands I had seen on the Pizzigano map of 1424, they had then gone on to explore Antarctica and the Arctic, North and South America, and had crossed the Pacific to Australia. They had solved the problems of calculating latitude and longitude and had mapped the earth and the heavens with equal accuracy.

I was educated by a Chinese *amah* for the first five years of my life – I remember to this day my sorrow at our parting – and I had made a number of visits to China over the years, but despite my interest in that great country, my knowledge of its history was by no means deep. Before I could follow the incredible course of these Chinese voyages of discovery, I would first have to immerse myself

in the unfamiliar world of medieval China. That was a voyage of discovery in itself, and my ignorance of those remarkable people was shared, I suspect, by many in the West. The more I learned, the more I was awe-struck by the glory of that ancient, learned and incredibly sophisticated civilization. Their science and technology and their knowledge of the world around them were so far in advance of our own in that era that it was to be three, four and in some cases five centuries before European know-how matched that of the medieval Chinese.

Having learned something of that great civilization, I spent years travelling the globe on the track of the Chinese voyages of exploration. I researched in archives, museums and libraries, visited ancient monuments, castles, palaces and the major sea-ports of the late Middle Ages, explored rocky headlands, coral reefs, lonely beaches and remote islands. Everywhere I went I discovered more and more evidence to support the thesis. It turned out that a tiny handful of Chinese documents and sailing directions had escaped the wholesale destruction of records, and there were several first-person accounts: two by Chinese historians, another by a European merchant, and others by the first European explorers to follow in the Chinese wake, who discovered evidence and artefacts left by their predecessors.

There was also a wealth of physical evidence: Chinese porcelain, silk, votive offerings, artefacts, carved stones left by the Chinese admirals as monuments to their achievements, the wrecks of Chinese junks on the coasts of Africa, America, Australia and New Zealand, and the flora and fauna transplanted far from their places of origin and thriving when the first Europeans appeared. Everything I found was confirmation of the accuracy of the maps that had first captured my imagination. The remarkable information that those maps contain is, and always has been, there for all to see, but it has eluded many eminent historians of China, not for want of any diligence on their part but simply because of their lack of knowledge of astro-navigation and the world's oceans. If I have



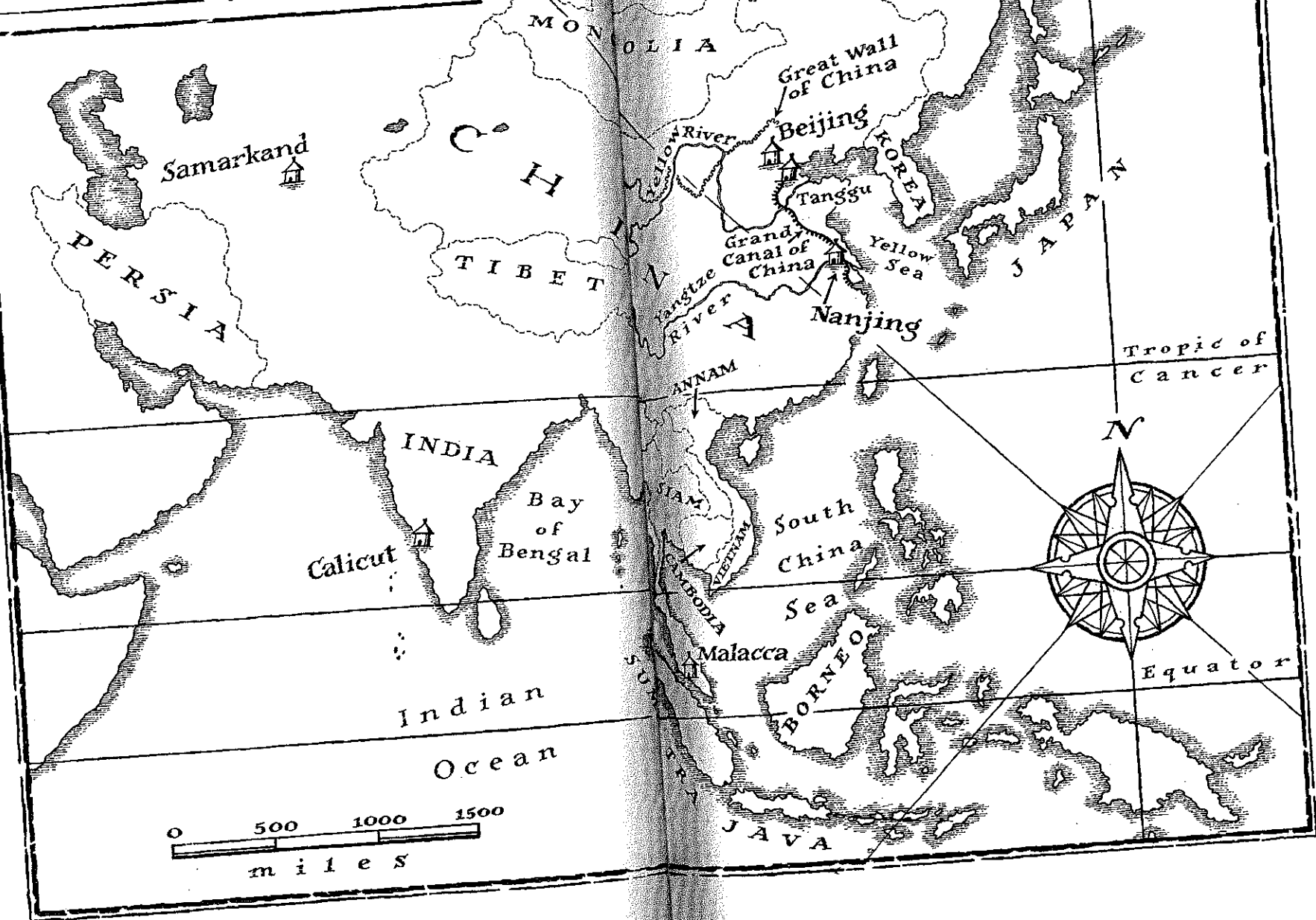
## INTRODUCTION

found information that escaped them, it is only because I knew how to interpret the extraordinary maps and charts that reveal the course and the extent of the voyages of the great Chinese fleets between 1421 and 1423.

Columbus, da Gama, Magellan and Cook were later to make the same 'discoveries' but they all knew they were following in the footsteps of others, for they were carrying copies of the Chinese maps with them when they set off on their own journeys into the 'unknown'. To misuse a famous quotation: if they could see further than others, it was because they were standing on the shoulders of giants.

# I Imperial China

# East Asia circa 1421



1

THE  
EMPEROR'S  
GRAND  
PLAN



ON 2 FEBRUARY 1421, CHINA DWARFED EVERY NATION ON earth. On that Chinese New Year's Day, kings and envoys from the length and breadth of Asia, Arabia, Africa and the Indian Ocean assembled amid the splendours of Beijing to pay homage to the Emperor Zhu Di, the Son of Heaven. A fleet of leviathan ships, navigating the oceans with pinpoint accuracy, had brought the rulers and their envoys to pay tribute to the emperor and bear witness to the inauguration of his majestic and mysterious walled capital, the Forbidden City. No fewer than twenty-eight heads of state were present, but the Holy Roman Emperor, the Emperor of Byzantium, the Doge of Venice and the kings of England, France, Spain and Portugal were not among them. They had not been invited, for such backward states, lacking trade goods or any worthwhile scientific knowledge, ranked low on the Chinese emperor's scale of priorities.

Zhu Di was the fourth son of Zhu Yuanzhang, who had risen to become the first Ming emperor despite his lowly birth as the son of a hired labourer from one of the poorest parts of China.<sup>1</sup> In 1352, eight years before Zhu Di's birth, a terrible flood had struck parts of China. The Yellow River had burst its banks, submerging vast areas of farmland, washing away villages and leaving famine and disease in its wake. The country was still in the throes of a terrible epidemic. The Mongols had ruled China since its conquest in 1279 by the great Kublai Khan, grandson of the greatest warlord of them all, Genghis Khan. But in 1352, plagued by famine and disease and desperately poor as a result of the depredations of their Mongol overlords, the peasants around Guangzhou on the Pearl River delta rose in revolt. Zhu Yuanzhang joined the rebels and rapidly emerged as their leader, rallying soldiers and farmers to his cause. During the next three years the revolt spread throughout China. Over decades of peace, the once ferocious Mongol warriors, the scourge of all Asia, had grown idle and complacent. Riven by internal dissension, they proved no match for the army raised by Zhu Di's father. In 1356, his forces captured Nanjing and cut off

corn supplies to the Mongols' northern capital, Ta-tu (Beijing).

Zhu Di was eight years old when his father's army entered Ta-tu itself. The last Mongol Emperor of China, Toghon Temur, fled the country, retreating north to the steppe, the Mongol heartland. Zhu Yuanzhang pronounced a new dynasty, the Ming, and proclaimed himself the first emperor, taking the dynastic title Hong Wu.<sup>2</sup> Zhu Di joined the Chinese cavalry and proved himself a brave and skilful officer. At the age of twenty-one he was sent to join the campaign against the Mongol forces still occupying the mountainous southwestern province of Yunnan, bordering modern Tibet and Laos, and in 1382 he was ordered to destroy Kun Ming, to the south of the Cloud Mountains, the remaining Mongol stronghold in the province. After the city was taken, the Chinese butchered the adult defenders and castrated those prisoners who had not reached puberty. Thousands of young Mongol boys had their penises and testicles severed. Many perished of shock and disease; the surviving eunuchs were conscripted into the imperial armies or kept as servants or retainers.

Eunuchs served as 'palace menials, harem watch dogs and spies'<sup>3</sup> for rulers throughout the ancient world, in Rome, Greece, North Africa and much of Asia, and they had played an important role throughout Chinese history.<sup>4</sup> Surprisingly, they were intensely loyal to the emperors who had authorized their mutilation. There had been eunuchs at the imperial court since at least the eighth century BC and as many as seventy thousand were employed in and around the capital. Only sexless males were permitted to act as personal servants to the emperor and to guard the women of his family and the quarters occupied by his concubines in the 'Great Within', inside the palace doors. Emperors retained thousands of concubines both as a symbol of their power and to ensure a number of male heirs at a time of high infant mortality; guaranteeing the continuity of the dynasty and the worship of ancestors was a vital part of Chinese cultural rites. Non-eunuchs, even relatives of the emperor and his consorts, were barred from the vicinity of the women's

quarters on pain of death. The absence of potent males ensured that any children born to the concubines had been sired by the emperor alone.

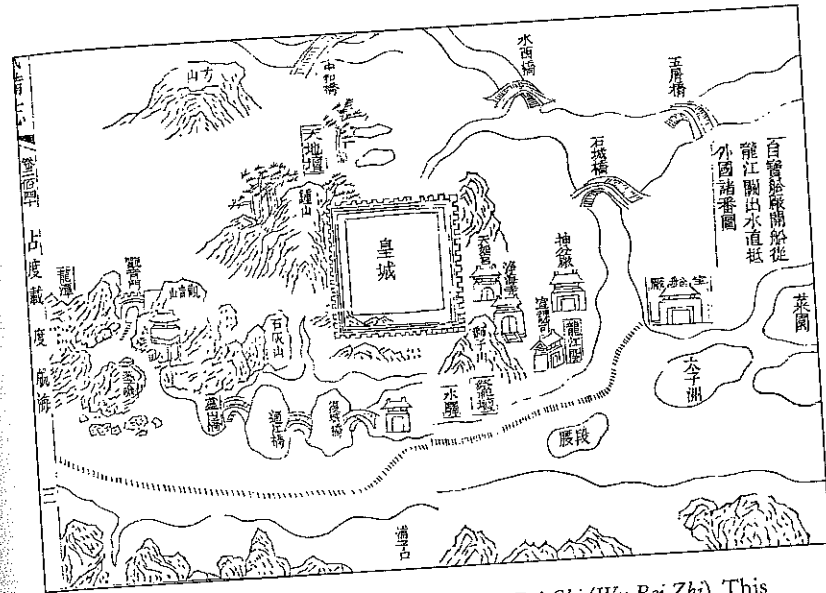
Eunuchs also helped to preserve the aura of sanctity and secrecy that surrounded the imperial throne. While the gods granted a 'Mandate of Heaven' to legitimize the emperor's rule, they could rescind it if he proved guilty of human failings, misgovernment or misconduct. It was forbidden to look upon the emperor: even senior officials kept their eyes downcast in the imperial presence, and when he passed through the streets, screens were erected to shield him from public gaze. Only the 'effeminate, cringing eunuchs', slavishly dependent upon the emperor for their very lives, were considered cowed enough to be silent witnesses to his private foibles and weaknesses.<sup>5</sup>

Ma He, one of the boys castrated at Kun Ming, was billeted in the household of Zhu Di, where his name was changed to Zheng He. Many of the Mongols whom Zhu Di and his father expelled had adopted the Muslim faith. Zheng He was a devout Muslim besides being a formidable soldier, and he became Zhu Di's closest adviser. He was a powerful figure, towering above Zhu Di; some accounts say he was over two metres tall and weighed over a hundred kilograms, with 'a stride like a tiger's'.<sup>6</sup> When Zhu Di was elevated to Prince of Yen – a region centred on Beijing – and given the new and more important responsibility of guarding China's northern provinces, Zheng He went with him. Zhu Di based himself in the former Mongol capital, Ta-tu, and renamed it Beijing. By 1387, after over thirty years of fighting, the last vestiges of Mongol rule had been purged from China. Zhu Di's father, the ageing and increasingly paranoid Emperor Hong Wu, systematically purged his military command, eliminating anyone who might offer even the most remote challenge to his authority. Many senior commanders committed suicide rather than bring dishonour and disgrace to their families and their ancestors by being dismissed or executed, but nonetheless, tens of thousands of civil and military officers were put to the sword.

After the death of his first-born son, Hong Wu had chosen his grandson, Zhu Yunwen – Zhu Di's nephew – to succeed him. He distrusted Zhu Di, believing he was a Mongol. Hong Wu had married a Mongol princess but had not been told she was already pregnant (with Zhu Di). When the old emperor died six years later in 1398, Zhu Yunwen duly continued his policy of eliminating potential rivals. In the summer of the following year, assassins were sent north to kill Zhu Di. To escape execution, he abandoned his fine house and for several months became a vagrant on the streets of Beijing, sleeping in gutters at night and wandering the streets by day. He feigned madness, growing filthy and unkempt, unrecognizable as a prince of the imperial line, and the execution squad passed by this apparently harmless vagrant. Then Zhu Di turned on his pursuers. Aided by his loyal eunuch bodyguard, headed by Zheng He, Zhu Di gathered his forces in secret to strike against his would-be killers. He assembled eight hundred men in a park in Beijing, having previously filled it with honking geese to muffle the clanking of their armour and weapons. Taken by surprise, the assassins were themselves butchered. The victorious Zhu Di at once began to raise and train an army.

When he received the news of his men's failure, Zhu Yunwen immediately despatched an army of half a million men to crush Zhu Di, but the seasons were turning, and his troops were sent north from Nanjing wearing only their summer uniforms and straw sandals. Many men froze as the pitiless winter advanced. Zhu Di's army was on manoeuvres outside Beijing when the demoralized troops of Zhu Yunwen began their advance on the city. They were routed in a battle in which even the women of Beijing took part, hurling pots down on their attackers from the city walls.

In 1402, Zhu Di marched south on Nanjing at the head of a great army. The imperial capital was a divided city. The mandarins, the educated elite in Nanjing, loathed the court eunuchs. Their antipathy was deep-seated and almost as old as imperial China itself. As his personal attendants, the eunuchs had the emperor's ear; like



A plan of imperial Nanjing from the *Wu Pei Chi* (*Wu Bei Zhi*). This seventeenth-century treatise on armaments drew on illustrations from earlier manuals; the shipyards are on the right across the bridge.

the courtiers of European rulers, they grew wealthy through their imperial connections. But while the eunuchs held sway in the 'Great Within', mandarins alone were entitled to hold office in the 'Great Without' beyond the palace walls.

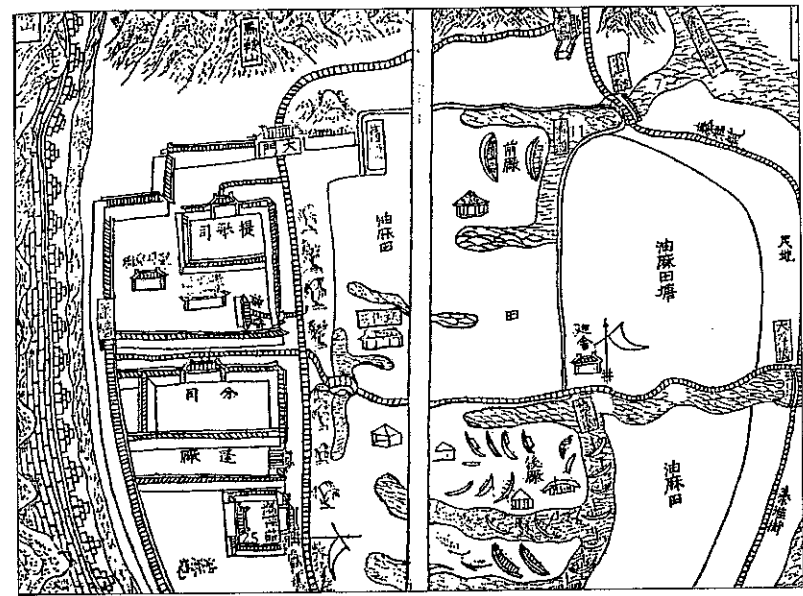
Men became mandarins and holders of exalted official positions only after years of intensive study and examinations based exclusively upon the teaching of Confucius (551–479 BC), the 'Great Sage' who had expressed his own disapproval of eunuchs holding positions of power. Eunuchs received no Confucian education and relied solely upon the emperor for advancement. Mandarins were steeped in Confucian ethics and a code of moral values intended to maintain order and hierarchy in society by eliminating the opportunity for people to disturb the *tao* (interaction of natural forces). It determined everyone's life, their rank, their rites and the position allocated to them in the social hierarchy. The Confucian definition

of good government required that 'a prince be a prince ... the subject a subject, the father a father, the son a son'.<sup>7</sup> Orderly, well-mannered continuity was at the heart of Confucianism and of mandarin government, and the mandarins saw rural farmers, not foreigners or merchants, as the backbone of society. The farmers represented stability, whereas merchants and foreigners continually upset the *tao*.

The mandarins surrounding Zhu Yunwen had succeeded in marginalizing the court eunuchs, stripping them of much of the power and influence they had previously possessed, and when Zhu Di's army appeared before the walls of Nanjing, the eunuchs threw open the city gates to them. Zhu Di seized the Dragon Throne<sup>8</sup> and pronounced himself emperor, taking the dynastic title Yong Le. Zhu Yunwen was never found. It was believed he had escaped, dressed as a monk. Zheng He remained at the new emperor's side, one of a group of eunuchs who formed an inner circle within Zhu Di's staff. They had personal knowledge of and gained influence in affairs of state, saw the emperor frequently and became familiar with his moods and wishes. As they were permitted to enter the concubines' quarters, they also became conversant with the intrigues among the two thousand women sequestered there.

The eunuchs were once more a political force. In recognition of his service to the emperor, the most powerful figure of all was the Grand Eunuch, Zheng He. In the folds of his white silk cloak he carried a jewelled casket containing the shrunken remnants of his severed penis and testicles, a fact which earned him the nickname San Bao, 'The Three-Jewelled Eunuch'. The casket containing his *pao* – 'manhood treasures' – would accompany him to the next world, where once again he could become a whole man. But in this earthly life, he was sworn to serve and do the bidding of his patron and ruler, the third Ming emperor, Zhu Di.

Within twelve months, despite never having been to sea, Zheng He had been appointed Commander-in-Chief of one of the largest fleets ever built. One of Zhu Di's first orders had been to double the



A plan of the Longjiang shipyards from the *Lung Chiang Chhang Chih*, a history of the yards at the time of Zheng He, published in 1553. The administrative offices are on the left, the slipways and docks on the right.

size of the Longjiang shipyards, near Nanjing. Already the principal shipyards in China, they were now vastly expanded, covering several square miles on the banks of the Yangtze beyond the eastern gate of Nanjing. Seven vast dry-docks were built, connected by a series of locks to the river, and each one could be subdivided to permit three ships to be built simultaneously. They remain there to this day.<sup>9</sup> Zhu Di's aim was to create what even Kublai Khan had failed to achieve: a maritime empire spanning the oceans.

Prior to the ninth century, ships voyaging beyond coastal waters were almost always foreign-owned, but from the ninth century onwards China developed its own ocean-going fleet. The Song and Yuan (Mongol) dynasties had maintained large fleets, sent emissaries overseas and built a substantial foreign trade, gradually wresting control of the spice trade from the Arabs who had once dominated

it. Zhu Di now embarked on an incredible expansion of the Chinese fleet. In addition to the warships and the merchant fleet he had inherited, Zhu Di commissioned 1,681 new ships, among them many gigantic nine-masted 'treasure ships', named after the huge value and quantity of goods they could carry in their vast holds. Tens of thousands of carpenters, sailmakers and shipwrights from the southern provinces around the shipyards were put to work to build them. In addition to 250 treasure ships, the fleet contained more than 3,500 other vessels. There were 1,350 patrol ships and the same number of combat vessels based at guard stations or island bases, 400 larger warships and another 400 freighters for transporting grain, water and horses for the fleet. The emperor's ships were to sail the oceans of the world and chart them, impressing and intimidating foreign rulers, bringing the entire world into China's 'tribute system'. Rulers paid tribute to China in return for trading privileges and protection against their enemies, but China always gave its trading partners a greater value of goods – silks and porcelain at discounted prices, often funded by soft loans – than was received from them. They were thus in perpetual debt to China. These ships were also tasked with hunting down the fugitive Zhu Yunwen: 'There are some who say he is abroad. The emperor ordered Zheng He to seek out traces of him.'<sup>10</sup> All should know who was the rightful occupant of the Dragon Throne: the Emperor on Horseback, Son of Heaven – Zhu Di.

As soon as he had claimed the imperial throne, Zhu Di decided to relocate the capital to his former stronghold of Beijing. The ageing Tamerlane had decided to seize his last and greatest prize of all, China, and Zhu Di resolved to meet the threat head on. Tamerlane (the anglicized form of Timur-i-Lang, or 'Timur the Lame', a nickname he received as a result of arrow wounds sustained in battle) had proved a worthy successor to his forebears Genghis Khan and Kublai Khan. 'He loved bold and valiant soldiers, by whose aid he opened the locks of terror, tore men to pieces like lions and overturned mountains.'<sup>11</sup> From his capital at Samarkand, straddling the

Silk Road, the great trading route through central Asia, Tamerlane had waged relentless campaigns across Asia, conquering northern India, Persia and Syria, and defeating the Ottomans at Ankara in 1402. Now his gaze had turned eastwards, his aim to destroy the Chinese armies, overthrow Zhu Di and restore China to Mongol rule.

To counter this potent threat, the new emperor took with him to Beijing his court, guarded by a million-strong army, but his vision for the new imperial capital encompassed far more than its being a defensive stronghold to thwart Tamerlane. Kublai Khan had built Ta-tu to a traditional Chinese design and diverted rivers to encircle the city. Zhu Di incorporated the basic elements of Kublai Khan's capital, but he demolished the royal enclosure and replaced it with a classic imperial complex, the Forbidden City, with far more perfect proportions than its former design. The walled capital surrounding it was to be built on an awesome scale: fifteen hundred times the area of walled London at that time and housing fifty times the population.

Yet building the world's greatest city to dazzle his people and intimidate his enemies and all the rulers of the world was only one part of Zhu Di's master plan. He would also repair the Great Wall, built by the first Chinese emperor, Qin Shi Huangdi, during the Qin dynasty (221–206 BC). Qin Shi Huangdi had united the warring provinces of China and was the first man to rule the entire country. The wall was erected at ruinous expense to protect China's northern frontiers from attack, but over the following 1,600 years it had been allowed to crumble into disrepair. Zhu Di began a programme of rebuilding and strengthening, adding watchtowers and turrets along the wall's existing 5,000 kilometres and extending it by a further 1,400. It ran from the Pacific as far west as the Heavenly Mountains in central Asia.

Still Zhu Di's aims were higher. He despatched expeditions to China's eastern neighbours and along the Silk Road across central Asia to recreate the trading empire China had possessed in the golden age of the Tang dynasty over five centuries earlier. All this in addition to his fleet-expansion programme.



Zhu Di intended to achieve all these stupendous goals within two decades. Running through all his policies was his determination that the Chinese should once again believe in themselves and their illustrious history. The Mongols had been expelled, China was Chinese again. Zhu Di was always concerned by the fact that he was not his father's designated heir, and he constantly sought to demonstrate that the gods had bestowed legitimacy on his ascent to the Dragon Throne. Hence the first buildings he commissioned were those of the great ceremonial complex, the Temple of Heaven, at the centre of the new Forbidden City. It was to be not only the stage for the annual ceremonies the emperor, the Son of Heaven, was required to perform, but the very heart of the new Chinese empire. A new observatory, in turn, would be at the epicentre of Beijing. Zhu Di took a personal interest in astronomy, and in the means by which he could build on the wonderful legacy he had inherited in this field. Chinese astronomers had well over two thousand years' experience of recording events in the night sky. They had noted the appearance of a new star in 1300 BC, had charted every arrival of Halley's comet since 240 BC, and by 1054 were describing the supernovas of the Crab Nebula with their attendant pulsars, quasars and neutron stars.

During more than a century of rule over China, the Mongol emperors had neglected this priceless inheritance; in the first year of his reign, Zhu Di restored the nightly practice of recording the stars. His astronomers charted no fewer than 1,400 of them as they traversed the sky, and they were able to predict both solar and lunar eclipses with considerable accuracy. Zhu Di also set up a committee of distinguished astronomers to 'compare and correct the drawings of the guiding stars'<sup>12</sup> and eventually persuaded the Shogun of Japan, the King of Korea, and Prince Ulugh Begh, grandson of Tamerlane, to do the same. The emperor's interest in astronomy was practical, not theoretical. He was determined that his astronomers should perfect new methods of using these guiding stars, enabling his admirals to navigate accurately at sea and correctly locate the new

territories they would find on their journeys of discovery. His aim was to ensure that Beijing's great observatory was the reference point from which the entire world would be explored and charted, and all new discoveries located – in short, the centre of the known universe.

The relocation of the capital from Nanjing to Beijing was by far the most complex and far-reaching project undertaken during the Ming dynasty. The move started in 1404, when ten thousand households were forcibly moved north to increase Beijing's population. A vast army of workers was also required to accomplish Zhu Di's vision and hundreds of thousands of Chinese labourers were force-marched to the north; some 335 army divisions were re-deployed to guard them, even though the threat from Tamerlane's Mongol hordes had quickly evaporated. The great warlord had left Samarkand at the head of a vast army in January 1405, his aim to march eastwards through the mountains, set up encampments near the Chinese border, and await the first sign of the approach of spring before striking deep into China, catching the emperor's forces unprepared. Sick and old, Tamerlane was too weak to march and was carried in a litter – a couch carried by bearers – but even so, the privations of the journey over such bleak terrain in the depths of winter were too much for him. He died on 18 February without even sighting the Chinese frontier. His army broke up into rival factions and dispersed.

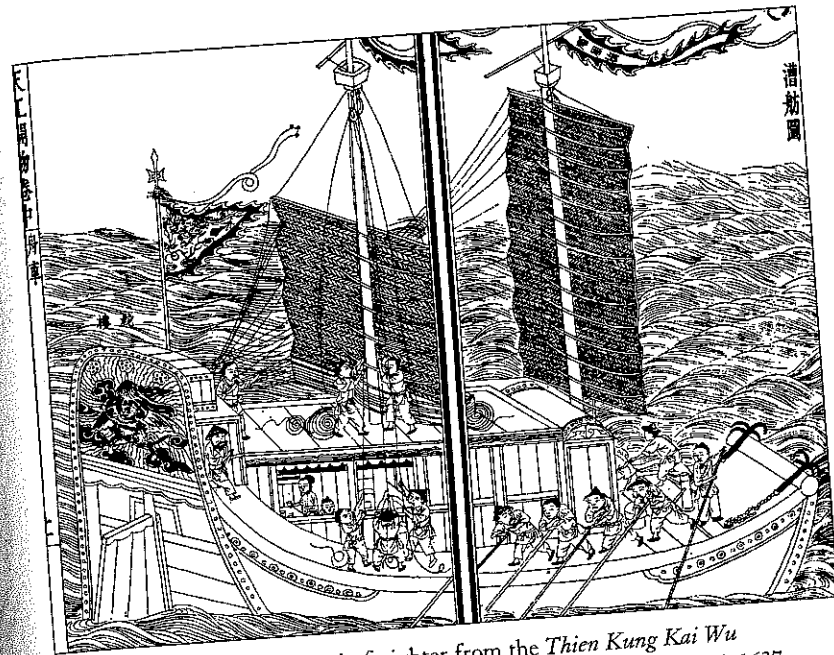
Zhu Di's plans for Beijing remained unaltered by the news of Tamerlane's death, but feeding the first construction workers soon began to prove difficult. The growing season in the north was short; millet could be grown, but not rice, and corn and barley produced poor yields. There was nowhere near enough grain to feed the tidal waves of workers continuing to arrive. Zhu Di delegated his third son, Zhu Gaozhi, to assume military command of Beijing, and tax rebates were granted to anyone who could grow grain around the city. When this measure failed to produce enough to feed the growing armies of workmen, the emperor decided that the Grand Canal

must be repaired and enlarged to carry shipments of grain northwards.

Begun in 486 BC under the Wu dynasty, the canal was one of the wonders of the ancient world. From AD 584 onwards it was extended and the individual sections linked together to form a system stretching for 1,800 kilometres – to this day the longest man-made waterway in the world. However, it was built at a horrific human cost: it is estimated that half of the six million labour force perished at their work. The financial stresses and domestic upheavals caused by the building of the canal were also one of the principal causes of the rapid collapse of the short-lived Sui dynasty (AD 589–618).

The Grand Canal was the main artery of commerce between north and south China, but its capacity was no longer equal to the demands being placed upon it. The work to enlarge it was carried out in two stages. In 1411, dredging and reconstruction of the northern section began to clear 130 miles of channel, and thirty-six new locks were built, for Beijing was over a hundred feet higher than the Yellow River. Three hundred thousand labourers were employed on the task. The southern section from the Yellow River to the Yangtze was opened in 1415. The completed canal stretched from Beijing in the north to Hangzhou on the coast, south of Shanghai. Grain was transported in no fewer than three thousand flat-bottomed barges, and shipments rose from 2.8 million piculs (approximately 170 million kilograms) in 1416 to five million (300 million kilograms) by the following year.

The insatiable demand for grain to feed the workforce in Beijing led to shortages and famine elsewhere in China, and the timber required for Zhu Di's great schemes stripped the forests of hardwood. Quite apart from the timber needed to build the Forbidden City, each treasure ship in the emperor's huge fleet consumed the wood of three hundred acres of prime teak forest. The imperial navy was supported by a new fleet of auxiliary store ships, and hundreds of smaller merchant ships were also built to trade between Chinese,



An early Ming grain freighter from the *Thien Kung Kai Wu* (*Tian Gong Kai Wu*), 'The Exploitation of the Works of Nature', 1637.

Indian and African ports. Yet more hardwood was used in the construction of the thousands of grain barges plying the Grand Canal. Hundreds of thousands, if not millions, of acres of forest were felled. Annam (the northern part of modern Vietnam) and Vietnam were also denuded of trees, sparking off the first of a series of uprisings against Chinese rule.

Zhu Di also faced domestic problems. The scale and cost of his grandiose schemes provoked increasingly ferocious opposition from the mandarins, and even an emperor could not undertake a massive project like the building of the Forbidden City without their cooperation. The mandarins were responsible for raising the tax revenues to fund Zhu Di's projects, and, as with officials of any court in any country, there were a thousand ways for them to delay or hinder schemes they did not favour. Zhu Di continued to pursue his dreams with a customary mixture of guile and ruthlessness, even

going so far as to exploit the arrival of a 'quilin' – in reality a common giraffe obtained by Admiral Zheng He on one of the epic expeditions that began in 1405, when his fleet visited East Africa – to bamboozle and outmanoeuvre his opponents.

The quilin was an important animal in Chinese mythology, said to have the body of a musk deer, the tail of an ox, the forehead of a wolf, the hoofs of a horse, and a fleshy horn like a unicorn. In legend, a quilin had appeared before a young woman, Yen Tschen-tsaii, in the sixth century BC. It dropped a piece of jade into her hand on which was engraved a message: she would bear a son, 'a king without a throne'.<sup>13</sup> The son she bore was Confucius, whose philosophy of system and order was to dominate Chinese thought for over two millennia.

The 'quilin' was presented to Zhu Di by Zheng He on 16 November 1416. Proclaiming its arrival as a sign of heavenly approval for his rule, Zhu Di immediately convened a council to confirm once and for all the merits of transferring the capital from Nanjing to Beijing. The court poet wrote a eulogy to the emperor and, astounded by the appearance of the celestial animal, the mandarins duly obliged him.

The whole of China was now mobilized to achieve the completion of the imperial design. Gangs were sent to fell yet more teak in the forests of the Chinese provinces of Jiangxi, Shanxi and Sichuan, and in Annam and Vietnam. Kilns were built to manufacture enormous quantities of bricks. A workforce of artisans, soldiers and labourers was recruited from all over the Chinese empire. In all, one million men were employed directly on constructing the Forbidden City, three and a half million indirectly. A further one million soldiers stood guard over them.

Once barges could carry food along the Grand Canal to this multitude of workmen, the rate of progress on the Forbidden City accelerated. Improvements were made to the moats, walls and bridges of the former Ta-tu and a start was made on the emperor's residence, the western palace in the Forbidden City. In March 1417,

the emperor left Nanjing for the last time, and by the end of that year most of the palace buildings had been completed. In 1420, sections of the southern city wall that had fallen into disrepair under the Mongols were restored, and later that year the Temple of Heaven was completed. Sufficient buildings had also been erected to enable the court permanently to move north, and on Chinese New Year's Day, 2 February 1421, the magnificent new capital was inaugurated. To emphasize the importance of the occasion, the envoys of all visiting heads of state were required to bow and kow-tow – prostrate themselves and press their foreheads to the ground – at Zhu Di's feet. China's absolute dominance was further highlighted by the humiliation imposed on two of the most powerful men in the world: the son and grandson of the mighty Tamerlane. Their first attempt at kow-towing before Zhu Di was deemed unsatisfactory and one of Zhu Di's eunuchs, Haji Maulana, made them repeat it. Their second attempt was also inadequate. Only after their third prostration at his feet did the emperor pronounce himself satisfied.

This array of foreign heads of state kow-towing before the emperor was the culmination of fifteen years' assiduous diplomacy. Chinese foreign policy was quite different from that of the Europeans who followed them to the Indian Ocean many years later. The Chinese preferred to pursue their aims by trade, influence and bribery rather than by open conflict and direct colonization. Zhu Di's policy was to despatch huge armadas every few years throughout the known world, bearing gifts and trade goods; the massive treasure ships carrying a huge array of guns and a travelling army of soldiers were also a potent reminder of his imperial might: China alone had the necessary firepower to protect friendly countries from invasion and quash insurrections against their rulers. The treasure ships returned to China with all manner of exotic items: 'dragon saliva [ambergris], incense and golden amber' and 'lions, gold spotted leopards and camel-birds [ostriches] which are six or seven feet tall' from Africa; gold cloth from Calicut in south-west India, studded with pearls and precious stones; elephants, parrots,

sandalwood, peacocks, hardwood, incense, tin and cardamom from Siam (modern Thailand).

Those rulers who accepted the emperor's overlordship were rewarded with titles, protection and trade missions. In south-east Asia, Malacca was rewarded for its loyalty by being promoted as a trading port at the expense of Java and Sumatra; the emperor even personally composed a poem for the Malaccan sultan. The subservient Siamese were also extended trading privileges to the detriment of the truculent Cambodians. Korea was especially important to China: Zhu Di lost no time in despatching an envoy to the King of Korea, Yi Pang-Won, granting him an honorary Chinese title. The Koreans needed Chinese medicine, books and astronomical instruments, and in return they agreed to set up an observatory to co-operate with Zhu Di in charting the world. They traded leopards, seals, gold, silver and horses – one thousand of them in 1403, ten thousand the next year. Despite some reluctance, they also found it expedient to comply with Chinese requests to fill Zhu Di's harem with virgins.

As soon as he had expelled the last Mongols from China in 1382, Zhu Di had despatched his eunuch Isiha to the perennially troublesome region of Manchuria in the far north-east, and in 1413 the Jurchen people of Manchuria responded by sending a prestigious mission to Beijing, where its members were showered with titles, gifts and trading rights. Japan was also assiduously courted. The third Ashikaga Shogun Yoshimitsu was a Sinophile; he lost no time in kow-towing as 'your subject, the King of Japan'.<sup>14</sup> His reward was a string of special ports opened to promote trade with Japan, at Ningbo, Quanzhou and Guangdong (Canton). Like Korea, Japan also set up an observatory to aid Zhu Di's astronomical research.

Having pacified Manchuria and brought Korea and Japan into the Chinese tribute system, Zhu Di next turned his attention to Tibet. Another court eunuch, Hau-Xian, led a mission to court the famous holy man the Karmapa, leader of one of the four sects of Tibetan Buddhism, and bring him to China. When he arrived, a

procession of Buddhist monks met him outside the city and Zhu Di bestowed upon him the title 'Divine Son of India Below the Sky and Upon the Earth, Inventor of the Alphabet, Incarnated Buddha, Maintainer of the Kingdom's Prosperity, Source of Rhetoric'. The emperor then presented the Karmapa with a square black hat bearing a diamond-studded emblem. It has been worn by successive incarnations of the Karmapa ever since.

Joining China's tribute system also gave rulers and their envoys the opportunity to visit the capital of the oldest and finest civilization in the world. The traditional imperial capital of Nanjing had received dignitaries from around the world, and now the new capital of Beijing began to welcome the latest arrivals. Although the emperor's main concern was to awe all countries into becoming tribute-bearing states, great efforts were also made to learn about their history, geography, manners and customs. Beijing was to be not only the world's greatest city but its intellectual capital, with encyclopedias and libraries covering every subject known to man. In December 1404, Zhu Di had appointed two long-time advisers, Yao Guang Xiao and Liu Chi, assisted by 2,180 scholars, to take charge of a project, the Yong-le-Dadian, to preserve all known literature and knowledge. It was the largest scholarly enterprise ever undertaken. The result, a massive encyclopedia of four thousand volumes containing some fifty million characters, was completed just before the Forbidden City was inaugurated.

In parallel with this great endeavour, Zhu Di ordered the opinions of 120 philosophers and sages of the Song dynasty to be collated and stored in the Forbidden City together with the complete commentaries of thinkers from the eleventh to the thirteenth centuries. In addition to this wealth of academic knowledge, hundreds of printed novels could be bought from Beijing market stalls. There was nothing remotely comparable anywhere in the world. Printing was unknown in Europe – Gutenberg did not complete his printed Bible for another thirty years – and though Europe was on the eve of the Renaissance that was to transform

its culture and scientific knowledge, it lagged far behind China. The library of Henry V (1387–1422) comprised six handwritten books, three of which were on loan to him from a nunnery, and the Florentine Francesco Datini, the wealthiest European merchant of the same era, possessed twelve books, eight of which were on religious subjects.

The voyage to the intellectual paradise of Beijing also offered foreign potentates and envoys many earthly delights. Carried in sumptuous comfort aboard the leviathan ships, they consumed the finest foods and wines, and pleased themselves with the concubines whose only role was to please these foreign dignitaries. The formal inauguration of the Forbidden City was followed by a sumptuous banquet. Its scale and opulence emphasized China's position at the summit of the civilized world. In comparison, Europe was backward, crude and barbaric. Henry V's marriage to Catherine of Valois took place in London just three weeks after the inauguration of the Forbidden City. Twenty-six thousand guests were entertained in Beijing, where they ate a ten-course banquet served on dishes of the finest porcelain; a mere six hundred guests attended Henry's nuptials and they were served stockfish (salted cod) on rounds of stale bread that acted as plates. Catherine de Valois wore neither knickers nor stockings at her wedding; Zhu Di's favourite concubine was clad in the finest silks and her jewellery included cornelians from Persia, rubies from Sri Lanka, Indian diamonds and jade from Kotan (in Chinese Turkestan). Her perfume contained ambergris from the Pacific, myrrh from Arabia and sandalwood from the Spice Islands. China's army numbered one million men, armed with guns; Henry V could put five thousand men in the field, armed only with longbows, swords and pikes. The fleet that would carry Zhu Di's guests home numbered over a hundred ships with a complement of thirty thousand men; when Henry went to war against France in June of that year, he ferried his army across the Channel in four fishing boats, carrying a hundred men on each crossing and sailing only in daylight hours.

For a further month after the inauguration of the Forbidden City, the rulers and envoys in Beijing were provided with lavish imperial hospitality – the finest foods and wines, the most splendid entertainments and the most beautiful concubines, skilled in the arts of love. Finally, on 3 March 1421, a great ceremony was mounted to commemorate the departure of the envoys for their native lands. A vast honour guard was assembled: 'First came commanders of ten thousands, next commanders of thousands, all numbering about one hundred thousand men . . . Behind them stood troops in serried ranks, two hundred thousand strong . . . The whole body . . . stood so silent it seemed there was not a breathing soul there.'<sup>15</sup> At noon precisely, cymbals clashed, elephants lowered their trunks, and clouds of smoke wafted from incense-holders in the shape of tortoises and cranes. The emperor appeared, striding through the smoke to present the departing ambassadors with their farewell gifts – crates of blue and white porcelain, rolls of silk, bundles of cotton cloth and bamboo cases of jade. His great fleets stood ready to carry them back to Hormuz, Aden, La'Sa and Dhofar in Arabia; to Mogadishu, Brava, Malindi and Mombasa in Africa; to Sri Lanka, Calicut, Cochin and Cambay in India; to Japan, Vietnam, Java, Sumatra, Malacca and Borneo in south-east Asia, and elsewhere.

Admiral Zheng He, dressed in his formal uniform, a long red robe, presented the emperor with his compliments and reported that an armada comprising four of the emperor's great fleets was ready to set sail; the fifth, commanded by Grand Eunuch Yang Qing, had put to sea the previous month. The return of the envoys to their homelands was only the first part of this armada's overall mission. It was then to 'proceed all the way to the end of the earth to collect tribute from the barbarians beyond the seas . . . to attract all under heaven to be civilised in Confucian harmony'.<sup>16</sup> Zheng He's reward for his lifelong, devoted service to his emperor had been the command of five<sup>17</sup> previous treasure fleets tasked with promoting Chinese trade and influence in Asia, India, Africa and the Middle East. Now he was to lead one of the largest armadas the world had ever seen. Zhu

Di had also rewarded other eunuchs for their part in helping him to liberate China. Many of the army commanders in the war against the Mongols were now admirals and captains of his treasure fleets. Zheng He had become a master of delegation. By the fourth voyage fleets were sailing separately. On this great sixth voyage loyal eunuchs would command separate fleets. Zheng He would lead them to the Indian Ocean then return home confident that they would handle their fleets as he had taught them.

The envoys' parting gifts were packed into their carriages, the emperor made a short speech, and then, after kow-towing one last time, the envoys embarked and the procession moved off. Servants ran behind the carriages as they rumbled down to the Grand Canal a mile to the east of the city. There, a fleet of barges decked with silk awnings awaited them. Teams of horses, ten to twelve for each barge, stood on the banks, bamboo poles tied to their harnesses. When the envoys were aboard, whips cracked and the sturdy animals began to drag the barges on their slow journey down to the coast.

Two days and thirty-six locks later, they arrived at Tanggu (near the modern city of Tianjin) on the Yellow Sea. The sight that greeted the envoys at Tanggu was one that must have lingered long in their minds. More than one hundred huge junks rode at anchor, towering above the watchers on the quayside – the ships were taller by far than the thatched houses lining the bay. Surrounding them was a fleet of smaller merchant ships. Each capital ship was about 480 feet in length (444 *chi*, the standard Chinese unit of measurement, equivalent to about 12.5 inches or 32 centimetres) and 180 feet across – big enough to swallow fifty fishing boats. On the prow, glaring serpents' eyes served to frighten away evil spirits. Pennants streamed from the tips of a forest of a thousand masts; below them great sails of red silk, light but immensely strong, were furled on each ship's nine masts. 'When their sails are spread, they are like great clouds in the sky.'<sup>18</sup>

The armada was composed very much like a Second World War convoy. At the centre were the great leviathan flagships, surrounded

by a host of merchant junks, most 90 feet long and 30 feet wide. Around the perimeters were squadrons of fast, manoeuvrable warships. As the voyage progressed, trading ships of several other nations, especially Vietnam and India, joined the convoy, taking advantage of the protection afforded by the warships and the opportunities offered as the magnificent armada, almost a trading country in its own right, swept over the oceans. Each treasure ship had sixteen internal watertight compartments, any two of which could be flooded without sinking the ship. Some internal compartments could also be partially flooded to act as tanks for the trained sea-otters used in fishing, or for use by divers entering and leaving the sea. The otters, held on long cords, were employed to herd shoals of fish into nets, a method still practised in parts of China, Malaysia and Bengal today. The admiral's sea cabin was above the stern of his flagship. Below were sixty staterooms for foreign ambassadors, envoys and their entourages. Their concubines were housed in adjacent cabins and most had balconies overlooking the sea. Chinese ambassadors, one for each country to be visited, were housed in less grand but nonetheless spacious apartments. Each ambassador had ten assistants as *chefs de protocol* and a further fifty-two eunuchs served as secretaries. The crewmen's quarters were on the lower decks.

In 1407, Zheng He had established a language school in Nanjing, the *Ssu-i-Quan* (Si Yi Guan), to train interpreters, and sixteen of its finest graduates travelled with the fleets, enabling the admirals to communicate with rulers from India to Africa in Arabic, Persian, Swahili, Hindi, Tamil and many other languages. Religious tolerance was one of Zhu Di's great virtues, and the junks also habitually carried Islamic, Hindu and Buddhist savants to provide advice and guidance. Buddhism, with its teachings of universal compassion and tolerance, had been the religion of the majority of the Chinese people for centuries. Buddhism in no way conflicted with Confucianism, which could be said to be a code of civic values rather than a religion. On this sixth and final voyage of the treasure fleets which would last

until 1423, the Buddhist monk Sheng Hui and the religious leaders Ha San and Pu He Ri were aboard.<sup>19</sup> After the inauguration of the Forbidden City and the dedication of the awesome encyclopedia the Yong-le-Dadian, thousands of scholars found themselves without an obvious role. It would have been natural for Zhu Di to send them overseas on the great voyages of exploration. Through interpreters, Chinese mathematicians, astronomers, engineers and architects would have been able to converse with and learn from their counterparts throughout the Indian Ocean. Once the ambassadors and their entourages had disembarked, the vast ships with their labyrinths of cabins would have been well suited to use as laboratories for scientific experiments. Metallurgists could prospect for minerals in the countries the Chinese visited, physicians could search out new healing plants, medicines and treatments that might help to combat plagues and epidemics, and botanists could propagate valuable food plants. Chinese agricultural scientists and farmers had millennia of experience of developing and propagating hybrids.

The native Chinese flora is perhaps the richest in the world: 'In wealth of its endemic species and in the extent of the genus and species potential of its cultivated plants, China is conspicuous among other centres of origin of plant forms. Moreover the species are usually represented by enormous numbers of botanical varieties and hereditary forms.'<sup>20</sup> In Europe, a long period of economic and agricultural decline followed the fall of the Roman Empire. The plant forms known to the Western world from Theophrastus to the German fathers of botany show that European knowledge had slumped, but there was no corresponding 'dark age' in Chinese scientific history. Botanical knowledge, and the number of plant species recorded by the Chinese, grew steadily as the centuries passed. The contrast between the voyages of discovery of the Chinese and those of the Europeans cannot be overestimated. The only interest of the Spanish and Portuguese was in gathering sustenance, gold and spices, while warding off attacks from the natives. The great Chinese fleets undertook scientific expeditions the



The betel-nut tree from the *Chêng Lei Pên Tshao (Cheng Lei Ben Cao)*, 'Classified Pharmaceutical Natural History', 1468. Above is the whole palm, below the fruit. The description to the left of the drawings states that it grows in the South Seas.

Europeans could not even begin to equal in scale or scope until Captain Cook set sail three and a half centuries later.

As the admirals and envoys embarked, and the armada was readied for sea, the water around the great ships was still black with smaller craft shuttling from ship to shore. For days the port had been in turmoil as cartloads of vegetables and dried fish and hundreds of tons of water were hauled aboard to provision this armada of thirty thousand men for their voyage. Even at this late hour, barges were still bringing final supplies of fresh water and rice. The great armada's ships could remain at sea for over three months and cover at least 4,500 miles without making landfall to replenish food or water, for separate grain ships and water tankers sailed with them. The grain ships also carried an array of flora the Chinese intended to plant in foreign lands, some as further benefits of the tribute system and others to provide food for the Chinese colonies that would be created in new lands. Dogs were also taken aboard as pets, others to be bred for food and to hunt rats, and there were coops of Asiatic chickens as valuable presents for foreign dignitaries. Separate horse-ships carried the mounts for the cavalry.

The staggering size of the individual ships, not to mention the armada itself, can only be understood in comparison with other navies of the same era. In 1421, the next most powerful fleet afloat was that of Venice. The Venetians possessed around three hundred galleys – fast, light, thin-skinned ships built with softwood planking, rowed by oarsmen and only suitable for island-hopping in the calm of a Mediterranean summer. The biggest Venetian galleys were some 150 feet long and 20 feet wide and carried at best 50 tons of cargo. In comparison, Zhu Di's treasure ships were ocean-going monsters built of teak. The rudder of one of these great ships stood 36 feet high – almost as long as the whole of the flagship the *Niña* in which Columbus was later to set sail for the New World. Each treasure ship could carry more than two thousand tons of cargo and reach Malacca in five weeks, Hormuz in the Persian Gulf in twelve. They were capable of sailing the wildest oceans of the world, in

voyages lasting years at a time. That so many ships were lost on the Chinese voyages of discovery testifies not to any lack of strength in their construction but rather to the perilous, uncharted waters they explored, from rocky coasts and razor-sharp coral reefs to the ice-strewn oceans of the far north and far south. Venetian galleys were protected by archers; Chinese ships were armed with gunpowder weapons, brass and iron cannon, mortars, flaming arrows and exploding shells that sprayed excrement over their adversaries. In every single respect – construction, cargo capacity, damage control, armament, range, communications, the ability to navigate in the trackless ocean and to repair and maintain their ships at sea for months on end – the Chinese were centuries ahead of Europe. Admiral Zheng He would have had no difficulty in destroying any fleet that crossed his path. A battle between this Chinese armada and the other navies of the world combined would have resembled one between a pack of sharks and a shoal of sprats.

By the end of the middle watch – four in the morning – the last provisions had been lashed down and the armada weighed anchor. A prayer was said to Shao Lin, Taoist goddess of the sea, and then, as their red silk sails slowly filled, the ships, resembling great houses, gathered way before the winds of the north-east monsoon. As they sailed out across the Yellow Sea, the last flickering lights of Tanggu faded into the darkness while the sailors clustered at the rails, straining for a last sight of their homeland. In the long months they would spend travelling the oceans, their only remaining links to the land would be memories, keepsakes and the scented roses many brought with them, growing them in pots and even sharing their water rations with them. The majority of those seamen at the rails would never see China again. Many would die, many others would be shipwrecked or left behind to set up colonies on foreign shores. Those who eventually returned after two and a half years at sea would find their country convulsed and transformed beyond all recognition.



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THUNDERBOLT  
STRIKES



ON THE NIGHT OF 9 MAY 1421, TWO MONTHS AFTER ZHENG He's armada had set sail, a violent storm broke over the Forbidden City.

On this night by chance a conflagration started . . . lightning struck the top of the palace that had been newly constructed by the Emperor. The fire that started in that building enveloped it in such a manner that it seemed as if 100,000 torches provided with oil and wicks had been lit up therein . . . so much so that the whole city was set ablaze with the light of that conflagration and the fire spreading . . . it burnt down the Ladies' Apartments behind the Hall of Audience . . . about 250 quarters were consumed to ashes, burning a large number of men and women. It continued burning like that until it was day and in spite of all efforts, the fire could not be brought under control until it was afternoon prayer time.<sup>1</sup>

Balls of fire appeared to travel down the Imperial Way itself, along the very axis of the Forbidden City, destroying the Hall of Great Harmony, the Hall of Central Harmony and the Hall of Preserving Harmony – the magnificent palaces where Zhu Di had received leaders of the world three months earlier. The emperor's throne was burned to cinders. 'In his anguish he repaired to the temple and prayed with great importunity, saying, "The God of Heaven is angry with me, and, therefore, has burnt my palace; although I have done no evil act. I have neither offended my father, nor mother, nor have I acted tyrannically."<sup>2</sup>

The shock killed the emperor's favourite concubine. Zhu Di was so distraught that he was unable to make proper arrangements for her burial in the imperial mausoleum.

He fell ill owing to his anguish and on account of this it could not be ascertained as to in what manner the dead personage was buried . . . The private horses of the deceased lady were let loose to graze freely . . . on the mountain where the sepulchre was situated. They had also posted about that sepulchre a number of maidens and eunuchs . . . leaving for them provisions

to last five years so that after that period when their food got exhausted, they might likewise die there.<sup>3</sup>

Chinese emperors believed they ruled with the mandate of heaven. The manner in which the lightning struck and the severity of the fire that followed could hardly have been more ominous for Zhu Di. An event of this terrible nature could only signal the gods' demand for a change of emperor. Zhu Di temporarily handed power to his son, Zhu Gaozhi. 'The illness of the Emperor having increased, his son used to come and sit in the audience hall.'<sup>4</sup> Struggling to comprehend the nature of the calamity that had befallen him, the emperor then issued an edict to his people:

My heart is full of trepidation, I do not know how to handle it. It seems that there has been some laxness in the rituals of honouring heaven and serving the spirits. Perhaps there has been some transgression of the ancestral law or some perversion of government affairs. Perhaps mean men hold rank while good men flee and hide themselves, and the good and evil are not distinguished. Perhaps punishments and jailings have been excessive and unjustly applied to the innocent, and the straight and the crooked not discriminated . . . Is this what brought about [the fire]? Harshness to the people below and above, going against heaven. I cannot find the reason in my confusion . . . If our actions have in fact been improper, you should lay these out one by one, hiding nothing, so that we may try to reform ourselves and regain the favour of heaven.<sup>5</sup>

The edict unleashed a predictable storm of criticism from the mandarins. Most of it was targeted on Zhu Di's grandiose plans and projects, notably the Forbidden City that the gods had destroyed. Vast areas had been denuded of trees to build the enormous halls, tens of thousands of artisans had laboured for years on the fabulous rooms, huge sums had been invested in marble and jade, the Grand Canal had been rebuilt using a million teaspoons to ferry grain, and the treasury drained to such an extent that peasants had even been

reduced to eating grass. And all this toil, suffering and sacrifice had led only to a carpet of ashes and cinders. The fires also coincided with a terrible epidemic of some unknown disease that had been raging in the south for two years. More than 174,000 people had died in the province of Fujian alone and their bodies lay rotting in the fields, for there was no-one to bury them. The epidemic seemed yet another sign of the gods' anger.

The mandarin Minister of Revenue, Xia Yuanji, who had managed to find the funds for the Forbidden City and for Zheng He's great armada, bravely stepped forward to accept personal responsibility for the catastrophe, but to no avail. Frantic efforts were made to pacify the people. Twenty-six high-ranking mandarin court officials were sent on 'calming and soothing' missions<sup>6</sup> and, in an attempt to save his throne, Zhu Di issued a series of ill-conceived decrees. A halt was placed on future voyages of the treasure fleets and foreign travel was prohibited.

Zhu Di had been plagued by other indignities and misfortunes. He had suffered a series of strokes during the previous four years and was being treated with an elixir containing arsenic and mercury that was probably poisoning him. Shortly before the great fire, he had also been thrown from his charger, Tamerlane's former steed and a present from one of the Mongol conqueror's sons, King Shah Rukh of Persia. Zhu Di was so furious that he was determined to put Shah Rukh's ambassador to death.

Thereafter the Qazi, coming forward, said to the ambassadors: 'Dismount and when the Emperor arrives prostrate yourselves on the ground!' They did so.

When the Emperor came near he asked them to mount again. The ambassadors mounted and proceeded along with him. The Emperor began to make complaint saying to Shadi Khwaja: 'I mounted for chase one of the horses which you brought me, and it being extremely old and feeble fell down throwing me off. Ever since that day my hand is giving me pain and has become black and blue. It is only by applying gold a good deal that the pain has abated a little.'<sup>7</sup>

A mandarin replied on behalf of the Persians:

The ambassadors are in no way to blame, for if their sovereign had sent good horses or bad as presents, those persons had no choice in the matter ... Moreover, even if your Majesty has the envoys cut in pieces it shall make no difference to their sovereign. On the other hand ... the whole world would say that the Emperor of China had acted contrary to all convention by imprisoning the envoys.<sup>8</sup>

Slurs on Zhu Di's manhood were even more humiliating. He had fathered no children after 1404, and had probably been impotent since the Empress Xiu's death in 1407. Two imperial concubines had been found trying to assuage their sexual frustration by attempting intercourse with one of the eunuchs who guarded them. In the subsequent witch hunt, 2,800 concubines and eunuchs were alleged to have been involved in treasonable activity; Zhu Di personally executed many of them, but before they died a number of Korean concubines flung insults at him, taunting him for his impotence: 'You have lost your yang power and that is why your concubines resorted to relationship with a young eunuch.'<sup>9</sup>

Apparently abandoned by heaven, the humiliated, ill and distraught old emperor also faced mounting political problems. The construction of the Forbidden City, the Grand Canal, the fleet of treasure ships and the repair of hundreds of miles of the Great Wall had placed enormous strains on China's economy, and the felling of the vast hardwood forests had provoked rebellions in Annam and Vietnam. The first rebellion, in 1407, was led by Le Qui Ly, a former minister of the Vietnamese court who usurped the throne and introduced reforms that won him wide support. Taxation was simplified, ports were opened to foreigners and trade boomed. Restrictions were placed on the acquisition of land by the wealthy at the expense of peasants, a system of health care was introduced, and the army and civil service were reorganized; ability was henceforth to be the key word. His ultimate aim was to end his country's subjugation by

China. Vietnam would no longer be a colony, but a proud and united sovereign nation. Zhu Di had sent an army southwards to crush the rebellion, depose Le Qui Ly and begin the systematic obliteration of Vietnamese national identity. Native literature was burnt and works of art destroyed. Chinese classics became required reading in schools and Chinese dress and hairstyle were imposed on Vietnamese women. Local religious rites were outlawed and private fortunes confiscated, while the pillage of the forests continued.

Another uprising began in 1418, this time led by an aristocratic landowner, Le L'oi, the founder of the dynasty that was to rule Vietnam for 360 years. Although twice defeated by the Chinese armies, each time he managed to escape to the jungle and continue the war. Despite a massive commitment of combat troops, the Chinese could neither find Le L'oi nor suppress his guerrilla army.

Insurrection spread throughout Annam and Vietnam; the entire coastal region south of the Red River delta (near modern Hanoi) was in revolt. Enormous numbers of Chinese troops were now tied down in the jungle at vast cost to the treasury and Chinese pride. The rebellion was a serious political and military problem, but it was one that a fit, powerful emperor such as Zhu Di in his prime would have solved with ruthless efficiency. Weighed down by his domestic troubles, he failed to suppress the revolt; Le L'oi then inflicted on the Chinese armies the first serious defeat the Ming dynasty had ever experienced. It was another shattering blow to the morale of the Chinese and their emperor, and though Le L'oi did not secure his country's formal independence until 1428, Zhu Di had effectively abandoned Vietnam by July 1421.

The demoralized old emperor had also lost control of his cabinet, and of China itself. There had always been an inherent contradiction at the heart of Zhu Di's government: it was effectively two separate administrations – a mandarin cabinet in charge of finance, economics, home affairs and law and order, and the eunuchs, who led the armed forces and executed Zhu Di's foreign policy. At the peak of his powers, Zhu Di had tolerated his mandarin critics,

allowing them to influence his favourite son and successor, Zhu Gaozhi. Deep down the mandarins loathed Zhu Di's grandiose plans, his foreign policy, and the bleak northern location of the Forbidden City. They seized the opportunity offered by his illness and waning powers and looked to the crown prince, Zhu Gaozhi, to reverse his father's policies.

A diplomatic crisis accelerated the disintegration of Zhu Di's government. Sensing the emperor's weakness after the fire in the Forbidden City, the Mongol leader Arughtai refused to pay the tribute demanded by China. Zhu Di saw a heaven-sent opportunity to reassert his authority; the emperor himself would lead an army to bring Arughtai to heel. As a young man, Zhu Di had relied on the speed of his cavalry to outwit and outmanoeuvre the Mongol army. Now, he and his eunuch generals assembled an enormous, ponderous force of almost a million men and 340,000 horses and mules and plodded northwards into the steppe. Some 177,500 carts were needed just to transport the grain to feed this vast army. The mandarin Minister of Revenue, Xia Yuanji, the financial genius who had raised the funds for the Forbidden City, for widening the Grand Canal, for the fleet of grain barges and for Zheng He's armada, baldly stated he could not find the money for this latest imperial adventure. The Minister of Justice, Wu Zhong, also objected. Zhu Di had both ministers arrested. Fang Bin, Minister of War, then committed suicide. By the end of that terrible year, Zhu Di had lost his most able, loyal and long-serving ministers and his cabinet had disintegrated.

As his ministers had feared, Zhu Di's expedition was a fiasco. Arughtai simply disappeared into the vastness of the steppe. On 12 August 1424, while still pursuing Arughtai, Zhu Di, a broken man, died at the age of sixty-four. Some of the army's pots and pans were melted down to make a coffin to carry him back to the burnt remains of the Forbidden City in Beijing, where his body lay in state for one hundred days.

Zhu Di's funeral had the same epic quality as his life. The

procession was led by the old emperor's honour guard. Ten thousand soldiers and officials surrounded the cortège as it slowly zigzagged on its two-day march to the magnificent imperial mausoleum at Chang Ling in the foothills north-west of Beijing. There, in hazy autumn sunshine, they marched down an avenue lined with stone animals to lay the emperor's body in his magnificent tomb. Animals were sacrificed to his ancestral gods and then his cloak of imperial yellow and military decorations were laid beside him. Sixteen concubines were buried alive with Zhu Di. The complex was sealed as the cries of the doomed women marked the end of the mortal life of one of the greatest visionaries and gamblers in history.

On 7 September 1424, Zhu Di's son, Zhu Gaozhi, ascended the throne. That very day he issued an edict:

All voyages of the treasure ships are to be stopped. All ships moored at Taicang [a Yangtze port] are ordered back to Nanjing and all goods on the ships are to be turned over to the Department of Internal Affairs and stored. If there are any foreign envoys wishing to return home, they will be provided with a small escort. Those officials who are currently abroad on business are ordered back to the capital immediately . . . and all those who have been called to go on future voyages are ordered back to their homes.

The building and repair of all treasure ships is to be stopped immediately. Harvesting *tieli mu* [hardwood for shipbuilding] is to be conducted in the same way as it was in the time of the Hongwu Emperor [Zhu Di's father]. [Additional harvesting] is to be stopped. All official procurement for expeditions abroad (with the exception of items already delivered at official depots), the making of copper coins, buying of musk, raw copper and raw silk must also be stopped . . . All those employed in purchasing should return to the capital.<sup>10</sup>

Zhu Gaozhi also ordered the immediate release of those senior officials who had been imprisoned by his father, including the former finance minister, the mandarin Xia Yuanji. Xia took immediate steps to control inflation, forbidding the mining of gold and

silver and stabilizing the amount of non-paper currency in circulation (paper money had been invented by the Chinese in AD 806, centuries before it came into use in Europe). Such was the value of pepper that it had been used as a means of payment by the Chinese. Now, all the pepper in the imperial warehouses was given away, the purchase of all luxury goods banned, the budget deficit slashed and all expenditure on the treasure fleets curtailed. China's territory produced all goods in abundance, so why buy useless trifles from abroad?<sup>11</sup>

The young emperor, fat, studious and religious, had shown no interest in military affairs and had hardly ever accompanied his father on his military expeditions, preferring to remain surrounded by his mandarin advisers. His priorities were in strict accordance with their Confucian values; 'Relieving people's poverty ought to be handled as though one were rescuing them from fire or saving them from drowning. One cannot hesitate.'<sup>12</sup> He saw no need to listen to the eunuchs who, in aiding and abetting his father's expansionary schemes, had brought China to the brink of disaster.

The last of the battered remnants of the great treasure fleets limped home in October 1423 after two and a half years at sea. Zheng He's men had no idea of the dramatic events unfolding at home and must have been expecting a heroes' welcome. Their voyages had been a remarkable success. They had reached countless unknown lands and immeasurably furthered their knowledge of navigation, but instead of plaudits, the returning admirals were spurned by those who now ruled China. Only Zheng He was spared from humiliation; perhaps his prestige was too great to strip him of his rank. The old admiral was pensioned off as an imperial harbour master in Nanjing, but was allowed to keep his sumptuous palace there and to continue building his mosque.

Zhu Gaozhi died in 1425 after only a year as emperor, and was succeeded by his son, Zhu Zhanji, who intensified his father's policies. Social harmony returned, but China had reverted to rule by traditional rural gentry. As long as the irrigation systems were

maintained, the farmers were well fed and famine averted, there was little requirement for economic or political change, or the exercise of China's inventive genius. The country's institutions remained as if preserved in amber. Merchants wielded little political power, bankers and soldiers virtually none, and revenue from foreign trade dropped to less than 1 per cent of government income. Zhu Zhanji did allow Admiral Zheng He his swansong – one final voyage to Mecca – but with Zhu Zhanji's death in 1435, complete xenophobia set in. All voyages of the treasure fleets were halted and the first of a stream of imperial edicts banned overseas trade and travel. Any merchant attempting to engage in foreign trade was to be tried as a pirate and executed. For a time, even learning a foreign language or teaching Chinese to foreigners was prohibited.

The embargo on overseas trade was rigidly maintained throughout the next hundred years, and the Qing dynasty that succeeded the last of the Ming emperors in 1644 went even further. To prevent any foreign trade or contact, a strip of land along the southern coast 700 miles long and 30 miles wide was devastated and burnt, and the population moved inland. Not only were the shipyards put out of commission, the plans for building the great treasure ships and the accounts of Zheng He's voyages were deliberately destroyed. The mandarin Liu Daxia, a senior official at the Ministry of War, seized the records from the archives. He declared that 'the expeditions of San Bao (Zheng He) to the Western ocean wasted myriads of money and grain, and moreover the people who met their deaths may be counted in the myriads'. The goods the fleets had brought home – 'betel, bamboo staves, grape-wine, pomegranates and ostrich eggs and such like things' – were useless, and all the records of these expeditions – 'deceitful exaggerations of bizarre things far removed from the testimony of people's eyes and ears' – should therefore be burned. Liu then blandly reported to the Minister of War that the logs and records of Zheng He's expeditions had been 'lost'.<sup>13</sup> Not only was the priceless legacy of the greatest maritime expeditions of all time gone for ever, foreign lands were to be banished from the

minds of the Chinese people. Only piracy and smuggling would be left to connect the fallen colossus with the outside world. The colonies established in Africa, Australia and North and South America were abandoned and left to their fate.

By late 1421, China's history was set for centuries to come. The legacy of Zhu Di, Zheng He and their great treasure fleets would be all but obliterated. What oceans they had sailed, what lands they had seen, what discoveries they had made, what colonies they had created were no longer of interest to the Chinese hierarchy. The ships that had made those voyages were left to rot and were never replaced. The logs and records were destroyed and the memory of them expunged so completely over the succeeding decades that they might never have existed. As China turned its back on its glorious maritime and scientific heritage and retreated into a long, self-imposed isolation from the outside world, other nations took up the torch. But all their explorers, colonizers and discoverers voyaged in the long shadows cast by Zhu Di's fleets.

# THE FLEETS SET SAIL

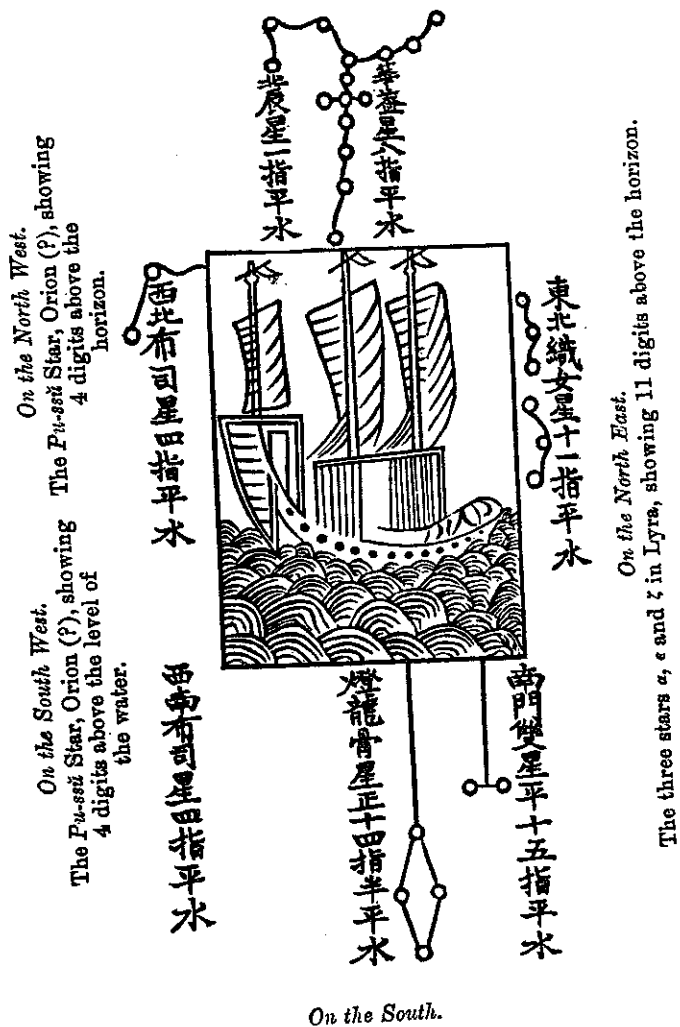


UNAWARE OF THE UPHEAVAL THAT WAS ABOUT TO OVERTAKE China, the great armada sailed majestically south across the Yellow Sea, beginning a journey that would take them to the ends of the earth. Early on the first morning of the voyage, 5 March 1421, the helmsmen kept the Pole Star, Polaris, dead astern while the navigators measured the star's altitude with their sextants. After taking their first readings, the navigators held their course due south for exactly twenty-four hours, then took another measurement of Polaris. By sailing due south, at the end of their first day at sea not only were they able to determine their change in latitude – their distance north or south of the equator – but could also adjust their compasses for magnetic variation, measure their speed and the distance covered, and calibrate their logs.

The methods of navigation employed by Zhu Di's admirals are revealed by one of the few documents of the era to have survived, the *Wu Pei Chi*. These Chinese sailing instructions, essentially a manual of the arts of seamanship and naval warfare, somehow escaped the purges of the mandarins.<sup>1</sup> There were instructions, inscribed on a long, thin strip of paper, for each regular voyage they made, giving detailed directions including star positions, latitudes, bearings and the physical description of islands, prominent headlands, bays and inlets that would be clearly visible along the route. By studying these sailing directions, it is possible to deduce not only the course the Chinese had steered but the accuracy of their navigation and their ability to set a course by the stars. It is an invaluable document.

The Pole Star was of great importance to the Chinese, both symbolically and for navigation. It was the fundamental basis of Chinese astronomy, for the celestial pole was regarded as the heavenly equivalent of the position of the emperor on earth. As mandarins, courtiers and servants circled around the emperor, so the other stars rotated around the Pole Star; as the clothes of the servants and their proximity to the emperor signified their importance, so did the brightness, colour and positioning of the stars that were 'tied' to the Pole Star. 'There is high Confucian authority. The master says,





Navigational diagram used by Zheng He for the Sri Lanka-Sumatra run and reproduced in the *Wu Pei Chi*, 1628.

“He who exercises government by means of his virtue may be compared to the Pole Star which keeps its place while all the stars turn around it.”<sup>2</sup>

Western methods of astronomy embodied the principles first enunciated by Greek astronomers such as Aristotle and Ptolemy, basing latitude on the equator. In Chinese astronomy, latitude was determined not by the distance north of the equator but by the distance from the North Pole, which was determined by the altitude of the Pole Star, Polaris. A bright and easily identifiable star, Polaris sits directly above the North Pole, billions of miles out in space. When viewed from the North Pole it is directly above the observer at 90° altitude or 90° latitude; at the equator it sits on the horizon at 0° altitude or 0° latitude. Measuring its height above the horizon (altitude) enables the navigator to calculate his latitude. Moreover, since Polaris is due north it enables magnetic variation – the difference between due north and the magnetic north of a compass – to be determined and adjustments made.

By 1421, the Chinese had well over six centuries' experience of ocean navigation, basing their calculations on both the Pole Star and the stars circling the pole at high altitudes which never rise and never set. In effect, once the Chinese had determined the absolute position of Polaris in the celestial sphere, they 'tied' other stars in the northern hemisphere to it. When viewing one star or constellation, they knew exactly where the others were in relation to it, even when they had not yet risen in the night sky. They were thus in a position to know a star's exact location, even when invisible below the horizon, by observing the meridian passage – the highest point of their track across the night sky viewed from any particular point – of the circumpolar stars to which it was 'tied'. However, the Chinese had not yet mastered using the sun to obtain latitude,<sup>3</sup> something the Portuguese first achieved in 1474 and which enabled them to measure latitude in the southern as well as the northern hemisphere. The Chinese could not determine their position south of the equator, where Polaris was invisible. It was a problem that had to be solved.

A star or stars in the southern hemisphere that could fulfil the function of Polaris in the northern had to be identified before Zhu Di's dream of charting the whole world could be realized.

By the seventh century, the Chinese could accurately determine the course to steer, for they had discovered the compass. They knew that the magnetic properties of lodestone could be transferred by induction to iron, and that this magnetized iron could be floated on oil, allowing it to swivel freely, one end pointing always to the earth's magnetic north. In 1421 the Chinese could steer to within two degrees of their chosen course using reliable magnetic compasses. They could also measure the distance travelled using hour-glasses of sand. One hour-glass equalled two and a half hours, the length of one watch for the seamen on duty.

The calculation of longitude, however, remained a problem they had not fully resolved at the start of this sixth voyage. Changes in longitude depend on four things: the course steered, the speed of the ship, the time that has elapsed and the distance north or south of the equator. By recording the number of watches, the speed through the water and the compass course, the navigator could estimate his change in longitude. But there was one great disadvantage to the Chinese method of navigation: if the body of water over which the ship was sailing was itself moving – for example, when a current was moving with or against the ship – the mariner had no way of measuring his change of longitude. This could only be achieved by measuring absolute time, something Europeans were not to achieve for another three and a half centuries, when John Harrison finally perfected a clock that could keep precise time at sea. At the start of the sixth voyage, this defect caused huge errors in Chinese calculations of longitude. Polaris navigation enabled them to calculate latitude and make landfalls north of the equator with astonishing accuracy, but a method of calculating longitude with anything approaching the same accuracy was not perfected until near the end of their voyages.

With centuries of experience in building ships to sail storm-tossed

oceans, the Chinese marine engineers had evolved a robust frame built in sections. Each section was contained by watertight bulkheads at either end, resembling the internal partitions of a bamboo, and the watertight sections were bolted together with brass pins weighing several kilograms. Three layers of hardwood were nailed to a teak frame, then the planks were caulked (made waterproof) with coir (coconut fibre) and sealed with a mixture of boiled tung oil and lime. This hard, waterproof lacquer had been used to seal Chinese ocean-going ships since the seventh century, but so much tung oil was required to build Zheng He's treasure fleets that acres of land along the Yangtze banks were acquired to plant orchards of tung trees.

Marine engineers at the Longjiang shipyards designed their ships to survive the fiercest storms on the open ocean. Reinforced bows enabled the vessel to smash through the waves, and at either side of the bow were channels leading to internal compartments. As the square bow pitched in heavy seas, water was funnelled in; as the bow surfaced above the waves, the water drained out, modifying the pitching motion. A teak keel bound together by iron hoops ran the length of the ship, and specially cut, large rectangular stones were packed around it for ballast. Additional keels that could be raised and lowered were fitted at either side for more stability. In a storm, semi-submersible sea anchors could also be thrown overboard to reduce rolling. Even in the roughest weather and sea conditions, pitching and rolling were greatly reduced by these ingenious modifications.

The giant ships could survive typhoons and the sectional construction reduced the risk of sinking through a collision with a reef or an iceberg. They were designed to remain afloat even if two compartments were flooded after being punctured by coral or ice. To increase cargo capacity, the hulls of the junks were very wide compared with their length and they were flat-bottomed. Their sails were balanced lugs, four-sided sails hanging from a yardarm set at an oblique angle – the characteristic sail of China. They were

stiffened by a series of bamboo battens, and the design was extremely efficient when sailing before the wind. It also allowed the sails to be reefed, or lowered, quickly in an emergency.

The most reliable ships in the world in the fourteenth and early fifteenth century, and by far the biggest, were these Chinese junks. Ibn Battuta, the Moroccan traveller and writer who journeyed through Asia in the fourteenth century, wrote that the trade of the whole world between the Malabar coast of India and China was carried in Chinese ships. Centuries later, in 1848, a junk built to the designs of that era was sailed from Shanghai via New York to London by a party of British naval officers. They sailed before the wind all the way and the junk handled beautifully. But magnificent though these ships were, they had been designed to operate primarily between China and Africa, sailing before the monsoon winds (which changed direction twice yearly), as they had for centuries. Although a lug-sail is also quite efficient when sailing into the wind, the combination of the hull shape and sail design meant that the Chinese monsters were crab-like and inefficient when attempting to do so. They had to wear rather than tack, and for all practical purposes were constrained to sail before the wind – a severe limitation when outside the monsoon belt of the Indian Ocean and South China Sea. It was to be one of the crucial factors when it came to tracking the course of the Chinese fleets during the great voyages of 1421 to 1423.

The eunuch captains and admirals of these great treasure ships were men of awesome ability but, like the European explorers who followed them, they often drew their crews from the lowest levels of society. Most were criminals, sent to sea in lieu of imprisonment or internal exile, and in some respects life as a crewman was far better than a prison sentence. They were provided with a uniform – a knee-length white robe – food and wine, and were well cared for when at sea. The admiral's staff included 180 medical officers, and every ship and company of soldiers had a medical officer for every 150 men. There was a varied and plentiful diet on the treasure ships,

but the perils of voyaging through uncharted waters meant that life expectancy was short: only one in ten returned from the great voyages of exploration and discovery. But those who had survived the earlier voyages of the treasure fleets had been well rewarded. They were often freed and given endowments or pensions.

Like all sailors, the Chinese were superstitious. Each of Zheng He's ships had a small cabin dedicated to Shao Lin, the mariners' deity, and prayers were said to her every evening before supper. When the crew went ashore in foreign lands, they carried round bronze mirrors to ward off evil spirits; on the reverse was the eight-spoked Buddhist wheel.

The elite of the crew were the navigators and 'compass-men', operating from an enclosed small bridge and living and dining separately from the rest of the men. The junks also carried artisans and craftsmen of every description, capable of performing any task. Caulkers, sailmakers, anchor- and pump-repairers, scaffolders, carpenters and tung oil painters would keep the ships in good repair on their long voyage into the distant oceans. Their work in the Forbidden City complete, stone-carvers and stone masons were also embarked to leave permanent legacies of the fleets' voyages across the world. There was even a historian, Ma Huan, to document the voyage. His diaries, *The Overall Survey of the Ocean Shores*, were published in 1433, after Zheng He's final voyage.

The staple foods – soya beans, wheat, millet and rice – were carried in separate grain ships, enabling a fleet to stay at sea for several months without replenishing supplies, but if the grain ships sank, the whole fleet was in desperate trouble. Soya beans, grown in tubs all year round, were used in several ways. Soaked in water, they sprouted 'yellow curls' from the green bean. The sprouting process increased the content of ascorbic acid, riboflavin and nicotinic acid, the basis of vitamin C, and protected the crew from the deficiency disease scurvy. The Chinese knew well the dangers of scurvy and the remedies to prevent it. Enough citrus fruit – limes, lemons, oranges, pomelos and coconuts – was taken aboard to give every man protection

against the disease for three months. Pomelos – a grapefruit-like fruit, also known as a shaddock – had been particularly valued ever since the Warring States period from the fifth to second centuries BC. 'The candid and ingenious prince should know . . . the State of Chu must necessarily gain wealth from its groves of orange and pomelo trees.'<sup>4</sup>

Rice was brown, not polished, and the husks contained vitamin B1. As a result, beri-beri – a disease causing degeneration of the nervous system – was rare among the crew. Fresh vegetables mainly comprised cabbages, turnips and bamboo shoots. When they ran out, the sprouting soya beans were particularly valuable. Soya beans also produced 'milk'. When boiled, it became curd, or tofu, rich in vitamin D, and fermentation of soya produced soy sauce. Tofu and vegetables were flavoured with a sauce made from fermented fish, soy, dried herbs and spices, or glutamate made by chewing wheat flour. The grains were chewed, spat out into a container and left to ferment. The method is still used in South America today. Noodles, pasta and dumplings were also made from wheat flour. Sugar cane was used to sweeten dried fruit and was also chewed raw by the crew.

Fruits and vegetables were preserved in ingenious ways. Fruit was dried or caramelized, pears, bamboo shoots and grapes were buried in sand, and vegetables were salted, pickled and marinated in vinegar and sugar.<sup>5</sup> Meat was limited, for the most part comprising dogs bred for the purpose and frogs kept in tubs. Chickens were kept for divination and were never eaten, but fresh, salted, dried and fermented fish were plentiful. They were caught by the trained otters, working in pairs to herd shoals into the nets, and by an array of hooks and nets. The crew drank green oolong and red tea, carried in both leaf and cake form, and rice wine (*jiu*) was hugely popular. 'In the sixth month [August] we gather wild plums and berries; in the seventh we boil marrows and beans; in the eighth we dry the dates; in the tenth we take the rice to make with it the spring wine so that we may be granted long life.'<sup>6</sup>

Wine was also distilled into liqueurs, brandy and vinegar. The junks carried huge quantities of fresh water and replenished their tanks whenever an opportunity arose, but they also knew how to distil it from sea-water, using paraffin wax or seal blubber for fuel. Their capacity to desalinate sea-water and the fresh vegetables they carried gave them the ability to cross the broadest oceans. The overall diet was infinitely more varied and nutritious than that provided for his crew by Magellan the best part of a century later – 'We ate only old biscuits turned to powder, all full of worms and stinking of the urine the rats had made on it.'<sup>7</sup> On the junks, rats were hunted by the sailors' little ship-dogs. Arsenic was used to kill bugs and insects and to promote the growth of plants.

The concubines for the treasure fleets were recruited from the floating brothels of Canton.<sup>8</sup> They belonged to an ethnic group called the 'Tanka', descendants of people who had emigrated from the remote interior of China to the coast to engage in pearl fishing. They spoke a peculiar dialect and differed from Chinese women by refusing to have their feet bound. They were prohibited from going ashore at any ports of call and from marrying Chinese men. They attended the sumptuous banquets aboard the treasure ships and were taught how to hold their drink; they consumed huge amounts. They were well educated and, as well as satisfying the sexual demands of the ambassadors and envoys, were expected to play cards and chess, to act in plays and to sing and dance. Most of them were Buddhists, a creed they adopted because of its teaching of universal love, compassion and equality of all beings, man and woman, emperor or prostitute.

Concubines were not viewed with contempt because of their profession; they were regarded as a long-established, legitimate and necessary part of society. Indeed, sex was viewed as a sanctified act. 'Of all the ten thousand things created by heaven, man is the most precious. Of all things that make man prosper, none can be compared to sexual intercourse. It is modelled after heaven.'<sup>9</sup> All men were free to have concubines, and 'class or fortune mean nothing in

the selection as the only standard of preference is physical beauty'.<sup>10</sup> The Chinese invariably invited rulers back to Beijing, and foreign envoys could dwell in heaven from the time they left their home country until they returned, often a year or more later. Little wonder that they accepted invitations to Beijing with such alacrity.

Sex aids and aphrodisiacs were available to concubines and their guests. The most popular aphrodisiac was a pair of red lizards caught while copulating and drowned alive in a jar of wine. The wine was left for a year before being sold. There were also 'the genitals of a lewd animal, the beaver, with the drug so obtained to anoint the penis', and 'bald chicken potion'<sup>11</sup> was very popular. The name derived from a prefect of Shu who started drinking the elixir when he was seventy. His wife was so exhausted by his subsequent virility that 'she could neither sit nor lie down', and insisted that her husband throw the potion away. A cockerel then ate it, jumped on a hen and 'continued copulating several days without interruption, pecking the hen's head until it was completely bald'.<sup>12</sup>

The 'classic' concubine's bed was decorated with symbolic fruit. Bedspreads were embroidered with patterns of blossoming plum branches – the plum denoted sexual pleasure and fulfilment. The peach represented women's genitalia, and pomegranates represented the vulva. When envoys boarded treasure ships they frequently gave pomegranates as gifts. By day, concubines wore pantaloons, wide trousers; they usually made love wearing the *mo xiong*, a red brassière and silk stockings. Envoys and concubines were expected to wash their private parts before and after intercourse. A male contraceptive, a condom called *yin jia*, was available, and agar-agar jelly acted as a lubricant and mild disinfectant; venereal disease in the era of the treasure ships was rare, though it was to spread like wildfire in the late Ming period.

For the courtesan, the voyages offered an opportunity to attain the ultimate aim: to be freed to join a man who loved her. An envoy would request that a particular favoured concubine be disembarked with him at his home port, and she would remain with him as the

fleet sailed on. Aboard she was respected and protected. If she failed to attain her dream and became too old to attract men, she was given the job of instructing the younger women in dancing and singing. By the time the foreign envoys left the treasure ships, some of the courtesans would undoubtedly have been pregnant. What happened to their children is not recorded. The concubines probably assumed other duties – cooking, weaving and sewing silk, making hemp ropes and looking after the tubs of beans and coops of chickens – until they were next required for the entertainment of foreign envoys. The eunuchs clearly had no use for the concubines and crewmen would have been executed for even approaching their quarters.

As the armada continued south on the first stage of the great voyage, the power to drive its huge ships was provided by the massive energy of the monsoon winds. Monsoons had always determined sailing patterns from China through the Indian Ocean to India and Africa. Ports such as Malacca (modern Melaka in Malaysia) developed where goods could be stored between the monsoons, the south-west in July and the north-east starting in January. Chinese ships took advantage of the north-east monsoon to sail before the wind to India, returning home on the next monsoon. The south-west monsoon reaches India in July, several weeks before it breaks over the coast of China. Ships from India sailing before the north-east monsoon winds arrived in Malacca before the junks from China had even set sail, and had unloaded and sailed for home by the time the junks arrived in Malacca.

According to Ma Huan, Zheng He's fleet arrived in Malacca six weeks after leaving Beijing. First established by the Chinese as a port where spices from the Moluccas – the Spice Islands (the modern Maluku Islands of Indonesia) – could be collected, Malacca soon expanded into a distribution centre for Chinese porcelain and Indian textiles, and grew to become one of the principal hubs of Indian Ocean trade. Halfway between India and China and 120 miles up the west coast of Malaysia from modern Singapore,

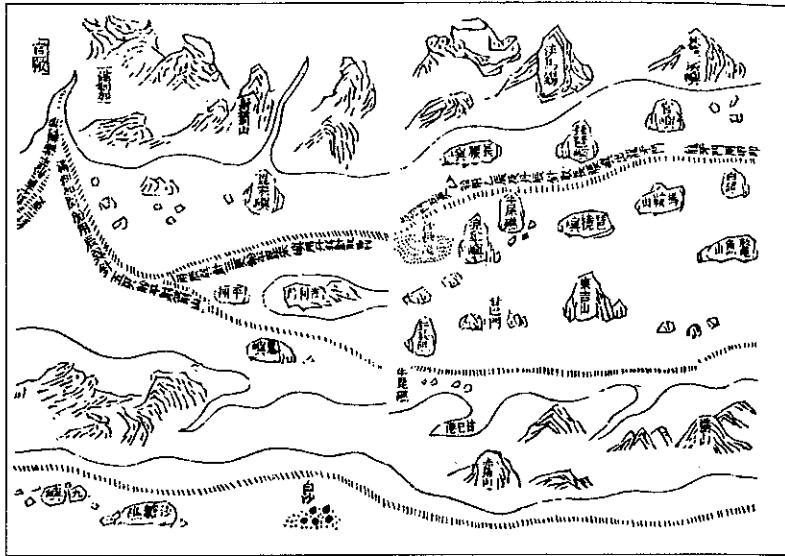


Chart of the Straits of Malacca from the Mao Kun map in the *Wu Pei Chi*. Malacca is in the top left-hand corner and Sumatra runs along the bottom.

Malacca lies on a strait through which sailing vessels must pass and has a sheltered location protected from storms by a ring of islands. There were rich tin mines in the surrounding area, a freshwater river bisected the town and the abundant water and teak from the surrounding forests made Malacca an ideal port. The trade in spices remained of paramount importance, offering merchants and traders the chance to amass vast fortunes. The attempt to exploit and control this vastly lucrative spice trade was later to be one of the principal engines driving the European voyages of discovery.

The Chinese set up a series of trading ports such as Malacca and Calicut on the south-west coast of India throughout south-east Asia and around the Indian Ocean. They were used as forward bases by Zheng He's fleets, providing fresh provisions, water and wood all the way from China to East Africa. They were an essential prerequisite for Zhu Di's plan to bring the entire world into China's tribute system. In 1421, trade throughout the Indian Ocean was

dominated by the Chinese and Arabs from Egypt and the Gulf States; relations between them were friendly. Like the rest of the known world, the Arabs craved Chinese porcelain and silk, and Chinese junks were almost always welcomed in Arab ports.

A report came from Mecca, the honoured, that a number of junks had come from China to the sea ports of India and two of them had anchored in the port of Aden, but their goods, chinaware, silk, musk and the like, were not disposed of there because of the disorders of the State of Yemen . . . The Sultan wrote to them to let them come to Jeddah and to show them honour.<sup>13</sup>

Chinese and Arabs met in equal numbers at the great Indian port of Calicut. Hormuz in the Persian Gulf and Malindi, Kilwa and Zanzibar in East Africa were Arab ports used extensively by the Chinese, but Malacca was virtually a Chinese colony and epitomized the Chinese forward base.

Formerly this place [Malacca] was not designated a 'country' . . . There was no king of the country; it was controlled only by a chief. This territory was subordinate to the jurisdiction of Hsien Lo [Thailand]; it paid an annual tribute of forty Liang of gold [approx. 48 troy ounces]; if it were not [to pay] then Hsien Lo would send men to attack it.

In the seventh year of the Yung Lo [1409] the Emperor ordered the principal envoy the grand eunuch Cheng Ho [Zheng He] and others to assume command and to take the imperial edicts and to bestow upon the chief two strong seals, a hat, a girdle and a robe . . . Thereafter Hsien Lo did not dare to invade it (Ma Huan, 1424).<sup>14</sup>

The diaries of Ma Huan also give a vivid picture of south-east Asia – the crocodiles that inhabit the mangrove swamps, rubber being tapped, the tin mines and coconut plantations.

The coconut has ten different uses. The young tree has a syrup, very sweet and good to drink; it can be made into wine by fermentation. The old coconut

has flesh, from which they express oil, and make sugar, and make a food stuff for eating. From the fibre which envelops the outside they make ropes for shipbuilding. The shell of the coconut makes bowls and cups; it is also good for burning to ash for the delicate operation of inlaying gold or silver. The trees are good for building houses, and the leaves are good for roofing houses.<sup>15</sup>

Ma Huan also described the procedures followed by the Chinese fleets when in port:

When Malacca is visited by Chinese merchant vessels, [the inhabitants] erect a barrier [for the collection of duties]. There are four gates in the city wall, each furnished with watch and drum towers. At night men with hand bells patrol the precincts. Inside the walls, a second small enclosure of palisades has been built where godowns [warehouses] have been constructed for the storage of specie and provisions. When the government ships [Zheng He's fleet] were returning homewards, they visited this place in order both to repair their vessels and to load local products. Here they waited for a favourable wind from the south and in the middle of the fifth month [June] they put to sea on their return voyage.<sup>16</sup>

As well as trade, the Chinese were also greatly intrigued by the erotic Malaccan women. "The mental capacity of the wives far exceeds that of their husbands. Should it happen that one of their wives is on terms of great intimacy with one of our countrymen, and allows him to feast and carouse with her, her husband looks calmly on and is not angry, but simply remarks: "My wife is beautiful and the Chinaman is delighted with her."<sup>17</sup> Malaccan men went to considerable lengths to give pleasure to their women. Chinese-made glass beads assisted them, a custom still practised in some parts of south-east Asia today.

When a man has attained his twentieth year, they take the skin which surrounds the penis (*membrum virile*), and with a fine knife shaped like an

onion they open it up and insert a dozen tin beads inside the skin . . . [The beads] look like a cluster of grapes. The King and the great chiefs or the rich people use hollow beads of gold in which is placed a grain of sand. After these have been inserted, when they walk there is a tinkling sound which is considered beautiful. Men who have no beads inserted [in the manner described] are people of the lower class.<sup>18</sup>

All manner of peoples visited Malacca – Bengalis, Gujaratis, Parsees, Arabs and many others conversed in eighty-four languages – and all returned home with Chinese goods. Boats that brought spices from the Spice Islands of Ternate and Tidore in the Moluccas returned with Chinese porcelain. Arab dhows sailed north-west for India, the Gulf, Egypt and Venice laden with silk, supplemented with batiks and tin from Malacca and Java. After the Chinese junks had unloaded their silk and porcelain, they refilled their holds with spice, Indian gems and Venetian glass.

[The Chinese] go about the country, scales in hand, buying up all the pepper they find, and after weighing a small amount so that they can judge approximately the quantity, they offer the payment for it in a lump sum, depending on the need for money of those who are selling it, and in this way they amass such a quantity they can fill the ships from China when they arrive, selling fifty thousand caixas' [a Portuguese trading currency] worth, which has cost them no more than twelve thousand.<sup>19</sup>

Throughout the archipelago and the whole of south-east Asia, trade was focused on Malacca and dominated by the Chinese. China consumed a hundred times more spice than distant Europe, and the Chinese merchants not only controlled commodity and currency markets but property prices too, even amusement and gambling. For ten months on end there was a Chinese fair where merchants gambled. 'As their merchandise is sold, they occupy less room and rent fewer houses. As sales fall, the gaming increases'.<sup>20</sup> Malacca was used as a forward base on each of Admiral Zheng He's voyages, and

the importance he attached to the port is demonstrated by the temple he established there. It still stands in the road that bears his name, a few yards east of the Malacca River. According to legend, his flagship was once holed on a reef but its triple hull and watertight compartments enabled him to reach Malacca without sinking.

Zheng He's expeditions had become progressively more adventurous. His first, between 1405 and 1407, had sailed in sixty-two treasure ships manned by 27,800 men. En route for Malacca, they visited Cambodia and Java, then sailed on the next south-west monsoon for Sri Lanka and Calicut on the west coast of India. An incident on this voyage cemented a belief among the sailors that Zheng He's fleet was under divine protection. In the midst of a storm so ferocious that the sailors were praying to Shao Lin to save them from death, a 'divine light' – presumably St Elmo's Fire, a luminous electrical discharge sometimes seen during a storm at sea – appeared at the tips of the masts of Zheng He's flagship. 'As soon as this miraculous light appeared, the danger was appeased.'<sup>21</sup>

By the time of the third expedition, 1409 to 1411, Zheng He had established a settled programme. The fleet used Malacca as its forward base and there divided into squadrons that sailed on independently to separate destinations. The next great fleet set sail from China in 1413. One squadron departed from Malacca for Bengal, the Maldives and Africa; another sailed for the Arabian Sea and up the Persian Gulf to Hormuz. The fleets of the following expedition, 1417 to 1419, visited every major trading port in Africa, Arabia, India and Asia, then brought back the rulers and ambassadors travelling to Beijing for the inauguration of the Forbidden City. They were to spend almost two years enjoying the lavish hospitality of the emperor before the inauguration of his capital. Now, another fleet led by Admiral Yang Qing had been sent on ahead of the main armada. After returning rulers and ambassadors to the Gulf states, his daunting task was to solve the problem of determining longitude.

The rest of Zheng He's armada was embarked on the greatest

voyage of them all. After provisioning in Malacca, they sailed northwards for five days before anchoring off Semudera (modern Sumatra) at the entrance to the Indian Ocean. There, the admiral divided his armada into four fleets. Each carried an army equipped with gunpowder weapons. Three of these great fleets were placed under the command of Grand Eunuch Hong Bao, Eunuch Zhou Man and Eunuch Zhou Wen.<sup>22</sup> The fourth, by far the smallest fleet, remained under Zheng He's direct command. He was the emperor's right-hand man and could not be spared for the entire duration of the voyage. He would return envoys to south-east Asia and then sail for home, arriving in November 1421.

Assuming that Zheng He would have taken only a handful of ships with him for what amounted to no more than a brief and relatively easy passage home, it is safe to estimate that each of the remaining Chinese fleets numbered between twenty-five and thirty ships. Zheng He delegated powers of life and death to his admirals, and command was further delegated within each fleet: two brigadiers and ninety-three captains commanded regiments, and 104 lieutenants and 103 sub-lieutenants reported to them. The first task of the fleets was to return the rulers, ambassadors and envoys to their home ports in India, Arabia and East Africa. They were then to rendezvous off the southern coast of Africa and set sail into uncharted waters to fulfil Zhu Di's vision. They knew exactly what was expected of them. They would proceed all the way to the end of the earth to collect tribute from the barbarians beyond the seas or they would die in the attempt.





II

The Guiding Stars

4

ROUNDING  
THE  
CAPE



IN ORDER TO TRACE THE STORY TO THIS POINT, I HAD HAD TO learn the history of medieval China almost from scratch; my previous knowledge of Chinese history and culture had been modest at best. However, as I began to trace the voyages of the great treasure fleets in the 'missing years' from 1421 to 1423, I was entering familiar territory, making use of knowledge and skills I had acquired over many years' experience as a navigator and commanding officer on the high seas. During that sixth voyage, the fleets of Hong Bao, Zhou Man, Zhou Wen and Yang Qing sailed the oceans for two and a half years, but the mandarin official at the Ministry of War, Liu Daxia, had ordered the destruction of all written records and there was virtually no evidence to show where they had sailed or what discoveries they had made. But where before I had been plodding in the footsteps of academics and historians far more knowledgeable and gifted than myself, I could now use my skills to decipher the fragmentary evidence offered by ancient maps and charts, and those few documents and artefacts to have survived.

Two of these artefacts were carved stones. Old, virtually ignored by the new regime in China and perhaps fearing that he might never return, Admiral Zheng He erected two carved stones in palaces of the Celestial Spouse, a Taoist goddess, before he set sail on his final voyage in late 1431. The first was in Chiang-su, Fujian province, and the second at Liu-Chia-Chang. Only rediscovered in 1930, the stones commemorate the crowning achievements of his life, the great voyages of the treasure fleets. Their inscriptions are the key to unlocking the riddle of the sixth voyage.

*Inscription at Chiang-su*

From the time when we, Cheng Ho [Zheng He] and his companions at the beginning of the Yung Lo Period [or Yong Le – Zhu Di, 1403], received the imperial commission as envoys to the barbarians, up until now seven voyages have taken place and each time we have commanded several tens of thousands of government soldiers and more than a hundred oceangoing vessels. Starting from T'ai Ts'ang and taking the sea, we have by way of the

countries of Chan-Ch'eng (Champa), Hsien-Lo (Siam), Kua-Wa (Java), K'o Chih (Cochin) and Ku-Li (Calicut) reached Hu-Lu-Mo-Ssu [Hormuz, in the Gulf] and other countries of the western regions, more than three thousand countries in all.<sup>2</sup>

*Inscription at Liu-Chia-Chang*

We have traversed more than 100,000 *li* of immense water spaces and have beheld in the ocean huge waves like mountains rising sky-high, and we have set eyes on barbarian regions far away, hidden in a blue transparency of light vapours, while our sails, loftily unfurled like clouds, day and night continued their course, rapid like that of a star, traversing those savage waves.<sup>3</sup>

The original English translation of Zheng He's Chiang-su inscription had been made by that great scholar of medieval China J.J.L. Duyvendak in the 1930s. In his article 'The True Dates of the Chinese Maritime Expeditions in the Early Fifteenth Century', the translation of a key phrase in the inscription was given as 'three thousand countries'. He and later scholars<sup>4</sup> thought that such a claim was so wildly implausible that the stone mason who carved the inscription must have made a mistake. On these grounds, the translation was amended to read 'thirty countries'. This was then repeated by subsequent writers and historians, and it was only when I consulted Duyvendak's text that I realized the original translation could have been correct; there was no logical reason why the mason who carved the inscription should have made such a gross error. But could such an extraordinary claim really be true? Had Zheng He's fleets reached three thousand countries? If so, the history of the exploration of the globe would have to be rewritten.

In attempting to reconstruct the voyages the fleets had made, I first had to put myself into the shoes of the Chinese admirals. There was no better way of doing that than by sailing in their wake, as I had done as a young officer in the British Royal Navy aboard HMS *Newfoundland*. Our captain was a very brave and distinguished submariner, now Vice-Admiral Sir Arthur Hezlet KBE CB DSO and bar DSC. *Newfoundland* left Singapore in February 1959, passed

through the Malacca Straits into the Indian Ocean and then turned westwards for Africa. We visited the Seychelles in the Indian Ocean before continuing west, making landfall on the East African coast at Mombasa. From there we went on to call at Zanzibar and Dar es Salaam before arriving at Lourenço Marques. We then sailed on down the east coast of Africa, visiting East London and Port Elizabeth before rounding the Cape, calling in at Cape Town, and sailing up the west coast round the 'bulge' of Africa to Sierra Leone, through the Cape Verde Islands and back home to England.

That journey gave me an invaluable insight into the winds, currents and navigational problems the Chinese admirals had encountered. Without that experience I could never have followed the elusive trail of evidence across the globe that revealed the incredible journeys made by the great Chinese treasure fleets. If I was able to state with confidence the course a Chinese fleet had taken, it was because the surviving maps and charts and my own knowledge of the winds, currents and sea conditions they faced told me the route as surely as if there had been a written record of it.

After parting company with Zheng He, the three remaining Chinese fleets sailed for Calicut, the capital of Kerala in southern India and by far the most important port in the Indian Ocean. The Chinese had been trading with Calicut since the Tang dynasty (AD 618–907). It was not only an important Chinese forward base but a great trading port, holding a huge stockpile of Indian cotton and textiles (calico), and the foremost centre for the trade in pepper. Its rulers, the Zamorins – Hindu kings – had built up an extensive network of trading relations throughout the Indian Ocean, East Africa and south-east Asia. Nearly all the celebrated travellers and explorers of the Middle Ages, such as Marco Polo (1254–1324), Ibn Battuta (1304–1368) and Abdul Razak (active 1349–1387), travelled to Calicut. In Zhu Di's reign, the Chinese explicitly recognized Calicut, which they called Ku-Li, as the leading emporium of the Indian Ocean, describing it as 'the most important harbour in

the western ocean' and 'the meeting port of all foreign merchants'.<sup>5</sup> Chinese sailing directions for the Indian Ocean specified distances to and from Calicut and gave courses to steer between Calicut, Malacca, northern India, the Gulf and Africa. For their part, Calicut's rulers venerated China; between 1405 and 1419 they sent a series of diplomatic missions to Nanjing and Beijing, and a delegation attended the inauguration of the Forbidden City and presented Zhu Di with valuable horses.

The official historian Ma Huan described the Chinese voyage from China via Malacca to Calicut in great detail: no fewer than nine pages of his account were devoted to the city. He gave an enthralling account of life in a medieval Indian city through Chinese eyes, noting the religious practices of the Zamorin king in contrast to those of his Muslim subjects, and bringing to life the habits of the people, their festivals, music and dancing, clothing and food: 'The King of the country and the people of the country all refrain from eating the flesh of the ox. The great chiefs are Muslim people, they all refrain from eating the flesh of the pig.'<sup>6</sup> Ma Huan went on to describe local crime and punishment, in particular how the guilt or innocence of a person was determined in a 'trial by ordeal' in which the accused's fingers were held in boiling ghee, or clarified butter, before being wrapped in cotton. He also detailed the way in which goods from the treasure fleets were sold, and the form of contract used:

If a treasure ship goes there, it is left entirely to the two men to superintend the buying and selling: the King sends a Chief and a Chei-Ti [a port customs official] to examine the account books in the official bureau; a broker comes and joins them [and] a high officer who commands the ships discusses the choice of a certain date for fixing prices. When the day arrives, they first of all take the silk embroideries and the open-work silks ... when the price has been fixed, they write out an agreement ...

The Chief and the Chei-Ti with his excellency the Eunuch all join hands together and the broker then says: 'In such and such a moon on such and such

a day, we have all joined hands and sealed our agreement with a hand clasp. Whether [the price] be dear or cheap, we will never repudiate or change it.'<sup>7</sup>

By an extraordinary coincidence, at the very time the treasure fleets were in the city in 1421, a young Venetian, Niccolò da Conti (c. 1395–1469), also arrived. A well-connected trader, da Conti had left Venice in 1414 for Alexandria. The Islamic rulers in Egypt, the Mamluk sultans from the steppes of Asia, did not then permit Christians to travel south of Cairo for they were determined that the Indian Ocean should remain an Islamic lake. While in Egypt, da Conti had learned Arabic, married a Muslim woman and converted to Islam. Now travelling as a Muslim merchant, he journeyed to the Euphrates delta (in modern Iraq) and on to India, arriving by late 1420. He made for Calicut, because at the time it was a centre for Nestorian Christians – a cult of followers of St Thomas, also known as 'The Holy Apostolic Catholic Assyrian Church of the East', that had thrived in Syria in the sixth century and still exists in parts of western Asia – who were allowed to worship there by the tolerant Zamorins.

Years later, as penance for da Conti's renunciation of Christianity, Pope Eugenius IV made him relate the story of his journeys to the papal secretary Poggio Bracciolini, who had them published.<sup>8</sup> Da Conti described Calicut as 'eight miles in circumference, a noble emporium for all India, abounding in pepper, lac [a kind of insect gum used in making lacquer] and ginger'. There can be no doubt that da Conti was in Calicut when the Chinese fleets passed through, nor that he had at the very least boarded a junk, for he later described them in conversation with his friend, the Castilian Pedro Tafur: 'Ships [junks] like great houses and not fashioned at all like ours. They have ten or twelve sails and great cisterns of water within ... the lower part is constructed with triple planks. But some ships are built in compartments, so that should one part be shattered, the other part remaining entire, they may accomplish the voyage.'<sup>9</sup> The description could only refer to warships of Zheng He's fleet; Chinese merchantmen did not have that type of construction, or that number

of sails. I felt certain that da Conti also met Ma Huan in Calicut, for he described scenes almost identical to those Ma Huan recounted, as I discovered when comparing their two accounts. It was as if two different witnesses were describing the same things: the land surrounding Calicut, the trial by ordeal, capons and partridges kept in coops, the price and quality of ginger and pepper. Only in writing about sex did their emphases differ: da Conti described how women's orgasms were heightened by the beads inserted in boys' penises; the more fastidious Ma Huan mentioned only the tinkling noise the beads made.

Having travelled through India and the Far East on many occasions over several decades, I can vouchsafe for the accuracy of da Conti's descriptions – durians (a luscious but curious fruit) smelling of cheese in Malaysia, the musk of civet cats on the Malabar coast, the sweet smell of the scent used by Goanese women. He describes African ostriches and hippopotami, the rubies of Sri Lanka, Hindu women practising suttee (self-immolation on their husbands' funeral pyres), vegetarian Brahmins (the priestly caste of Hindu India), the

dusty smell of cinnamon. Da Conti's descriptions of his subsequent travels in Chinese junks were to prove a vital link in solving the riddle of where the Chinese fleets had gone in the 'lost' years, for, as Ma Huan's account makes clear, with his role as official chronicler apparently over, he left the treasure fleets at Calicut. His departure meant that one useful source of information had dried up, and I had to look for other sources to replace him. The importance of da Conti to the story of the Chinese voyages became increasingly clear. Someone must have brought back copies of maps showing the discoveries made by the Chinese fleets, for how else could this information have reached Europe and become incorporated in the charts that were later to guide the Portuguese explorers? If it turned out that da Conti had also conversed with the Chinese on their return journey, he would be a prime candidate. Those charts were now proving equally vital to me as I endeavoured to trace the routes the Chinese fleets had followed.

The first task of the Chinese admirals after leaving Calicut was to return ambassadors to the coastal states of East Africa. Their passage

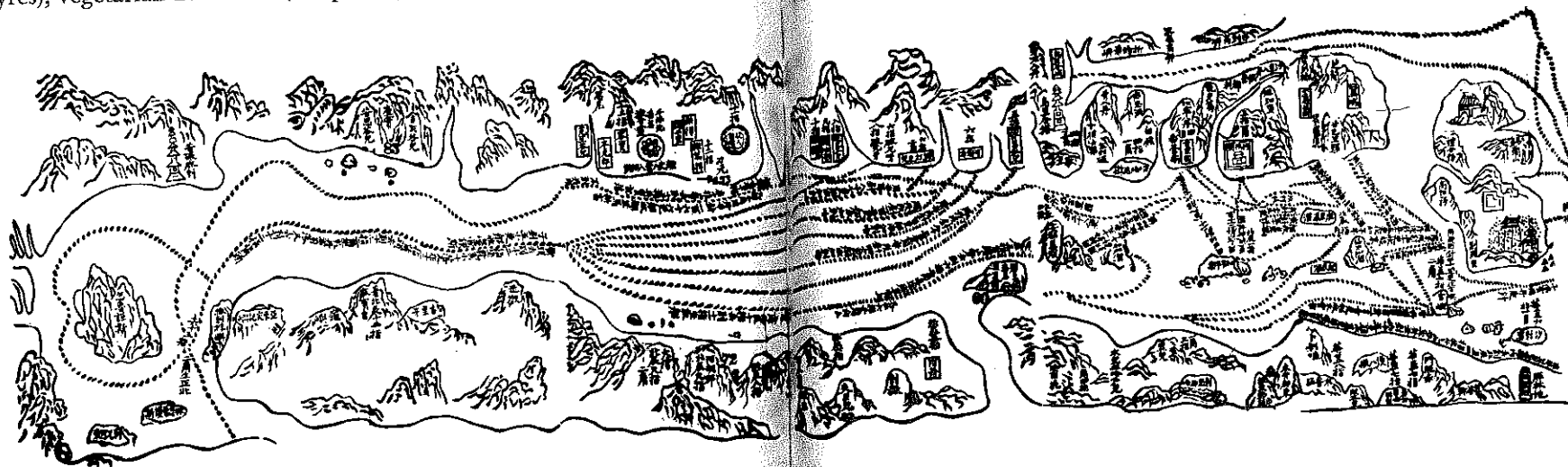
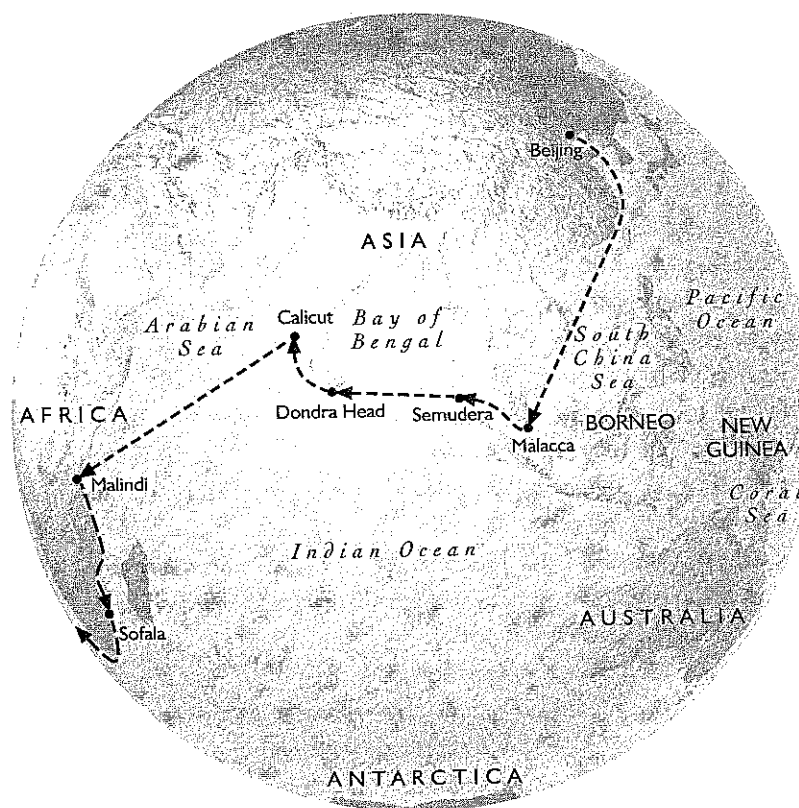


Chart of the Arabian Sea from the Mao Kun map in the *Wu Pei Chi*. At the top is the west coast of India and at the bottom the coast of Arabia.

plan was marked on the Chinese Mao Kun chart compiled after the sixth voyage. The Mao Kun forms part of the much larger *Wu Pei Chi*. That part of the Mao Kun that has survived – no-one knows how large it originally was – is in strip form, 21 feet long and plastered with hundreds of names of ports and prominent coastal features, and the courses to steer and distances between them. It is 'believed to have been compiled in about 1422 from a mass of information brought back by Zheng He's fleet or collected for their use'.<sup>10</sup> Only a part of it has been translated to date, and as I write, scholars of medieval Chinese are working on the remainder. The translations of the Mao Kun and the *Wu Pei Chi*, and other documents of the period, will almost certainly produce further evidence of the great Chinese voyages. The quest to find further records will be formally inaugurated at a conference in Nanjing on 18 October 2002.<sup>11</sup>

The treasure fleets sailed from Calicut on the tail end of the north-east monsoon into the Indian Ocean, altering course to the south-west to make landings in Africa to return the ambassadors to their home ports – the route we followed over half a millennium later in HMS *Newfoundland*. It would have been uneconomical for all the fleets to have gone to each African state, so they would almost certainly have divided, with one returning ambassadors to Mogadishu (in modern Somalia) in the north, another to Zanzibar in the middle of the east coast, and a third to Kilwa (in modern Tanzania) further south. After all the ambassadors had been returned to their home countries, the Mao Kun indicates that the fleets rendezvoused off Sofala (near Maputo in modern Mozambique).

Finding the rendezvous must have posed a major problem, for during a voyage from India to southern Africa, Polaris, the Chinese guiding star, would have sunk closer and closer to the horizon and become invisible at 3°40'N, north of Mogadishu in Somalia. Until they found another guiding star in the southern hemisphere to fulfil the same purpose as Polaris in the north, they were sailing into the



The voyage to Sofala.

unknown. They could use the Southern Cross for direction, for they knew that its leading stars, Crucis Alpha and Crucis Gamma, pointed to the South Pole, but as yet they had no star they could use to determine latitude. To locate one, they would have to sail far into the icy waters of the deep south. This was to be one of the most important aims of the expedition.

Allowing for sailing a hundred nautical miles (115 statute miles) in a day (the average speed recorded in the surviving records of

Chinese voyages in the Indian Ocean) and for remaining a maximum of one week in each port to re-provision (it usually took two to four days), all three fleets had probably completed the return of the envoys and ambassadors to their home ports by July 1421. By the time they had arrived at the rendezvous off Sofala, the admirals had already sailed some ten thousand miles since leaving China four months earlier. They would not return for over two years, but they did leave signposts of where they had sailed. The Chinese were rightly proud of their great voyages, and whenever they landed they usually carved stones in commemoration, like those erected by Zheng He in China. There are other similar stones near Cochin and Calicut in India, and near Galle in Sri Lanka. Some of the masons and stone-carvers who had worked on the Forbidden City had been brought with the fleets for precisely this purpose. The discovery of such stones was to prove one of the crucial links in the chain of evidence I was assembling. From the inscriptions on the carved stone erected by Zheng He in the Palace of the Celestial Spouse at Liu-Chia-Chang, I knew they had sailed forty thousand miles on their sixth voyage – almost twice around the globe.<sup>12</sup> The *Wu Pei Chi* and the *Mao Kun* covered only the Chinese routes across the Indian and Southern Oceans. Without Chinese records to help me, how could I find out how far they had sailed, what new oceans they had traversed and what new lands they had discovered?

My first recourse was to turn to the other great seafarers of the fifteenth century, the Arabs. My initial instinct has always been to look first for evidence in maps. The British Library holds copies of the great collection of early Arab maps assembled by Prince Youssuf Kamal, a wealthy Egyptian. These maps showed that the Arabs had certainly visited the east coast of Africa, and made regular voyages from the Gulf to collect slaves. However, dependent upon the prevailing winds, they had never ventured beyond the monsoon belt that spans the Indian Ocean but stops short of southern Africa. They set off from the Gulf on the north-east monsoon, sailed down to Zanzibar or sometimes further south to Kilwa and Sofala, then

returned on the next south-west monsoon to the Gulf, laden with their tragic cargoes of slaves. I could not trace a single Arab chart that accurately depicted the east coast of Africa south of Sofala.

I knew of, but at that stage had never seen, a planisphere – a map of the world – showing the Indian Ocean and southern Africa. It was drawn in 1459 by Fra Mauro, a cartographer based on the island of San Michele in the Venetian Lagoon but working for Dom Pedro of Portugal, Henry the Navigator's brother and another leading light in the first wave of European journeys of exploration, who was then compiling a map of the world. I wondered if Fra Mauro's map, now held by the Biblioteca Nazionale Marciana, could throw some light on the Chinese voyages.

When I flew to Venice, the curator, Dr Piero Falchetta, took me into his office and proudly showed me Fra Mauro's map, a grandiose undertaking: the first map of the entire world to be drawn since the days of the Roman Empire. It was to be the first, vital clue to the course taken by the Chinese fleets. Dr Falchetta pointed out that Fra Mauro had correctly drawn the Cape of Good Hope (which he had called Cap de Diab) with its easily identifiable triangular shape, and had done so thirty years before Bartolomeu Dias rounded the Cape. That this was no mistake was emphasized by Fra Mauro himself, for he had appended notes stating that a ship or junk had rounded the Cape:

Around the year 1420, a ship or junk [coming] from India on a non-stop crossing of the Indian Ocean past 'the Isles of Men and Women' was driven beyond Cap de Diab [Cape of Good Hope] and through the Isole Verde and obscured islands [or darkness] towards the west and south-west for 40 days, found nothing but sea and sky. In their estimation, they ran for 2,000 miles and fortune deserted them. They made their return to the said Cap de Diab in 70 days.<sup>13</sup>

Near the note, Fra Mauro had drawn a picture of a Chinese junk. It had the highly unusual broad, square bow, like a modern tank



landing-craft, typical of Zheng He's junks, and was shown much bigger than his depiction of European caravels. Another inscription, placed in the middle of the Indian Ocean, read: "The ships or junks that navigate these seas carry four masts or more, some of which can be raised or lowered, and have 40 to 60 cabins for the merchants."<sup>14</sup> A further note described the huge eggs the crew found when replenishing at Cap de Diab and the giant size of the birds that laid them. That description could only have applied to ostriches.

Fra Mauro's planisphere of 1459 showed the Cape of Good Hope correctly drawn, had an accurate depiction of Zheng He's junks and described birds unique to southern Africa several decades before the first Europeans, Dias and da Gama, got to the Cape. The immediate and obvious question was, how did Fra Mauro get his information? How did he know the shape of a junk, and that the Cape was triangular? I found a partial answer in another fifteenth-century document describing the Portuguese conquest of Guinea: 'Fra Mauro has himself spoken with "a trustworthy person" who said that he had sailed from India past Sofala to Garbin, a place located in the middle of the west coast of Africa.'<sup>15</sup> There was no other clue to help identify the location of Garbin; the name does not correspond to that of any modern place. It is a bastardized version of the Arabic Al Gharb, meaning 'a place in the West'. The identity of the 'trustworthy person' would vitally affect the provenance and credibility of the notes on Fra Mauro's planisphere.

I was convinced that the person could only have been Niccolò da Conti. He was in Calicut when the Chinese junks berthed to offload passengers and cargo and take on supplies on their way across the Indian Ocean. The notes on Fra Mauro's map alluding to the voyage of the junk refer to 'the Isles of Men and Women', a peculiar name also used by da Conti in the account related to the papal secretary Poggio Bracciolini. Da Conti (c. 1395–1469) was a contemporary of Fra Mauro (c. 1385–1459), both came from Venice, and both were engaged in exploration or documenting exploration. Fra Mauro was working for the Portuguese government, and as well as publishing da Conti's

stories, Poggio Bracciolini was also the intermediary between the Pope, Fra Mauro and the Portuguese government. There are no records of other Venetian merchants in India at the time, let alone in Calicut, when the Chinese passed through. It would be extraordinary if Fra Mauro's 'trustworthy person' were not da Conti.<sup>16</sup>

This was the crucial link in the chain connecting the maps drawn by the Chinese cartographers during the great voyages of exploration by the treasure fleets to the later Portuguese discoveries based on the mysterious maps they were soon to obtain. Chinese knowledge and Chinese maps passed from da Conti to Fra Mauro, and from him to Dom Pedro of Portugal and Prince Henry the Navigator. The Papal Secretary, Poggio Bracciolini, was, as we shall see, a key intermediary.

If Fra Mauro's description did come courtesy of da Conti's travels aboard a Chinese junk, it came from a reliable and accurate eyewitness, as I had already discovered. In those circumstances it seemed sensible to examine Fra Mauro/da Conti's claim that a ship or junk had indeed rounded the Cape of Good Hope and then sailed into the South Atlantic. If so, it was a towering achievement, for Pedro Álvares Cabral (1467–1520) and Bartolomeu Dias (c. 1450–1500), the first Europeans to round the Cape and venture into the Indian Ocean, did not do so until 1488. To have drawn the Cape so accurately Fra Mauro must have had a copy of a chart showing the exact shape and location of the southern tip of Africa. Only da Conti could have brought him such a map, obtained during his voyages aboard the Chinese fleet.

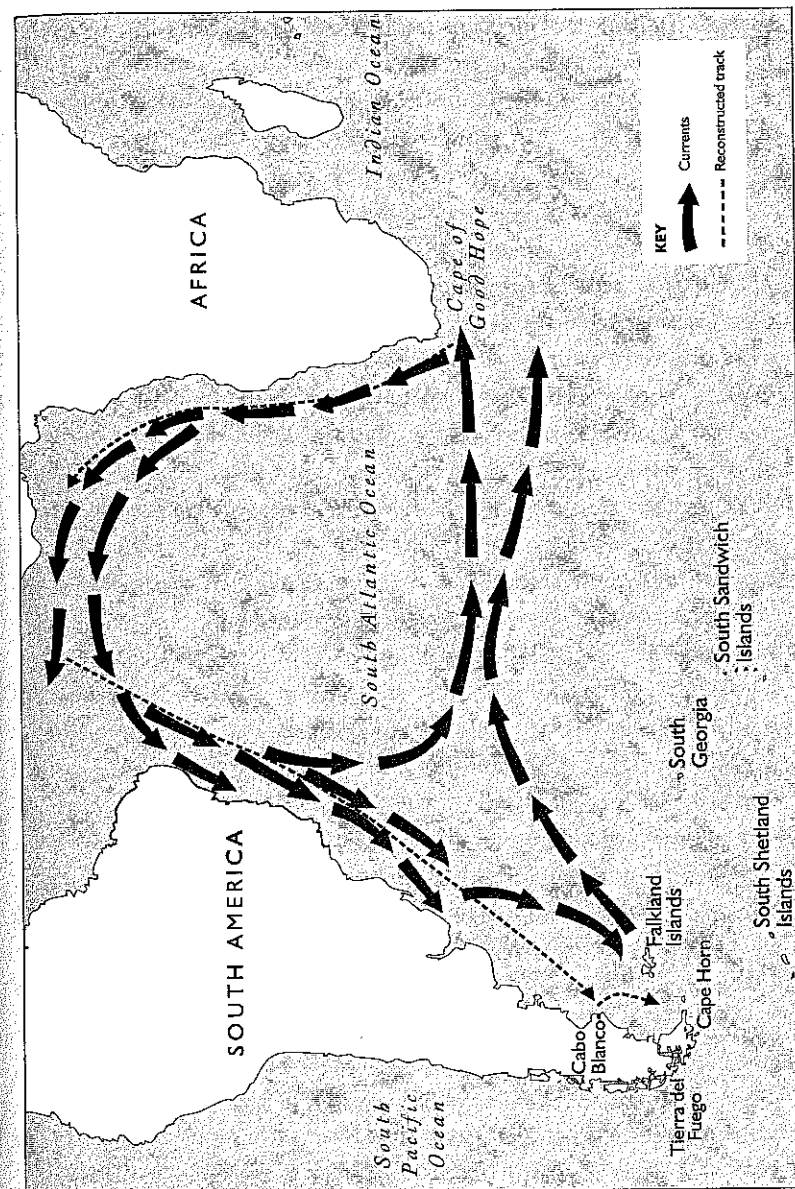
As I know from my own naval career, rounding the Cape remains an emotional experience for sailors today. As the clouds peel off the strange flat mountain tops of the fabled Cape, another ocean and another world – the exotic East – beckons. To the Chinese in 1421, coming from the opposite direction, it must have seemed that at last they had reached the brink of the unknown – not even the great admirals of the Tang dynasty had sailed this far. As they saw the lengthening waves and deepening troughs, they must have prayed

that their ships would prove equal to the colossal challenges the vast and stormy Atlantic Ocean would surely bring.

I now had to discover where the mysterious ship described by Fra Mauro had sailed after rounding the Cape, and look for further independent evidence that it was a junk of one of the Chinese fleets. I started from the treasure fleets' last recorded position, shown on the Mao Kun chart of 1422 as off Sofala, sailing southwards at 6.25 knots, a good speed explained by the Aghulas current that sweeps southwards along the east coast of South Africa down to the tip. At that speed, the Chinese would have rounded the Cape of Good Hope in approximately three weeks, by August 1421.

As they have for millennia, winds and currents in the South Atlantic circle anti-clockwise in a huge oval loop from the Cape of Good Hope in the south to the 'bulge' of Africa in the north. At the Cape, the mariner meets the Benguela current that carries him due north up the west coast of Africa. After some three thousand miles, the current starts to hook first to the north-west, then westwards to South America. Off the coast of South America the current continues its anti-clockwise movement, running southwards off Brazil and Patagonia down the east coast as far as Cape Horn before sweeping to the east, back to South Africa. If a sailing ship, carrying sufficient supplies and robust enough to withstand the 'Roaring Forties' – powerful winds that circle the globe for hundreds of miles north and south of the latitude that gives them their name – were to hoist its sails off South Africa and sail before the wind and current, then several months later, having crossed thousands of miles of ocean in this great anti-clockwise loop, it would return more or less to where it started. An illustration of this is provided by the epic voyage of a very brave and distinguished submarine captain, now Vice-Admiral Sir Ian McIntosh KBE CB DSO DSC, once captain of the submarine squadron in which I served. He wrote to me:

In March 1941 I was a Sub Lieutenant in a merchant ship taking passage to Alexandria. She was sunk by gun-fire by an armed commerce raider some



The circulatory winds and currents in the South Atlantic Ocean.

500 to 600 miles west of Freetown at about 08°N 30°W. The 28-foot standard wooden lifeboat, 'authorised' capacity 56, finally had 82 souls on board.

Even when I had repaired the shrapnel holes in the hull and the boat was reasonably dry I could not get her to sail closer than 5 or 6 points to the wind, a brisk NE Trade. This would never have allowed us to reach Africa, and to run before the wind to Brazil some 1,600 miles distant by the route chosen seemed preferable.

The plan was to steer due west until reaching 33° West then alter course to SW. This made full use of the NE Trades and gave us only a few days of shifting winds (and some most welcome rain) in the Doldrums before picking up light SE Trade winds. We made the [South American] coast on the 22nd day, ran NW along the coast looking for a suitable landing, which we found on the afternoon of the 23rd day.

I had estimated a maximum of 28 days for rationing purposes knowing that the equatorial currents were helping us but I had no idea at our latitude and time of the year whether they were a quarter knot or more than 1 knot, so I disregarded it in my noon DR [Dead Reckoning] positions.<sup>17</sup>

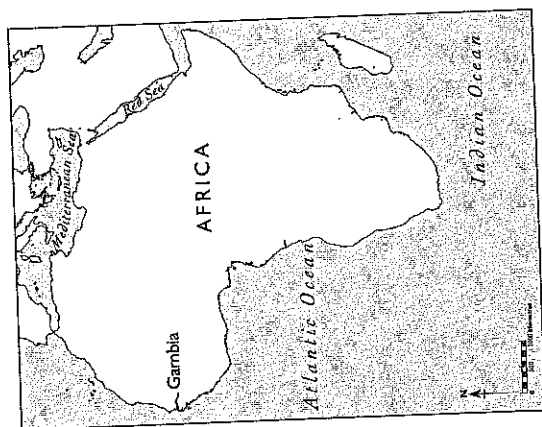
It is entirely feasible that the treasure fleets did reach the Cape of Good Hope where they would have been swept by the wind and current around the Cape and up the west coast of Africa to the 'Garbin' described by Fra Mauro. What I now urgently needed was independent evidence that this had happened. I pondered this question for months. Then I had a stroke of luck. John E. Wills Jr, Professor of History at the University of Southern California, and Dr Joseph McDermott, Professor of Chinese at Cambridge University, England, suggested to me that although the charts and records of the treasure fleets in China had been destroyed, there might be copies in Japan, for Japanese scholars were particularly interested in the early Ming era.

Subsequent research revealed that Ryukoku University in Kyoto held a copy of a Chinese/Korean chart known colloquially as the Kangnido. The Korean ambassador had presented Zhu Di with this extraordinary world map in 1403 after his inauguration as emperor.

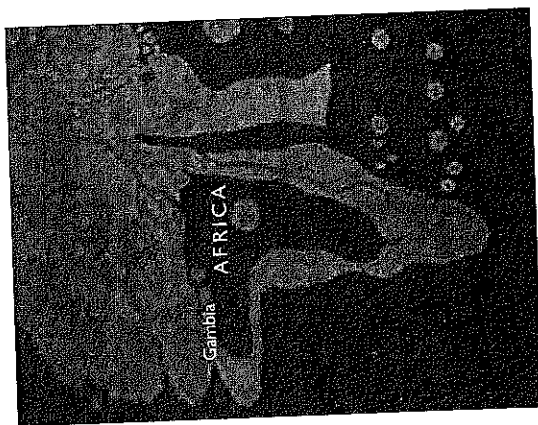
The original map, however, has been lost, and the Ryukoku version of the Kangnido was extensively modified after 1420. It is nearly square and strikingly large, measuring 1.7 by 1.6 metres. Painted on silk, it remains in excellent condition, its colours little faded by the passing centuries. It is 'nicely organized and well worth admiration. One can indeed know the world without going out of the door.'<sup>18</sup>

The Kangnido gave a grandiose panoramic view of the world as seen in the early fifteenth century, and was compiled from many different sources. Names for Europe were in Persian Arabic, central Asia came from the Mongols, China and south-east Asia from old Chinese maps. Europe was covered in names as far north as Germany (named Alumangia). Spain was depicted, as were the straits of Gibraltar leading into the Mediterranean and the North African coast with the Atlas mountains. Europe, Africa, Asia, Korea and China were in their correct positions relative to one another, though Korea, perhaps for reasons connected with national pride and its traditional rivalry with Japan, was shown vastly larger than it should be and Japan much smaller. Nonetheless, it was an extraordinary piece of mapmaking.

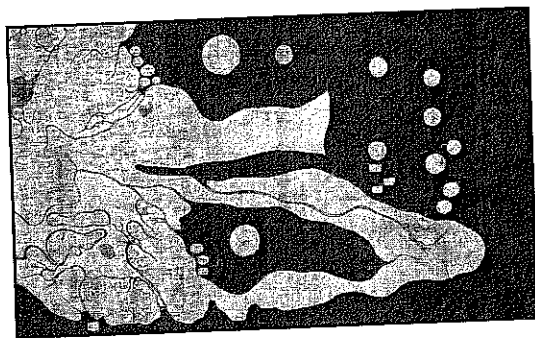
For the moment, the part of the Kangnido that interested me most was Africa. So accurately does the Kangnido depict the coasts of East, South and West Africa that there cannot be a shred of doubt that it was charted by someone who had sailed round the Cape. Europeans did not reach South Africa for another sixty years; Arab navigators on the west coast never sailed south of Agadir in modern Morocco, eight thousand kilometres away, and the Mongols never reached Africa at all. The accuracy of the Kangnido told me that Mauro/da Conti's description made absolute sense. A Chinese navigator could indeed have reached 'Garbin' and then drawn the Kangnido. Still I had no precise location for Garbin save that, from the shape of the coastline shown on the Kangnido, it appeared to be near the Bay of Biafra, off western Nigeria. It was a problem I would have to address later. For now, I felt justified in assuming that the 'junk' referred to by Fra Mauro and drawn on his planisphere was



(iii) Modern Africa.



(ii) The Kangnido map corrected for longitude.



(i) The Kangnido map showing Africa.

from the treasure fleets, for Chinese merchant ships did not sail beyond Kilwa in East Africa. The Kangnido was much less accurate when it came to the 'bulge' of Africa north of the Bay of Biafra, so I next turned my attention to that part of the voyage. If they had managed to survey the coast of southern Africa with such accuracy, why was the bulge of West Africa not shown on the Kangnido chart?

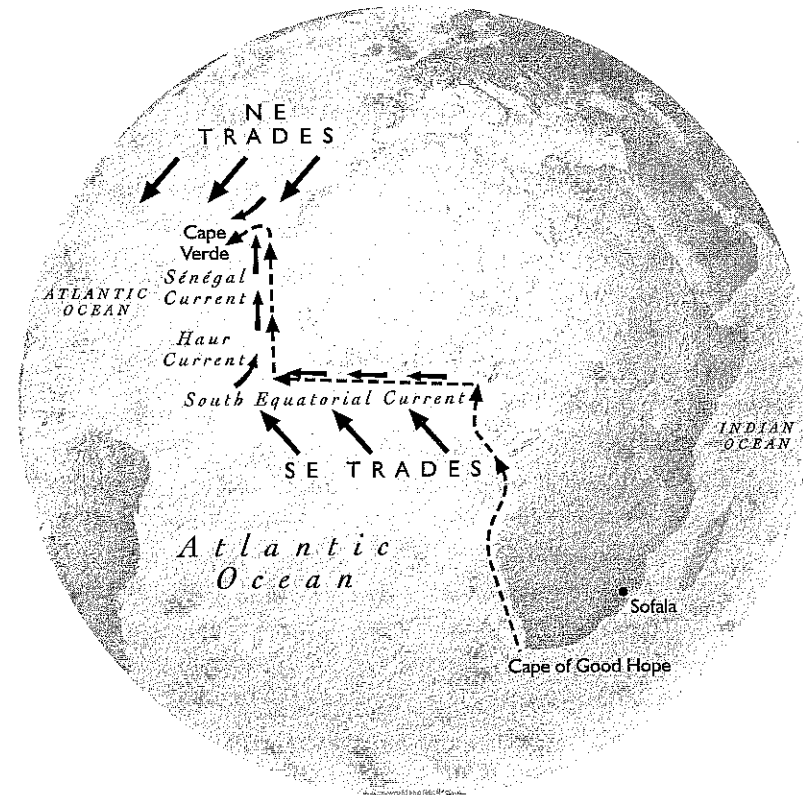
By the time the Chinese fleets reached the Bay of Biafra, they had sailed some three thousand miles north from the Cape. I assumed that they rounded the Cape on their outward journey some time in August. At their average speed of 4.8 knots it would have taken about twenty days to sail from the Cape to 'Garbin'. They would have reached it in late August or early September 1421, the end of summer and towards the end of the rainy season. As I well know from my own time at sea in the South Atlantic, there is an extraordinary natural phenomenon in this part of Africa. Starting in the Bay of Biafra, the south equatorial current runs first to the north past São Tomé e Príncipe Island (where the bulge starts) then hooks westwards to flow due west along the south coast of the bulge, past Nigeria, Ghana and the Ivory and Gold Coasts until it peters out a thousand miles out into the Atlantic around 21°W. This massive body of cold water flows westwards with considerable speed the whole year round; a minor change occurs in summer when it extends further north to reach 5°N, a similar latitude to Monrovia in modern Liberia.

This current would have had two important implications for the Chinese: they would have been carried due west for some 1,800 miles, but they would not have known that this had happened. At this stage of their voyage the Chinese could only measure longitude by estimating their speed through the water, and if the great body of water was itself moving, either against them or with them, there was no way that they could determine their position with any accuracy, any more than a man walking up an escalator can judge the distance he has travelled by the number of paces he has taken. With

mounting excitement, I realized that the charts drawn after they had entered the south equatorial current had to be adjusted to take account of this discrepancy, and the land they showed moved by up to 1,800 miles further to the west. I went back to my copy of the Kangnido and adjusted the land north of the Bay of Biafra to allow for this longitudinal error. The result was startling: the familiar outline of Africa became immediately recognizable. It appeared that the Chinese had been carried by the wind and current to the 'bulge' of Africa forty years before the first Europeans set eyes on it.

The south equatorial current gave them a 'free ride' westwards until the current petered out a thousand miles into the Atlantic. By then, they were in the south-east trade belt and being blown towards the coast of Senegal. In the wet season, running from April to October, the S n gal current off this coast of West Africa reverses its normal direction and runs northwards along the coast at a rate of 0.6 to 1 knot. Yet again the junks would have had a free ride, this time to the north for around five hundred miles until the current itself petered out off Dakar, the modern capital of Senegal. By then they were in the belt of the north-east trade winds, blowing them south-west to the Cape Verde Islands. These lonely islands, then unknown to Europeans, were to play a vital part in unravelling the mystery of the Chinese voyages.

I checked and rechecked my calculations. By late September the junks that left the Cape of Good Hope in August would have found themselves approaching the Cape Verde Islands from the north-east. The design of the ships and the prevailing winds and currents would have prevented these flat-bottomed, broad-beamed monsters from sailing south at any point. It was now clear that Fra Mauro's account was entirely possible and that the Cape Verde Islands could have been the 'Isole Verde' reached by the ship or junk from India, forty days after leaving the Cape of Good Hope; they even had the same name. At 4.8 knots, the speed the treasure fleets averaged over all six great voyages, this would have taken forty days. Vasco da Gama took thirty-three days to make the same passage in the closing years of the century.



The journey to the Cape Verde Islands.

To have been called the 'Isole Verde', the islands Niccol  da Conti described to Fra Mauro must have been strikingly green. I knew the Cape Verde Islands well, having sailed through them in HMS *Newfoundland*. They are divided into two groups, and the windward (*balaventos*) are significantly wetter than the leeward (*sotaventos*). Of the windward islands, the biggest, highest, wettest and greenest is Santo Ant o. It is an island of savage grandeur, awesome and eye-catching from the sea, particularly to a mariner seeking fresh water.

The Chinese admirals would have been approaching from the north-east on the trade winds, and from that direction they would have sighted Santo Antão first. On the north coast of Santo Antão, clearly visible from miles out as you approach from the north-east, there is a dramatic volcano. Streams pour down its sides and rush through lush valleys to the sea around what is now the small settlement of Janela. That strip of coast would have been an obvious and immediate place for the Chinese fleets to anchor and obtain water. If the Chinese had indeed landed there, I was confident that a legacy of their visit should exist.

The Cape Verde Islands were uninhabited when the first European, Cà da Mosto (1432–88), a Venetian explorer in the service of Henry the Navigator, arrived in 1456, so I could not expect to find goods that the Chinese had traded for food, such as the blue and white plates that were their currency on the south-east coast of Africa. On the Cape Verde Islands the Chinese could have obtained any amount of food and water for nothing. The seas teemed with swordfish, sole, shark, octopus, crayfish and tiny sweet mussels, the island was lush with fruit, and flocks of tame birds could be picked up by hand, for they had never learned to be wary of humans, as Cà da Mosto's crew found to their joy thirty-five years later. Nonetheless, there should have been other mementoes. A carved stone similar to the one erected by Zheng He on the estuary of the Yangtze stands at Galle, near Dondra Point in southern Sri Lanka. Inscribed in Chinese, Tamil and Persian, it extols the virtues of Hinduism (the local religion), Buddhism (Emperor Zhu Di's faith) and Islam (the religion of most Indian rulers in the early fifteenth century). There are other similar stones near Cochin and Calicut. I wondered if a carved stone might have been erected here.

The Chinese were always careful to respect local sensibilities; the language school in Nanjing, the *Ssu-i-Quan*, was, after all, set up by Zheng He specifically to train interpreters, and the fleets on this sixth voyage carried interpreters fluent in seventeen different Indian and African languages. It was highly probable that they had also left

a stone on one of the Cape Verde Islands, carved with inscriptions in a language they thought people from the surrounding areas would understand. Such stones were always sited in prominent places where they would readily be discovered by others – what would be the point of erecting a monument to your achievements and then hiding it where it would never be found? If such a stone existed, the first Europeans should have found it when they reached Santo Antão thirty-five years later.

I referred to the journals describing Antonio da Noli, Cà da Mosto and Diego Alfonso's first voyages to the islands, and discovered that they had indeed found a large, free-standing stone near the coast at Janela. The stone still stands there today, in a dramatic setting framed by encircling mountains, beside the Ribeira de Penedo. Until a century ago, a clear, rushing stream tumbled down the side of the volcano, but now the stream has dried up and the stone is surrounded by agave plants. The stone, called locally *Pedra do Letreiro* (Stone of Letters), is of red sandstone, some three metres high and covered with inscriptions from top to bottom. The later carvings are in medieval Portuguese, commemorating the death of a mariner, Antonio of Fez, but underneath them I could see more calligraphy, unfortunately obscured by moss and lichen. The stone was so badly weather-worn and defaced by recent graffiti that it was very difficult to decipher the underlying calligraphy. A series of experts had tried – first a Frenchman, M. Chevalier, in 1934, then several learned Portuguese and Cape Verde historians over the past twenty years. They could tell me what the calligraphy was not – it was not Arabic, Judaic, Berber, Tifnaq, Aramaic, Phoenician, Latin, or any other European language – but they could not tell me what it was.

After receiving the necessary approval from the Cape Verde authorities, some of the lichen was removed. This revealed two pieces of calligraphy. I hoped that, helped by computer enhancement, I would at least be able to determine the language, but the calligraphy was quite extraordinary, unlike anything I had ever seen

in my travels anywhere in the world. It appeared to have two characteristics: whorls like interlocking ram's horns, and a number of concentric circles.

My first thought was that it could be medieval Chinese, either the Zhu Qi Shan script or 'Flowinghand'. I sent photographs to experts at the Forest of Steles in Xian, China. Once the Temple of Confucius, it is now a museum and library holding a huge collection of steles, or engraved stone tablets, a timeless memorial to the Chinese written language. It is neither script, the experts replied. Could it be Tamil, similar to the writing on the stone the Chinese erected in southern Sri Lanka? It does resemble Tamil, but not closely enough. Nor is it Swahili, the lingua franca of the east coast of Africa. I then wondered if it could be another Indian language, perhaps one of the thirteen shown on today's high-denomination Indian banknotes. Could the Bank of India help? I faxed them a photo of a small section of one of the pieces of calligraphy.

'It looks like Malayalam,' they replied.

It was a language I had never even heard of. I faxed again.

'Where was this language spoken?'

'It was the language of Kerala.'

'Was it in use in the fifteenth century?'

'Yes, it had been in common use since the ninth century. It has largely ceased to be spoken today, though it is still used in a few out-lying coastal districts on the Malabar coast.'

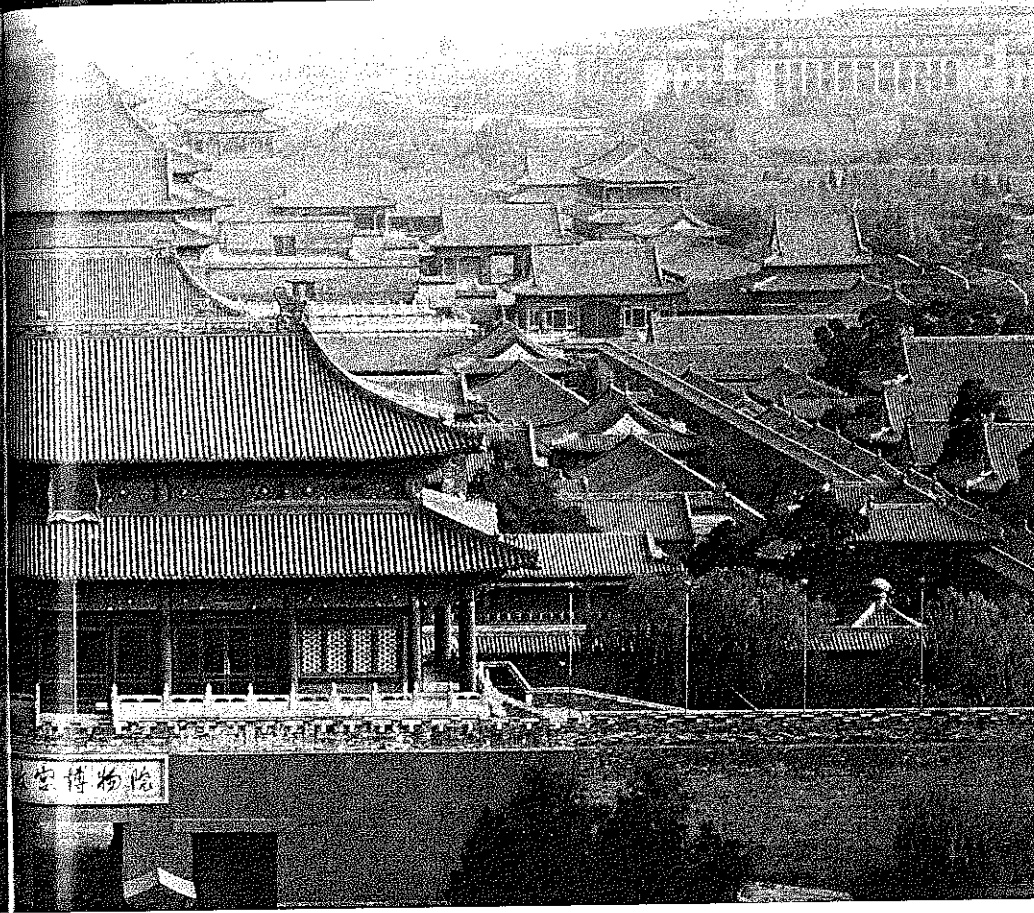
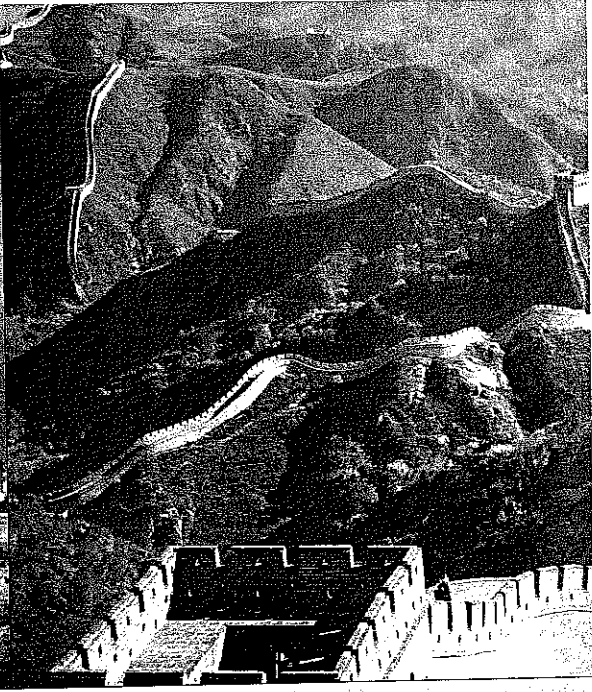
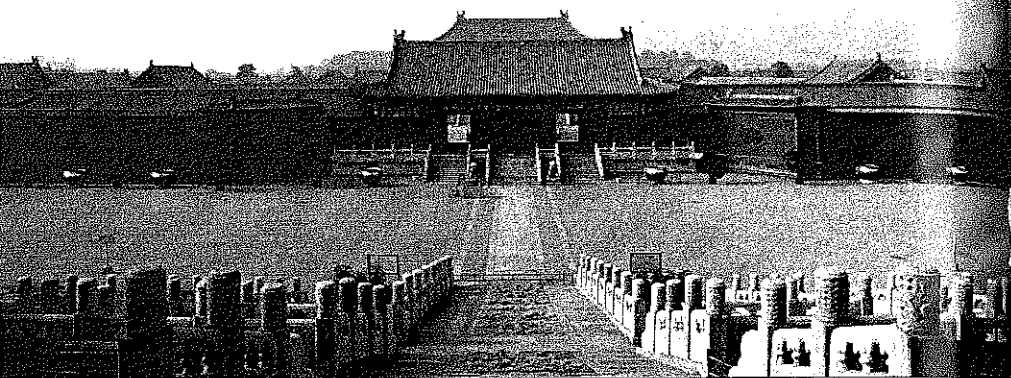
Once I'd put down the phone, I punched the air in my excitement. In 1421, Kerala's capital was Calicut, the great port of India from which the Chinese had sailed. Once again, Fra Mauro and Niccolò da Conti seem to have been correct: a ship or junk from India appeared to have reached the Cape Verde Islands before the Portuguese arrived.

I next trawled through the learned experts' research<sup>19</sup> to see whether they had come across another, similar stone while they were attempting to decipher the writing at Janela. They had, but not in the Cape Verde Islands. The other stone was sited at the Matadi Falls

The third Ming emperor, Zhu Di, under whom exploration flourished.



From 1406 to 1420 Zhu Di presided over the building of the Forbidden City with the Imperial Palace (*below and bottom*) as its centre. The Temple of Heaven was its place of ritual; it encompasses the Hall of Prayer for Good Harvests (*opposite left*) where the emperor came to pray at the new year. When the capital moved north, the renovation of the Great Wall (*opposite right*) became a priority.

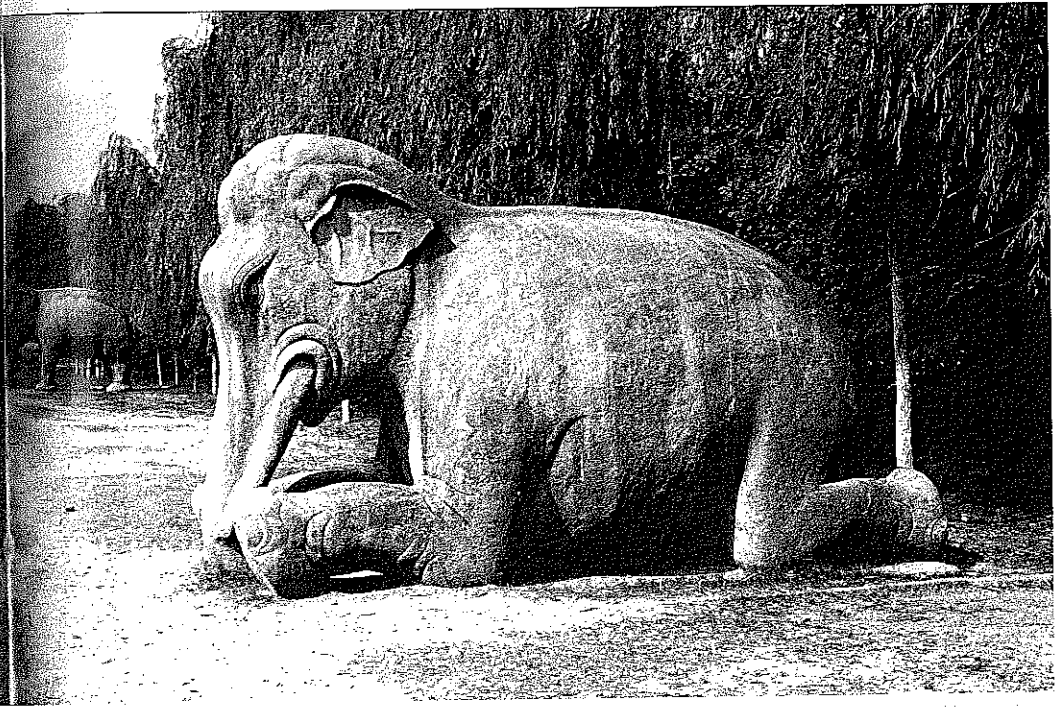






The Ming court in life and death: the emperor sits ensconced at the bottom level of a Taoist shrine (*above*) between a civil and a military adviser and flanked by two guardian figures.

The Spirit Way leading to the Ming tombs in Beijing is lined by stone warriors (*above left*) and high officials, here a Grand Secretary (*above right*), as well as powerful beasts – exotic elephants (*below*) and the mythical qilín (*opposite, below*).



the merchants who had controlled the spice trade, seal Egypt's borders to international trade and sever the sea route through the Bosphorus to the western end of the Silk Road. With the canal linking the Red Sea and the Nile (completed in the tenth century) collapsing and unusable, all land and sea routes to the East were now closed to Christians. A new ocean route to the East had to be found.

I knew from Antonio Galvão's description that the 1428 World Map showed the 'East Indies' (the Indian Ocean and what is now Indonesia) and revealed the ocean routes to the Spice Islands (Ternate and Tidore in eastern Indonesia), Asia and China round the Cape of Good Hope and through the Strait of Magellan. The information it contained was of incalculable commercial value and it was kept for decades under lock and key in the Portuguese treasury in Lisbon. However, the secret eventually leaked out and others became determined to get their hands on this vital map, even though the penalty for stealing it was death.<sup>22</sup> Certainly, Christopher Columbus was in possession of a copy in 1492 (see chapter 18).

The 1428 World Map has long been lost, but the information contained on some sections of it has survived, the most important of which is the section showing South America. A Spanish seaman who had sailed to the Americas with Columbus kept that portion of the map together with some notes Columbus had written about it. In 1501, the Ottomans captured the ship in which the seaman was serving; he still had the map in his possession. Neither the seaman nor any other who sailed with Columbus could have been the originator of this map because Columbus never sailed south of the equator. The information can only have come from the 1428 map.

Appreciating the extraordinary value of this captured document, the Ottoman Admiral Piri Reis incorporated it into a map known from that day to this as the Piri Reis map of 1513. This beautiful map can be seen today in the Topkapi Serai Museum high above the Bosphorus in Istanbul. It was based on several different maps, pieced together by the admiral from a number of different sources, and parts of it are unreliable, but the south-western portion based on the

map taken from Columbus's seaman is very accurate. The trail I had begun to follow the day I visited the Torre do Tombo in Lisbon and read Antonio Galvão's description of a mysterious map that had come into Portuguese hands in 1428 had now led me to another chart that would prove one of the most valuable keys to unlocking the secrets of the Chinese voyages.

In recreating the Chinese route I remained certain of one thing: because of the hull shape of the Chinese junks, they would have had to sail before the wind. Their route after leaving the Cape Verde Islands was not hard to establish for there, as Admiral McIntosh described so many centuries later, the wind blows relentlessly westwards, towards South America. Moreover, at the Cape Verde Islands 'the north equatorial and south equatorial current converge, forming a broad belt of current setting west. Average rates reach two knots.'<sup>23</sup> The converged currents separate near the Caribbean: the northern part sweeps through the Caribbean to New England where it becomes the Gulf Stream; the southern part turns south-west towards South America.

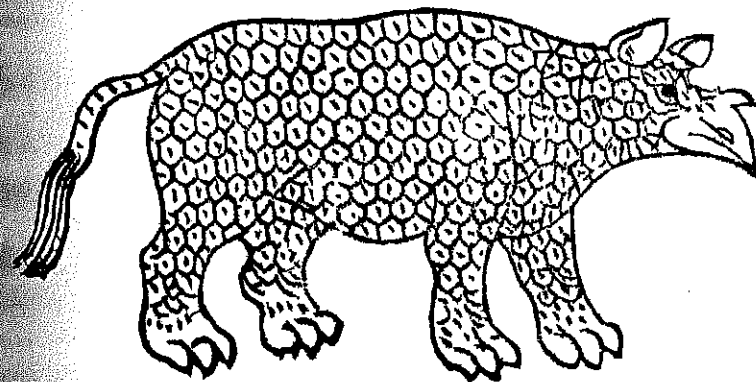
My study of the old maps and charts, together with the evidence from wrecks and artefacts found around South America and in the Caribbean (to be examined more fully in a later chapter), led me to conclude that the Chinese fleets had separated with the current. Admiral Zhou Wen sailed north-west through the Caribbean towards North America, while Admirals Hong Bao and Zhou Man took the south-west branch of the equatorial current towards South America. It must have been an emotional parting as the great ships began to drift apart, gathering speed as the wind filled their sails. They were sailing into hazardous, uncharted waters and the admirals and their men would have been well aware that they might never set eyes on their companions again.

The evidence of the Piri Reis map and of the winds and currents seemed conclusive; the Chinese fleet must have sailed in this direction from the Cape Verde islands. Perhaps I would find the answer to the mystery of the 'obscured islands' somewhere off

the coast of the Americas. I would return later to track the northward voyage of Zhou Wen's fleet, but for the moment I had to follow the course of Zhou Man and Hong Bao on their south-west track towards the 'New World'.

5

THE  
NEW  
WORLD



五

THE FLEETS OF HONG BAO AND ZHOU MAN WOULD HAVE sighted the coast of what is now Brazil approximately three weeks after leaving the Cape Verde Islands. What a moment that must have been, a sprawling, unknown land filling the horizon before them, the air full of unfamiliar scents and the calls of strange birds. They may well have wondered if this was the land of Fusang, described by their forebears almost a thousand years earlier.

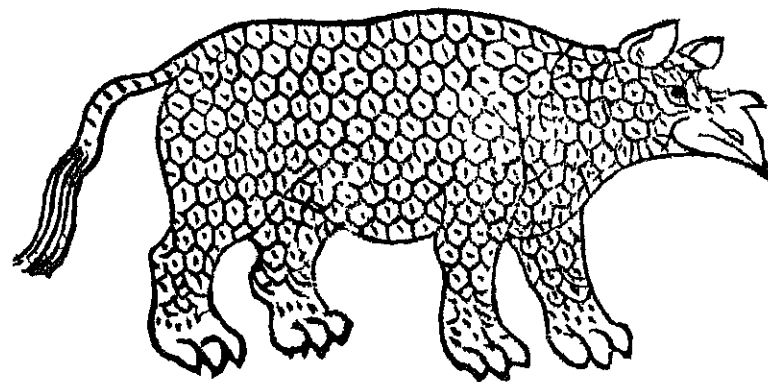
During the Northern and Southern dynasties in the first year of the 'Everlasting Origin' Emperor, AD 499, a Buddhist priest named Hwei-Shin ('Universal Compassion') returned from a land twenty thousand *li* (eight thousand nautical miles) east of China. He named this continent Fusang after the trees that grew there. The Fusang tree bore fruit like a red pear, and had edible shoots and bark the inhabitants used for clothing and paper. Coupled with his statement that the country had no iron, Hwei-Shin's description suggests that the Fusang was the maguay tree that grows only in Central and South America. It bears red fruit and is also used in the other ways he described. Iron is found in almost every part of the world except for Central America, just as Hwei-Shin indicated. Whether or not Hwei-Shin reached the Americas, the Chinese certainly believed he had, for his report was regularly entered in the yearbooks or annals (official histories) of the Chinese Empire. From there it passed not only to historians but also to poets and writers, and down the centuries innumerable tales were told of Hwei-Shin's exploits and adventures in the land of Fusang.

Fusang is about twenty thousand Chinese miles [eight thousand nautical miles] in an easterly direction from Tahan, and east of the Middle Kingdoms [China]. Many fusang trees grow there, whose leaves resemble the *Dryanda cordifolia*; the sprouts, on the contrary, resemble those of the bamboo tree, and are eaten by the inhabitants of the land. The fruit is like a pear in form but is red. From the bark they prepare a sort of linen which they use for clothing . . . The houses are built of wooden beams; fortified and walled places are there unknown . . . They have written characters in this land [which the Olmecs

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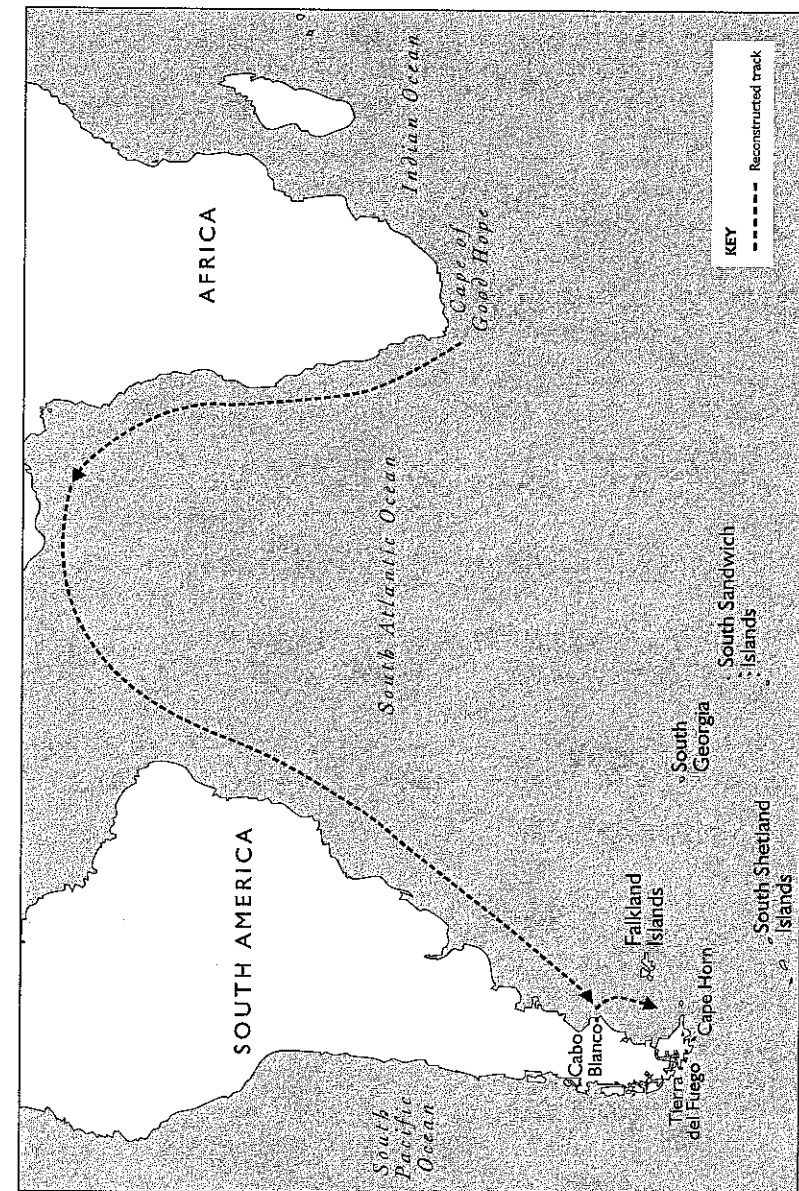
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did have] and prepare paper from the bark of the Fusang [which the Olmecs did from the maguey tree, which indeed has red fruit like pears].<sup>1</sup>

Zheng He and his admirals certainly knew these tales when they set sail, as did the Chinese seamen crowding at the rail for a sight of this new land. Was it a land of no iron? Did it have the famous Fusang trees? No doubt they were nervous, perhaps even frightened, but they must also have been immensely curious. Their landfall must have been around the Orinoco delta, for the Piri Reis map shows that they had surveyed that small part of the coast with great accuracy. My search for the obscured islands Fra Mauro/da Conti had described during the junk's seventy-day voyage after leaving the Cape Verde Islands could now begin in earnest.

Just before the book went to print I was informed that a considerable amount of research had been carried out into the DNA of American Indian peoples and the diseases that they carried which were otherwise unique to China and South East Asia. Briefly, it concerns a skin disease of the Indians of the Mato Grosso of Brazil; hookworms occurring in the Lengua Indians of Paraguay; roundworm in Peru and Mexico; and *ancylostoma duodenale* in Mexico. It is conclusive proof of Chinese sea voyages to the Americas before Columbus. This evidence, coupled with that of wild rice and horses in South America before Columbus, will be incorporated in the paperback edition. For the moment, however, I had to continue with the charts.

After making landfall near the Orinoco, where they would have replenished their water and taken on fresh food, they would then have set sail once more for the south. The currents would have carried them down the east coast of Brazil to Cabo Blanco in southern Argentina. I had found an inscription on the southern part of the Piri Reis map stating: 'It is related by the Portuguese Infidel [Columbus] that in this place, night and day are, at their shortest period, of two hours duration, and at their longest phase of 22 hours.'<sup>2</sup> For the winter daylight to have lasted only two hours, the



The journey to Tierra del Fuego.

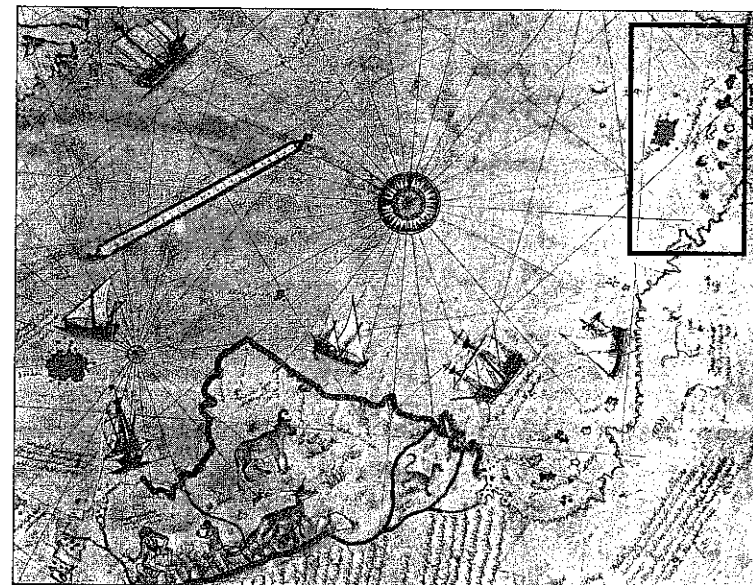
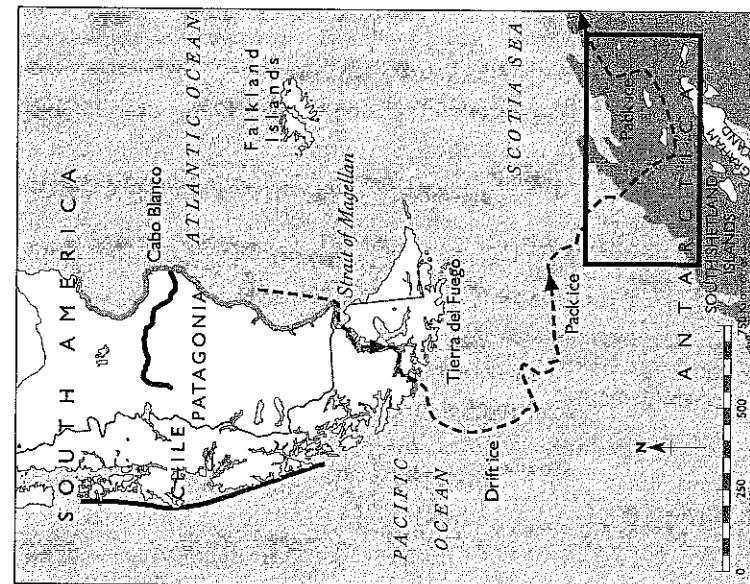
man who originally drew the chart and made that note must have been in the deep south at a latitude of about 60°S, well to the south of the southern tip of Tierra del Fuego. The map also shows what appears to be ice connecting the tip of South America to Antarctica.

I was able to use the inscription on the Piri Reis map and the position of the ice shown on it to fix the southern tip of South America to approximately 55°S, the northern limit of drift ice. Establishing the latitude of Tierra del Fuego allowed me to make a closer examination of the southern part of the Piri Reis and compare it with a modern chart. This revealed at once that the original cartographer had drawn the east coast of Patagonia with great accuracy. The prominent features of the coastline – headlands, bays, rivers, estuaries and ports – tally from Cabo Blanco in the north to the entrance of the Strait of Magellan in the south. The cartographer of the Piri Reis also drew a number of animals on the land.

It is a bleak, desolate, windswept region, as Darwin recalled: 'Without habitations, without water, without trees, without mountains, they support merely a few dwarf plants ... The plains of Patagonia are boundless, for the area is scarcely passable, and hence unknown.'<sup>3</sup> Columbus could not possibly have been the original cartographer; he never got south of the equator. His knowledge of the region, including his description of the islands in the South Atlantic being in darkness – obscured – for twenty-two hours each day, can only have come from the inscriptions on the 1428 chart he had copied.

The first European, Magellan, did not set sail for Patagonia until years after the Piri Reis was drawn. So who originally provided the information to enable Patagonia to be drawn on the Piri Reis, and how did he obtain it? Knowing I was looking at Patagonia, a desperate place but nonetheless one that supports animal life, I began to examine the five creatures depicted on the map.

The first, a deer with prominent horns, was superimposed on an area that has now been designated a national park, the Parque Nacional Perito Moreno. This animal is clearly a huemil, an Andean deer, with the head and antlers accurately depicted. There are still



The Piri Reis map compared to modern Patagonia, showing the Strait of Magellan.



huge herds of these deer where the animal is shown on the Piri Reis. The next creature was placed in what is now the Monumento Natural Bosques Petrificados, 150 kilometres south of modern Caleta Olivia. I have spent some time photographing animals in the Andes and instantly recognized the creature as a guanaco. Guanacos are members of the camel family. They have curious, floppy ears which are bent forwards when they are excited or anxious. Andean people decorate guanacos' ears with red tassels in the same way we would plait a horse's mane. From a side view, the bent ears resemble forward-pointing horns. Clearly, the cartographer who copied the original chart mistook the bent ears for horns. Large herds of guanaco are found in the Monumento Natural Bosques Petrificados, just where they are shown on the Piri Reis, and, like the huemils, guanacos are unique to South America. The third animal, a mountain lion, was placed in what is now the Parque Nacional Monte León where, as the name indicates, mountain lions are common. All three animals were shown exactly where they can still be found in Patagonia today and were drawn before Europeans arrived.

There is also a drawing of a naked bearded man. At first glance, he appears to have his head in the middle of his body, but on closer examination it seems perfectly possible that he had been drawn in a crouching position, allowing his thick beard to cover his genitals. I surmised that the Turkish cartographer who copied the captured Portuguese chart onto the Piri Reis was almost certainly a Muslim. Muslims are very conservative about exposing their bodies; if the cartographer had indeed been of that faith, he would not have been comfortable depicting naked men. When Magellan arrived in Patagonia long after the original map was drawn, he was surprised to find that despite the cold weather the people did indeed go about naked, keeping themselves warm with fires, even when they were travelling in boats. As a result, he named the land 'Tierra del Fuego' – the land of fire.<sup>4</sup>

That left one last creature to identify, a beast that appeared to have come from fable: a dog-headed man. There were two notes

describing the creature: 'In this place there are . . . wild beasts of this shape',<sup>5</sup> and 'These wild beasts attain a length of seven spans . . . between their eyes there is a distance of only one span [the distance between the outspread tips of the thumb and the little finger]. Yet it is said they are harmless souls.'<sup>6</sup> The Piri Reis map had depicted the other Patagonian animals with remarkable accuracy and placed them precisely where they are found today. I could therefore expect the monster, if it ever really existed, to have lived in the south of the Santa Cruz province of Argentina or in the north part of the Chilean province of Magallanes. Did such monsters ever walk the earth there? London's Natural History Museum could offer no help in identifying the creature, so I contacted every natural history museum within a two-hundred-mile radius of where the monster was shown and described on the Piri Reis.

My first call, to the Museo de Fauna, Rio Verde in Magallanes province, Chile, was answered in the negative, with barely suppressed mirth. The fourth call, to the nearby Museo de Sitio in Puerto Natales, was much more fruitful.

'I'm looking for a monster twice the size of a human. Were there ever any creatures like that in your area?'

'Yes.'

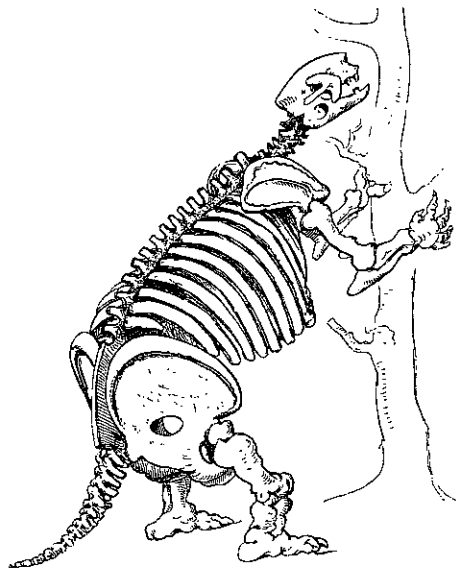
'Does your museum exhibit one?'

'Yes.'

'What is its name?'

'The mylodon.'

The mylodon is a creature of which I had been wholly ignorant until then, but London's Natural History Museum now provided a wealth of information about it. The monster was a giant sloth weighing around two hundred kilograms, unique to South America. In 1834, Darwin found a skeleton on a beach at Bahía Blanca in Patagonia near to where the creature is shown on the Piri Reis map. He sent the bones to Dr Richard Owen at the Royal College of Surgeons in London, who reconstructed the skeleton. It resembled a giant man with a dog's head, rearing on its haunches



A nineteenth-century engraving of the skeleton of a mylodon.

and using its legs and tail as a tripod while it knocked down small trees. It would strip the branches bare of fruit before lumbering off to demolish the next tree. The animal was said to reach three metres, sometimes even more, in height and slept for most of the time. The native people of Patagonia harnessed them in caves during the winter, taking them out to graze in summer; their meat apparently tasted like bland mutton. The last of these 'harmless souls'<sup>7</sup> was thought to have died out some three centuries ago. However, in recent years, well-preserved pieces of this creature, apparently butchered by the local people, have been found in a cave, leading to speculation that it may still exist in the wilds of Patagonia.

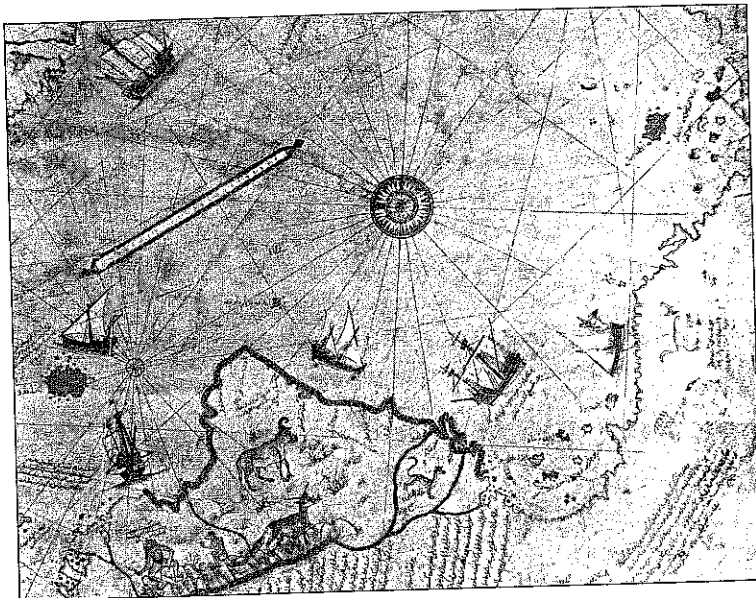
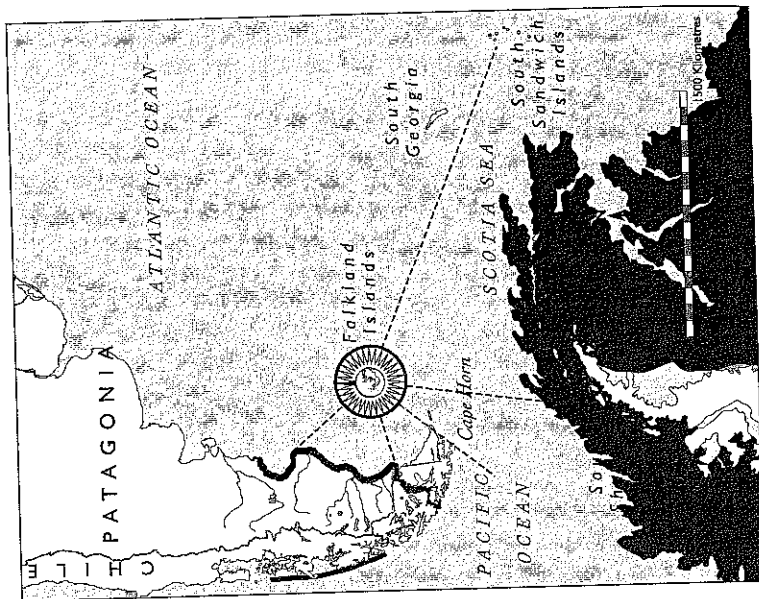
Later I was to find a Chinese book published in 1430 entitled *The Illustrated Record of Strange Countries*. As its title implies, this book records the strange animals the Chinese found on their travels. A

dog-headed creature very similar to that drawn on the Piri Reis map is shown, with a note – the only part of the document that has yet been translated – stating that it was found after travelling for two years west of China.

The Chinese must have looked upon such alien creatures with wonder, and at once would have begun efforts to capture some specimens. When encountering strange and exotic animals, it was their custom to take them back to China to present to the emperor for his zoo.<sup>8</sup> A stream of quilins (giraffes) had returned with Zheng He's captains to astound and delight Zhu Di, and I believe that a number of mylodons were also taken aboard the Chinese junks, two of which did reach China.<sup>9</sup> I could imagine the Chinese seamen luring these lumbering, dog-headed creatures out of their caves and onto the giant ships, accompanied by tons of leaves for them to eat.

The Piri Reis map was so accurate both in its depictions of physical features and its descriptions of animals unique to South America that it could only be charting Patagonia. For that reason, I was also certain that the mountains drawn on the western side were the Andes. These mountains, running northwards up the Pacific coast, are not visible from the Atlantic; they are hundreds of miles away from the east coast. The original cartographer must have sailed that Pacific coast long before the first Europeans reached South America or the Pacific, and the fleet that carried him can only have passed through the Strait of Magellan or braved the blizzards, incessant gales and mountainous seas of Cape Horn.

Knowing the size of Patagonia, I could accurately determine the scale of the Piri Reis map and fix the latitudes of the land and islands shown on it. Cabo Blanco is at 47°20'S, so the islands shown at the bottom of the Piri Reis must be at 68°43'S – exactly the latitude of the South Shetland Islands. I now knew that the original cartographer had been aboard a ship that had discovered the Antarctic continent and the South Shetland Islands four centuries before the first Europeans reached them. As I was later to discover, these obscure, almost uninhabited islands were of vital importance to the Chinese.



The Falkland Islands on the Piri Reis, compared to a modern map.

It must have taken thousands of man-hours for the skilled surveyors and navigators to chart such a large area of land and ocean, stretching thousands of miles from Antarctica in the south to the Peruvian Andes in the north. To cover such vast distances, the charting must have been co-ordinated, involving the use of different fleets. Before Europeans reached the South Atlantic, the only nation capable of putting such fleets to sea was China, and the only plausible opportunity was provided by the Chinese treasure fleets during the 'missing' two years of the great voyage of 1421-3. Although I was convinced I was right, I had not yet found any first-hand evidence of a Chinese visit to South America. The clearest evidence would come from the surviving wreck of a treasure ship full of early Ming porcelain. Such wrecks were to play a vital part in establishing the presence of the Chinese treasure fleets elsewhere in the world, but finding such a wreck on the coasts of South America is likely to be a lengthy task. The seas are buffeted by incessant storms and strong tides break up and sweep away wreckage and spilled cargoes. The search is in hand, but it is unlikely to yield short-term results.

Meanwhile, I needed an interim solution. For example, did the first Europeans to reach South America find plants or animals unique to China when they landed there, or were plants unique to the Americas seen in China when the first Europeans arrived there? If so, had the Chinese junks carried them home with them? Fortunately, a number of distinguished scholars have worked on this problem for many years.<sup>10</sup> I was led to their work as a result of waking at cockcrow on my first morning during a visit to Peru. I had lived in Malaysia and remembered well how the morning call of Asiatic hens – 'kik-kiri-kee' – was markedly different from the 'cock-a-doodle-do' of their European counterparts. As I lay in bed, I recognized the familiar 'kik-kiri-kee' and began to wonder how Asiatic rather than European hens had come to be in Peru.

The domesticated Asiatic cock and hen originated several thousand years ago in the jungles of south-east Asia, in South China,

Annam, Vietnam, Cambodia and Malaysia. The strain remains quite distinct from the European hen. When Magellan arrived off Rio (as it is now called), he 'picked up a great store of chickens . . . for one fish hook or a knife, they gave me six chickens, fearing even so that they were cheating me'.<sup>11</sup> But the chickens Magellan and the Spanish conquistadors found in South America had virtually nothing in common with European 'dunghill fowl'. They were of four principal, wholly different types. The Malay class were tall and thin – the cocks were able to peck food off a dinner table. They had thin heads, more like a turkey's than a chicken's, with a bare throat and a bare strip running down the breast. The Chinese class had stocky, heavy bodies, fluffy feathers, short wings and feathered legs. The cocks had modest tail feathers and very small, short, blunt spurs. They were poor flyers and notably tame. To this day, the silky-feathered melanotic chicken ('melanotic' denotes the black feathers, skin, flesh and bones of this strange bird) is found throughout Latin America. The fourth type of hen was the Asian frizzle fowl, with feathers that curve back towards the body instead of lying flat. Again, there was nothing remotely resembling this bird in the Mediterranean world of 1500, when frizzle fowl were found all over South America. Perhaps the most striking difference was that the Asiatic hens laid blue-shelled eggs whereas those of European hens were white or cream. Blue eggs are still found all the way from Chile to Mexico.

There were two other significant differences. If the Europeans had brought chickens, then the European name would have been adopted by the Indians of South America. This did not happen. The Arawak of northern South America called melanotic chickens *karaka*; the Indian name is *karaknath*. In north-west Mexico, chicken was *tori*; in Japanese it is *nihuatori*, meaning 'yard bird'. The Inca emperors, who were just embarking on a period of imperial expansion in 1421, frequently wore feathers and adopted the names of birds. In their Quechua language, chicken was *hualpa*, the name Topác Yupánqui (c. 1440–1493) adopted; Atahualpa was the formal



The frizzle fowl from Aldrovandi's *Ornithologia*, 1604.

name of the emperor overthrown by Francisco Pizarro. The Incas therefore had a word for chicken at least forty years before the arrival of the conquistadors.

Europeans of that era were almost unique in eating chickens and their eggs. In south-east Asia and China, chickens served a completely different purpose. The Chinese practices of divination using eggs or dripping chicken blood on bark paper before burning the paper, and the belief that a melanotic chicken protects the household from evil spirits, were also found in South America, and just as in China, neither chickens nor eggs were eaten by Amerindians. They used them for sacrifice, divination and healing the sick.

Asiatic chickens were found the length of both the Atlantic and Pacific coasts of the Americas as far north as Rhode Island. These birds cannot fly and must have been brought by ship. The only non-European ships that could travel such vast distances were Chinese.

The spread of Asiatic chickens prior to the European conquest closely correlates with the lands shown on the Piri Reis map – the Orinoco delta in Venezuela, Brazil, Patagonia, Chile and Peru. Even today, in areas of South America where there has been minimal Spanish (or other European) influence, one still finds chickens which lay pale blue eggs and possess other Asiatic characteristics unknown in European birds.<sup>12</sup> The conclusion is inescapable: Chinese fleets must have brought chickens to South America.

Since the Asiatic chickens are very different from the Mediterranean chickens and most of the traits that reappear in the flocks of the Amerindians are found in Asia, the obvious conclusion would be that the Amerind chickens were first introduced [to South America] from Asia and not from the Mediterranean . . .<sup>13</sup>

When one considers the total data available on the chicken in America, a conclusion for a Spanish or Portuguese first introduction of chickens into America is simply counter to all the evidence. The Mediterraneans, as late as 1600, did not have, and did not even know of, the galaxy of chickens present in Amerind hands . . . If a scholarly and scientific approach to the subject is taken, an approach that pays attention to the data instead of the clichés of the past, then the only possible conclusion is that chickens were introduced from across the Pacific, probably repeatedly, long before the Mediterranean discoveries of America.<sup>14</sup>

The second line of evidence came from maize, a very unusual plant that originated in the Americas and was unknown in China before Zheng He's voyages. Just as chickens cannot fly, maize is incapable of self-propagation. Wherever it is found, it has been propagated by man. There is considerable evidence that maize was carried to Asia before Columbus landed in America in 1492.<sup>15</sup> For example, within his description of the expedition landing at Limasava in the Philippines in 1520, Antonio Pigafetta, Magellan's diarist, noted this: "The islanders invited the General [Magellan] into their boats in which were their merchandise, viz. cloves, cinnamon,

ginger, pepper, nutmegs and maize."<sup>16</sup> There is no possibility that Pigafetta had misidentified the plant. In his notes in the original Italian, maize is translated as *miglio* against which Pigafetta had written the Caribbean word, *maíz*. He knew what maize looked like – it had 'ears like Indian corn and is shelled off and called *lada*' – and not only had he spent months with Magellan in South America on his way to Limasava but several seamen aboard had also served with Columbus in the Caribbean.<sup>17</sup> Chinese records state that Zheng He's admirals brought back 'extraordinarily large ears of grain'.<sup>18</sup> The Chinese were used to rice with ears the size of barley. The only 'extraordinarily large' ears compared to rice were those of maize. There is a wealth of further evidence, for the Portuguese also found maize in Indonesia, the Philippines and China, and *metates* – utensils for grinding maize unique to South America – were found in the hold of a junk, built in 1414, that was recently discovered on the seabed at Pandanan in the south-west Philippines where it had sunk in about 1423.

There was now not a scintilla of doubt in my mind that the Chinese fleet had been in South America in 1421 and had surveyed the lands shown on the Piri Reis map a century before Magellan. But they were sailing on this epic voyage to bring the entire world into the Chinese tribute system. Why should they have taken such inordinate trouble to chart this part of inhospitable Patagonia, a land of driving snow and bitter cold occupied only by unsophisticated, naked people with nothing to trade and with little natural wealth save for burberries and fish?

Could the Piri Reis map provide a further clue? At first it seemed only to deepen the mystery, for it showed a series of 'spokes' extending from the Patagonian coast and intersecting in a hub – the centre of a compass-rose – in the wastes of the South Atlantic. These spokes are what navigators call 'portolan lines', used in portolan navigation, also known as triangulation. Comparing the Piri Reis with a modern map, I identified the prominent points on the Patagonian coast from where each portolan line was drawn. The cartographers must have

been aboard seven ships that set sail from Puntas Guzmán and Mercedes on the northern coast, Cabos Curioso and San Francisco in the centre and Punta Norte, Cabos Buen Tempo and Espíritu Santo in the south.

Knowing the scale of the Piri Reis map, I could now readily identify the true location of the centre of the compass-rose. The portolan lines intersected in King George's Bay in the West Falkland Islands. At the absolute centre of the compass-rose is Mount Adams (2,917 feet), the most conspicuous mountain in the Falklands. Was either Zhou Man or Hong Bao a secret mountaineer at heart? Is that why the ships were ordered to steer towards a mountain peak? For weeks I was baffled by this conundrum, then suddenly the answer came to me. The Chinese needed a star in the southern hemisphere to replace Polaris in the northern, and in the event they selected two: Canopus for latitude and the Southern Cross for navigation.<sup>19</sup>

Canopus, a yellow-white, super giant star, sits in space three hundred light years from Earth towards the South Pole and pumps out more than a thousand times the power of the sun. The combination of its power and distance makes it the second brightest star in the sky, nearly as bright as Venus, and instantly identifiable because of the colour of its light. Like the Southern Cross, Canopus is in the far south but not directly above the South Pole. To use Canopus for latitude, the Chinese had to determine its precise position by sailing to a point directly underneath the star. The Southern Cross points to the South Pole but, unlike Polaris, it is not directly above the Pole. To be able to use the Southern Cross for accurate navigation, the Chinese also had to locate its position in the sky – its height and longitude. Once again, the only way to calculate the precise position of the Southern Cross was to sail to a position directly beneath it.

The Chinese had been attempting to locate the positions of both the Southern Cross and Canopus for centuries:

In the eighth month of the twelfth year of the Khai-Yuan period [in the eighth century AD] [an expedition was sent to the] south seas to observe Lao

Jen [Canopus] at high altitudes and all the stars still further south [Southern Cross] which, though large, brilliant and numerous, had never in former times been named and charted. They were all observed to about 20° from the south [Celestial] Pole [viz. 70°S]. This is the region that the astronomers of old considered was always hidden and invisible below the horizon.<sup>20</sup>

Only when Canopus and the Southern Cross had been located could new lands in the southern hemisphere be accurately placed on charts. When they reached Mount Adams in the West Falklands the Chinese cartographers were directly underneath Canopus. They were taking such pains to fix their position so that they could calculate their precise latitude: 52°40' South. By cross-referencing Canopus to Polaris they could establish Canopus's height and then use that star to obtain their latitude anywhere in the southern oceans, just as they used Polaris in the northern hemisphere. Given the importance of this location to them, I would expect the Chinese to have erected a carved stone near Mount Adams, and I have asked the governor of the Falklands for his help in organizing a search for it.

Once the latitude of Canopus had been discovered, the fleets of Zhou Man and Hong Bao could have returned independently to China, sailing westwards across the Pacific and eastwards across the southern oceans, along the same line of latitude, directly under Canopus. By doing so, all ships would be conducting surveys from the same latitude. I also came to the conclusion that it would have been logical to survey the world at latitudes where the position of other stars could be precisely determined, for example at 3°40'N, where Polaris disappeared below the horizon. It also seemed logical to expect that other latitudes of particular significance to the Chinese, for example that of their capital city Beijing at 39°53'N, might also have served the same function. As will be seen, my hunches were to prove correct.

The first Chinese 'anchor point' was the Falkland Islands,

selected because they are not only directly underneath Canopus but also almost exactly half the world away ( $179^\circ$ ) from Beijing. At this stage, although the Chinese could not measure longitude they knew the earth was a sphere. Moreover, by using Polaris they could determine the semi-circumference of that sphere ( $180^\circ \times 60$  nautical miles) and thus approximate when they were half the world away from Beijing (days sailed multiplied by average speed). If a fleet sailed westwards from this anchor position in the Falklands and found another island south of Australia at  $52^\circ 40'$  South, the cartographers could chart that continent by triangulation as precisely as they had charted Patagonia. Similarly, a fleet sailing eastwards and finding another island south of Africa at  $52^\circ 40'$  South could chart the Indian Ocean.

I pondered how I could track the onward movements of the Chinese fleets from this anchor position. I already knew the dates on which the fleets under Zhou Man and Hong Bao had eventually returned to China and the number of ambassadors each one had brought with them. I soon realized that by using the charts and maps, and noting the locations from which the ambassadors had been collected, I could make a rational deduction about the course each fleet had followed in the intervening period. It was another significant link in the chain of evidence leading me in the wake of the treasure fleets.

Whereas the fleet under the senior admiral, Yang Qing, had remained in the Indian Ocean throughout the duration of the voyage, and returned to China in September 1422 with seventeen envoys from states in East Africa and India, Zhou Man and Hong Bao did not reach China until the autumn of 1423. Zhou Man brought no ambassadors and Hong Bao only one, from Calicut. From that, I deduced that Admiral Zhou Man's fleet had sailed westwards to chart the Pacific and returned via the Spice Islands. Admiral Hong Bao's fleet had sailed southwards for Antarctica to measure the Southern Cross and then made its way home eastwards via the southern oceans, Malacca and Calicut. I began the search for traces of their voyages, first of all by tracking Hong Bao across the southern oceans.

### III

## The Voyage of Hong Bao

6

VOYAGE  
TO  
ANTARCTICA  
AND  
AUSTRALIA





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EPILOGUE:  
THE  
CHINESE  
LEGACY



THE LEGACY OF THOSE GOLDEN YEARS WHEN CHINA'S POWER and influence extended from Japan to Africa and beyond to encompass the whole world remains. Chinese Buddhist architecture graces the Asian skyline from Malacca to Kobe. Chinese silk of the Ming dynasty is found from Africa to Japan, glorious blue and white ceramics from Australia to Manchuria, and graves in many places across the globe bear witness to Chinese jade jewellery of that era. Even the most blasé traveller to south-east Asia must be struck by the pervasiveness of China's legacy. From Sumatra to Timor to Japan, communities are still united by trade, religion and a written language inherited from China. For four thousand kilometres west to east and an equal distance from north to south, China's imperial footprint remains, the imprint of a colossus.

The depth of Chinese culture is as awesome as its width. Three thousand years ago the Chinese had mastered brass moulding and carving with simple yet stunning designs. By the Qin dynasty (221–206 BC), pottery was being cast as sublime as anything our planet has seen, epitomized by the graceful horses and fluid soldiers of Emperor Qin's terracotta army. By the Tang dynasty (AD 618–907), at a time when our European ancestors were clothed in rags, rich Chinese were dining off gold plates adorned with phoenixes and dragons and drinking their wine from silver chalices engraved with dancing horses. Fruit was displayed in white jade bowls. Merchants' wives, sheathed in fine embroidered silk, wore subtle Persian scents. Exquisite jade and gold jewellery adorned their ears, throats and wrists.

The Chinese had millennia of experience and expertise in every sphere of human activity. By 305 BC conservation of land and rotation of crops had been the subject of letters to the emperor. Zhu Di's huge ships and incredible expeditions were the culmination of eight hundred years of voyages of discovery – Song dynasty (960–1279) ships had reached Australia. Chinese trade with India was six hundred years old when Admiral Zheng He set sail, and even his vast fleet was dwarfed by that of Kublai Khan two centuries

earlier. Chinese science and technology were centuries ahead of the rest of the world, their military and civil engineering know-how epitomized by the Great Wall. The stability and protection that wall provided ensured that, of all the great civilizations of antiquity, China alone survived. Its most striking national symbol is a monument to the history, resilience and enduring power of China and its people.

Although much evidence of the Chinese voyages of discovery has been lost or destroyed over the centuries, one very tangible kind is visible everywhere today: the plants and animals the Chinese fleets carried with them to new lands, and those they brought back to China and south-east Asia. China's greatest contribution to civilization may well be the cultivation and propagation of plants.

For centuries it was believed that the global propagation of the world's plants began after Columbus 'discovered' the Americas in 1492, and accelerated when the British founded their great maritime empire after the Battle of Trafalgar. In fact, although the Victorians were certainly great plant collectors, almost all of the important agricultural plants had been spread across the world before Columbus set sail on his first voyage. Europeans not only had charts showing them the way to the New World, they found the most important crops already flourishing when they arrived there. No fewer than twenty-seven important cash crops are known to have been brought to the islands of Hawaii from India, Asia, Indonesia, the Americas and even Africa. The sweet potato, sugar cane, bamboo, coconut palm, arrowroot, yam, banana, turmeric, ginger, kavi, breadfruit, mulberry, bottle gourd, hibiscus and candlenut tree were all growing in Hawaii when the first Europeans arrived; none of them is indigenous to the islands.

This pattern was repeated throughout Polynesia and halfway across the world to Easter Island. There the first Europeans found toora reeds originating in Lake Titicaca, tomatoes, wild pineapples and sweet potatoes from South America, tobacco from Central and North America, gourds from Africa, papayas from Central

America, yams from south-east Asia and coconuts from the South Pacific. The first Europeans to reach the Caribbean also found coconuts; Magellan loaded maize in the Philippines that had originated in Central America; California was graced with Chinese roses; South America had Asiatic chickens. No fewer than ninety-four genera of plants were found to be common only to South America and Australasia;<sup>1</sup> another seventy-four genera, including 108 distinct species, are common only to tropical West Africa and tropical America.

It has been argued that this mass of plants could have been propagated naturally, by seeds carried by ocean current and wind, or by birds. Coconuts will float, and in theory they could have found their own way from the South Pacific across the Indian Ocean, the South Atlantic and the North Atlantic to end up in the Caribbean. Some certainly did float from island to island, and some seeds and spores were undoubtedly carried on the wind, but to suggest that all plants were propagated in this way is preposterous. The argument collapses with maize and sweet potatoes; they do not float, and sweet potatoes are far too heavy for birds to carry from country to country. In the last three decades, a number of distinguished botanists have carried out research into the places of origin of cultivated plants. Improved understanding of the classification of plants has radically altered views on their wild relatives and hence place of origin. An example is the coconut, which early European explorers found on Atlantic and Pacific coasts of Central America.

The coconut (*Cocos nucifera*) was once thought to have originated in the New World because this is where the other species of *Cocos* occurred. Now, however, *Cocos* is treated as a monotypic genus whose closest living relative is African. This, together with the fossil records of the coconut and its variability and range of uses in south-east Asia, suggests that the coconut originated in the western Pacific and spread west to east, not east to west, across the ocean.<sup>2</sup>

An analysis of the plants common to Africa and South America and of those common to South America and Australasia discloses that they were all carried in the direction of the prevailing winds and currents – in short, by ships crewed by men. No Polynesian ships are ever known to have left the Pacific to enter the Indian and South Atlantic oceans, and propagation predates the European voyages of discovery. Only one nation could have transported this array of plants and animals around the globe. The Chinese ships certainly carried plants and seeds – they were found in the Sacramento junk – and they not only circumnavigated the world but did so in precisely the direction propagation has been found to have occurred, from China through south-east Asia to India, thence to Africa, from there across the South Atlantic to South America, and finally on to Australasia.

Rice was by far the most important Chinese crop, perhaps the most diverse and adaptable crop on our planet. The Chinese developed varieties that could flourish on dry mountain slopes, while others needed to be submerged. Some species took months to ripen, others only two. Some were sensitive to temperature, others to sunlight. Some crossbred species became so tolerant of salt that they could be used to reclaim marshes along the sea shores. Rice is an ideal food crop – it tastes good and, flavoured with soy products, has high nutritious value. It stores well, and is easy and economical to cook. It yields more calories per unit of land than any other grain crop. Until the twentieth century, rice produced seven times as many calories per hectare of land as any other grain,<sup>3</sup> and China was the most efficient agricultural country in the world.

The entire way of life of over a billion people revolves around rice, the ideal crop for sustaining the dense populations of Asia, where it has even higher status than bread in Western societies. In China, a man who has lost his job has 'broken his rice bowl'. Marriages and business deals are sealed over cups of sake – rice wine. In the West, we throw confetti as a symbol of rice, to bring good luck at weddings. When Japanese children look at the night sky, rather

than the man in the moon, they see a rabbit making rice cakes.

In the Ming era, China exported rice to the Pacific, principally through Makassar (Selat in modern Indonesia). Rice ships accompanied the treasure fleets, and rice was found in the hold of the Sacramento junk.<sup>4</sup> But the Chinese were also importers of plants, and they showed their inventive genius by utilizing the crops they found in distant lands. The south-east Asian climatic zone, stretching from China to Indonesia, was an important source of crop plants. A case can be made that the domestication of such crucial crops as millet, rice and yams originated in this zone. Later introductions to China included sugar cane, bananas, ginger and some species of citrus fruits, and cotton was imported from India, but perhaps the most spectacular example was the maize brought back by Zheng He's fleets from the Americas.

After rice, maize is the world's most prolific crop; compared to wheat, at least three times as much can be harvested from the same area. Furthermore, it can grow in arid deserts or in humid jungles, at sea level or up to 12,000 feet (3,600 metres). Maize originated in Central America, yet it was loaded in the Philippines by Magellan, the first European to reach there, and surviving Chinese records tell of 'extraordinarily large ears of grain' being carried back by Zheng He's fleets to China. Maize was ideal for China's mountain dwellers for it had deep roots, preventing the plant being washed away by heavy rain, and cultivation on the mountain slopes minimized the danger of frost damage. To the Miao people of southern China, the introduction of maize with its extremely high yield was an enormous benefit. Today, maize, the third most important crop in the world, has spread across Asia and is the staple food in many African countries.

The third group of foods carried by the Chinese were taros, yams and sweet potatoes. Sweet potatoes (*Ipomoea batatas*) thrive in the hot, moist climate of South America where they originated, and they have subsequently become an important root crop in warm, sub-tropical countries. By the time Captain Cook arrived in New

Zealand, sweet potatoes had become the principal food of the Maori. Their name for them, *kumara*, is almost identical to the name *kumar* still used in the Lima region of coastal Peru. True yams (the *Dioscorea* species) originated in Africa and south-east Asia, yet they were growing in Hawaii when the first Europeans landed there. Taros originated in south-east Asia but had also reached Hawaii before the Europeans. They are members of the Arum family (*Aracheae*) and, like potatoes, are rich in starch grains and also in the soluble starch amylase. Taros are widely cultivated throughout the Pacific from Tahiti in the south – taro ponds greet the visitor leaving Tahiti's airport – to Hawaii in the north.

It can be said that rice, maize, sweet potatoes, taros and yams, originating in entirely different parts of the world, provided the essential food for those living in the tropics and sub-tropics. Their transportation was of incalculable benefit to mankind, for man now had the capacity to grow and harvest crops in almost every soil and climatic condition.

The Chinese also played a vital part in propagating other cash crops. Apart from its role as the world's leading producer and exporter of silk, China also led the way in other fabrics. First used in the Indus valley several millennia ago, cotton is probably the world's most important cash crop, accounting for 5 per cent of the world's agricultural output. Scientists and scholars were initially baffled by the chromosomal structure of South American cotton, but after a series of painstaking experiments experts have now agreed that one parent of American cotton undoubtedly came from Asia. The wild American cotton the first Europeans found in the Americas had one gene that came from India. Cotton had been brought from India to Canton, where it was cultivated by the eighth century. It was widely grown during the Mongol Yuan dynasty that preceded the Ming, and Ming fleets carried huge amounts of cotton on their voyages.<sup>5</sup> The King of Cochin was rightly grateful to Emperor Zhu Di: 'How fortunate we are that the teachings of the sages of China have benefited us. For several years now, we have had

abundant harvests in our country and our people have had houses to live in, have had the bounty of the sea to eat their fill of, and enough fabrics for clothes.'<sup>6</sup>

Coconut is far and away the most important nut crop in the world. Its native home was in the islands of Indonesia, yet coconuts were found by the first Europeans when they arrived in the Caribbean and on the Pacific coast of Central America, and there are now about 3.5 million hectares of coconut plantations in the Philippines, India, Indonesia, Sri Lanka and the Caribbean. Coconuts grow within the tropics, yet can withstand slight frost. Besides providing delicious meat and coconut milk, oil extracted from the dried white meat has been used for centuries for cooking and frying and in the manufacture of soaps, cosmetics and lubricants. After extracting the oil, dried copra cake can be ground to a meal high in protein, used for cattle and chicken feed. The trunk provides roof beams, and the fibres of the husk (coir) can be used to make ropes. Ming fleets traded coir extensively.

Bananas originated in south-east Asia, but were also found in Hawaii by the early European explorers and have subsequently spread to India, Africa and tropical America. Along with grapes, oranges and apples, bananas are the world's most important fruit crop; their cousins, starchy plantains, are eaten as a vegetable throughout the tropics. Pineapples originated on the hot, steamy Atlantic coast of South America, yet Columbus noted pineapples on his second voyage to the West Indies in 1493. The evidence of the great voyages by the Chinese treasure fleets is literally growing all around us today.

At the start of my long journey in the tracks of the great fifteenth-century Chinese explorers, I had learned of a monument, a carved stone erected by Zheng He overlooking a bay in the Yangtze estuary in China, and read the inscription incised on its surface. It was almost the only surviving physical evidence on the whole Chinese mainland of that epic sixth voyage of the treasure fleets. Little

else had survived the purges of the mandarins. Translated, it read:

The emperor . . . has ordered us [Zheng He] and others [Zhou Man, Hong Bao, Zhou Wen and Yang Qing] at the head of several tens of thousands of officers and imperial troops to journey in more than a hundred ships . . . to treat distant people with kindness . . . We have gone to the western regions . . . altogether more than three thousand countries large and small. We have traversed more than a hundred thousand *li* [forty thousand nautical miles] of immense water spaces.

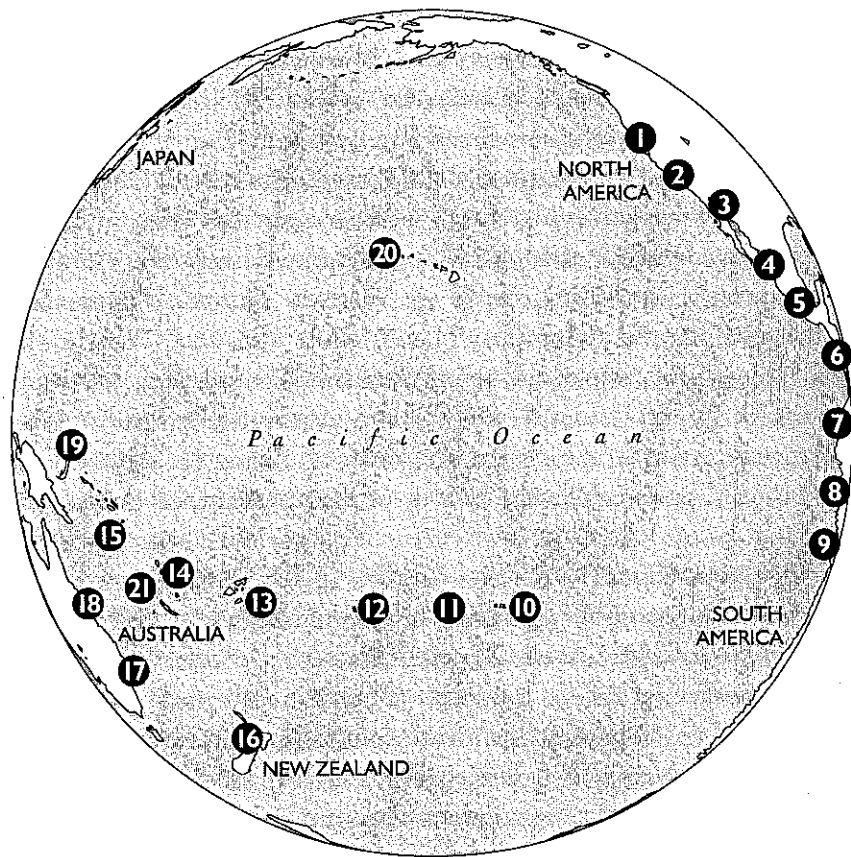
I had puzzled over this inscription as I began the voyage of discovery that was to consume me for years. Now at the conclusion of my journey, I returned, believing that I had found the evidence to overturn the long-accepted history of the Western world. I had found a wealth of evidence that the Chinese fleets commanded by Admirals Zheng He, Yang Qing, Zhou Man, Hong Bao and Zhou Wen on that epic sixth expedition had surveyed every continent in the world. They had sailed through sixty-two island archipelagos comprising more than seventeen thousand islands and charted tens of thousands of miles of coastline. Admiral Zheng He's claim to have visited three thousand countries large and small appeared to be true. The Chinese fleets had voyaged across the Indian Ocean to East Africa, around the Cape of Good Hope to the Cape Verde Islands, through the Caribbean to North America and the Arctic, down to Cape Horn, the Antarctic, Australia, New Zealand and across the Pacific. Throughout the entire hundred thousand *li*, only in the Antarctic would the treasure ships have had to sail into the wind or an opposing current.

Before that great voyage of 1421 to 1423, Zhu Di had already brought all of south-east Asia, including Manchuria, Korea and Japan, into China's tribute system. The eastern end of the Silk Road had been reopened from China as far as Persia (modern Iran). Central Asia was in thrall to China, and the Indian Ocean was dominated by Chinese shipping. The treasure fleets of 1421 to 1423

added to this already vast trading empire. They created permanent colonies along the Pacific coast of North and South America, from California to Peru. Settlements were also initiated in Australia and throughout the Indian Ocean as far as East Africa. Supply bases were established right across the Pacific to link first the Americas with China, and then Australia and New Zealand with China. Vast distances were covered: there were bases from Easter Island to Pitcairn Island, through the Marquesas and the Tuamotu Archipelago, at Tahiti, Sarai in Western Samoa, Tonga, San Christobal in the Solomons, Nan Madol, Yap and Tobi in the Carolines, and Saipan in the Marianas. The remains of stone barracks, quays, houses, reservoirs and observation platforms may be seen on many of these islands to this day. Zheng He's great fleets and their supply trains were to link all these settlements and supply bases.

My claims about the Chinese voyages in the 'missing years' from 1421 to 1423 rest on the authenticity of the Kangnido, Piri Reis, Jean Rotz, Cantino, Waldseemüller and Pizzigano charts. No-one has ever questioned their veracity. The Vinland map has been questioned in the past, but as I have demonstrated (see chapter 14), I believe it passes the authenticity test. The Piri Reis, Jean Rotz and Cantino charts depict the whole of the southern hemisphere, covering tens of millions of square miles of ocean, thousands of islands, and tens of thousands of miles of coastline from the Antarctic to the equator. The lands they show can only have been surveyed by fleets that had sailed the southern hemisphere before the European voyages of discovery, and those fleets can only have been Chinese.

There is also a wealth of physical evidence for these great Chinese voyages. The Pandanan junk in the Philippines vividly demonstrates the extent of Chinese trade with the states of the Indian Ocean, the Americas and south-east Asia. Ming porcelain has been found down the East African coast, in the Persian Gulf and Australia, Ming silk as far north as Cairo. The wrecks of treasure ships lie off New Zealand and southern Australia, and there is also a



- |                      |                    |                                |
|----------------------|--------------------|--------------------------------|
| 1 Sacramento         | 8 North Peru       | 15 Caroline Islands            |
| 2 Los Angeles        | 9 South Peru       | 16 New Zealand - Waikato River |
| 3 Bahía California   | 10 Easter Island   | 17 New South Wales             |
| 4 Mexico - Michoacán | 11 Pitcairn Island | 18 Gympie                      |
| 5 Guatemala          | 12 Tahiti          | 19 Micronesia                  |
| 6 Venezuela          | 13 Kiribati        | 20 Hawaiian Islands            |
| 7 Ecuador            | 14 Samoa           | 21 Norfolk Island              |

Chinese bases across the Pacific Ocean.

wealth of other evidence of a Chinese presence in those countries. Carved stones were erected across the Indian Ocean, in the Cape Verde Islands, New Zealand and South America. Chinese chickens were carried to South America, maize brought from the Americas to China. Votive offerings have been found in the Lamu archipelago, at Darwin and on Ruapuke beach in New Zealand.

It is the spread, depth and variety of the evidence that makes the great Chinese voyages of 1421-3 so credible. One mahogany wreck in Australia may be explained away as an Indian merchantman blown far off course, but several wrecks, accompanied by Chinese votive offerings, ceramics and adze anchors, tell an entirely different story, one corroborated by Aboriginal folklore and cave paintings and clearly recognizable charts of the Barrier Reef drawn hundreds of years before the first Europeans reached Australia. The Chinese porcelain dating from the Ming era found throughout the Indian Ocean might have come from the cargoes of shipwrecked Portuguese caravels, but again, the evidence does not exist in isolation. There are the accounts of yellow-skinned people, the Chinese votive offerings, and silk found by the first Portuguese explorers. There is also a detailed chart of millions of square miles of ocean that was drawn before the Portuguese could have surveyed the Indian Ocean in such detail. The only explanations to date of how Antarctica could have appeared on a chart four hundred years before Europeans reached those parts have come from the pens of Erik von Daniken (aliens from outer space) and Charles Hapgood (Egyptian civilization before the Pharaohs).

Magellan saw the 'Strait of Magellan' and the Pacific depicted on a chart before he set sail; that can only mean that someone had passed through the strait and crossed the Pacific before he did, and had drawn animals native to Patagonia before any European knew of them. That the 'someone' was Chinese is confirmed by the pictures of animals (published 1430) and the Chinese artefacts along the route they followed, and the continents shown on the Chinese charts that have survived. That the Chinese had the ships, the

expertise, the funds and the time to make such an extraordinary circumnavigation of the world is beyond question, just as it is beyond doubt that no-one else in that era could have done it.

These claims will doubtless be greeted with astonishment, yet if one takes a dispassionate view, there is nothing illogical about them. The Chinese enjoyed a far older and richer maritime tradition than the Europeans. When Zhu Di's fleets set sail in 1421, they had at least six centuries of ocean exploration and astro-navigation behind them; when Dias and Magellan set sail, the Portuguese had no means of accurately navigating south of the equator. Zheng He's fleets of treasure ships with their attendant supply ships were the products of a massive shipbuilding programme made possible by the economic strength of China; the tiny caravels of Cabral, Dias and Magellan would have looked like dinghies alongside the Chinese craft. Until Napoleon built his great flagship *L'Oriente* almost four centuries later, no wooden ship had ever approached the size of the giant treasure ships that epitomized Chinese naval supremacy and domination of the oceans. Even the European warships at Trafalgar could barely match the Chinese junks in size, range or firepower. Nelson's fleet of, at best, thirty ships carrying eighteen thousand men would have been dwarfed by Zheng He's armada of more than a hundred ships carrying twenty-eight thousand men. His treasure ships were twice the length and three times the beam of HMS *Victory*. They had far better damage control and logistical support, and could remain at sea far longer, for months on end if necessary.

The Chinese fleets had charted the world, they could determine longitude by means of lunar eclipses, and by comparing charts they were able to resolve any remaining longitudinal differences and complete the first map of the world as we know it today. But that knowledge was bought at a terrible cost. Only four of Hong Bao's ships and just one of Zhou Man's returned to China – a loss of at least fifty ships in those two fleets alone. The human toll was equally high: a mere nine hundred of the nine thousand men in Zhou Man's

fleet were still with their admiral come October 1423. Up to three-quarters of the fleets' original complement must have died or been abandoned in the scattered settlements around the globe.

Twenty-four wrecks have already been located around the world; many more, carrying thousands of tons of treasure, remain to be found. The oceans will inevitably release more and more evidence as time goes by. The costs in both human and financial terms remain unparalleled – even the mightiest empire the world had ever seen was unable to sustain them – but the tasks Zhu Di had set his admirals had been achieved. It was a towering achievement, unequalled in the annals of mankind.

Zhu Di's master plan to discover and chart the entire world, and bring it into Confucian harmony through trade and foreign policy, could have succeeded, for the whole world now lay at China's feet – or so it must have seemed to his admirals when the handful of surviving ships of the treasure fleets limped home during the autumn of 1423, only to find that China, and the world, had changed forever. Zhu Di was dying, a broken man, and the mandarins were dismantling the apparatus of the worldwide empire he had so nearly created. There would be no more tribute system, no more great scientific experiments, no more epic voyages of trade and discovery. China was entering its long night of isolation from the outside world. The eunuch admirals were dismissed, their ships broken up or left to rot at their moorings, the maps and charts and thousands of precious documents recording their exploits destroyed. Zhu Di's great achievements were disowned, ignored and, in time, forgotten.

One of the fascinating 'what ifs' of history is what would have happened had lightning not struck the Forbidden City on 9 May 1421, had fire not roared down the Imperial Way and turned the emperor's palaces and throne to cinders. Would the emperor's favourite concubine have survived? Would the emperor have kept his nerve? Would he have ordered Admiral Zheng He's squadrons to continue their voyages? Would they have carried on establishing permanent colonies in Africa, the Americas and Australia? Would



New York now be called New Beijing? Would Sydney have an 'English' rather than a 'Chinese' quarter? Would Buddhism rather than Christianity have become the religion of the New World?

Instead of the cultured Chinese, instructed to 'treat distant people with kindness', it was the cruel, almost barbaric Christians who were the colonizers. Francisco Pizarro gained Peru from the Incas by massacring five thousand Indians in cold blood. Today he would be considered a war criminal.

In effect the Portuguese used Chinese cartography to show them the way to the East. Then they stole the spice trade, which the Indians and Chinese had spent centuries building. Anyone who might stop them was mown down. When da Gama reached Calicut he told his men to parade Indian prisoners, then to hack off their hands, ears and noses. All the amputated pieces were piled up in a small boat. The historian Gaspar Correa describes da Gama's next move:

When all the Indians had been thus executed [*sic*], he ordered their feet to be tied together, as they had no hands with which to untie them: and in order that they should not untie them with their teeth, he ordered them to strike upon their teeth with staves, and they knocked them down their throats . . . ?

Then a Brahmin was sent from Calicut to plead for peace. The 'brave' da Gama had his lips and ears cut off and the ears of a dog sewn on instead.

It seems certain that a further voyage by Zheng He's fleets would have included the one section of the globe they had not yet reached and charted – Europe. The upheavals in Beijing ended any possibility of that, but who can say what the subsequent history of the world would have been had the Chinese treasure ships appeared over the European horizon in the 1420s? One thing seems certain: had the emperors who followed Zhu Di not retreated into xenophobia and isolation, China, not Europe, would have become the mistress of the world.

The Forbidden City still stands as a monument to the vision of the great Zhu Di, but what more fitting epitaph could there be to the 'Emperor on Horseback' than the valiant horseman mounted on the tip of Corvo's volcano in the Azores, high above the Atlantic rollers crashing onto the cliffs far below? He pointed dramatically to the west, towards Fusang, the Americas, the land his brave and skilful mariners had discovered. As China began to draw in on itself, abandoning Zhu Di's great ambitions, others, notably the Portuguese and Spanish, began to fill the vacuum they had left. For centuries they have basked in the glory that rightfully belonged to others; it is now time, at last, for us to redress the balance of history and give credit where it is due.

To assert the primacy of the Chinese exploration of the New World and of Australia is not to denigrate the achievements and memories of Dias, Columbus, Magellan and Cook. The exploits of these brave and skilful men will never be forgotten, but it is now time to honour other men who have been allowed to languish in obscurity for too long. These remarkable Chinese admirals rounded the Cape of Good Hope sixty-six years before Dias, passed through the Strait of Magellan ninety-eight years before Magellan, surveyed Australia three centuries before Captain Cook, Antarctica and the Arctic four centuries before the first Europeans, and America seventy years before Columbus. The great admirals Zheng He, Hong Bao, Zhou Man, Zhou Wen and Yang Qing deserve to be remembered and celebrated too, for they were the first, the bravest and most daring of all. Those who followed them, no matter how great their achievements, were sailing in their wake.

It had taken me years to complete the research into these great Chinese voyages, but finally, by Christmas 2001, my work was finished. I sent it out for comment to experts around the world, and when their corrections were incorporated I was ready to publicize my findings at the lecture I gave at the Royal Geographical Society on 15 March 2002. It was broadcast around the world to thirty-six

countries populated by two billion people, and since then a further mass of corroborative evidence has come my way from people carrying out research on every continent. Some has been used in this book, and more continues to arrive every day. Many exciting discoveries such as the Sacramento junk, the sand mounds on Bimini and the tower at Rhode Island have yet to be fully examined and evaluated. The story is only just beginning, and it is one for all of us to share.

POSTSCRIPT

BY GREAT GOOD LUCK, THE TALK I GAVE AT THE ROYAL Geographical Society, London, in March 2002 was broadcast around the world, and a subsequent article in the London *Daily Telegraph* was also published in seventy-four other newspapers and magazines. As a result, new evidence began to pour in from all over the world, all of which had to be evaluated and checked for accuracy by experts in each different field. The text was continuously expanded and rewritten to incorporate this new material, but eventually a line had to be drawn to allow the book to be prepared for publication. However, e-mails, faxes and letters about exciting new discoveries have continued to arrive almost every day, and as the book goes to press, this postscript allows me a final opportunity to summarize the very latest evidence available.

Perhaps the most striking recent discovery has been the wreck of a very old, large ship or junk found near Fraser Island, off Queensland in Australia. It was unearthed as a result of research by a local historian, Brett Green, followed by a sonar search of the sands of the eastern part of the island. On 5 October 2002, during the period of the lowest tides of the year, a private firm of salvage experts deployed huge sand pumps over the area where metal traces had been detected by the sonar scan. The powerful pumps quickly unearthed three cast-iron cannon in a remarkable state of preservation, as well as the huge wooden ribs of the wreck. The provisional analysis was that the wreck was around six hundred years old and the cannon of hitherto unknown origin. However, on 8 November 2002, before the cannon or other artefacts could be raised from the sea-bed, the Australian government reclassified the area as a 'heritage' site. Only government-appointed archaeologists are now allowed to continue investigations there, and I await their findings with great interest, but the wreck is almost certainly of Portuguese or Chinese origin, and in either case it should provide definitive proof that Captain Cook was not the first to discover the eastern coast of Australia.

The great majority of the other new evidence I have received

relates to the Pacific and Atlantic coasts of North and South America. I have been notified of countless new discoveries from Vancouver Island in the north to Chile in the south, and the evidence takes many different forms. Dr Annabel Arends and her colleagues are continuing the pioneering work begun by her father, Dr Tulio Arends, and Dr Gallengo, into the DNA (transferins) of the Indians of northern Brazil, Venezuela, Surinam and Guyana, proving that these transferins are otherwise unique to the natives of Kwantung province in China. Diseases previously unknown in South America but common in south-east Asia—roundworm, lice and nits—were also found among the indigenous population of Mexico, and Chinese methods of extracting dyes from roots, insects, tubers and leaves were commonplace there, as were complex, time-consuming and highly individualistic methods of lacquer technology.

In addition to that discussed in earlier chapters, there is additional evidence that a wide variety of other animals and birds were carried to and from the Americas in pre-Columbian times. Wild pigs (*babiroussa*) were brought from Sulawesi in Indonesia to British Columbia; horses—extinct in the Americas by around 10,000 BC—were found by the first Europeans in Peru; the almost flightless fulvous [tawny] tree duck is found only in pockets in India and on the Caribbean coast of South America; turkeys—a type of large Central American pheasant—reached Turkey via the Silk Road before Columbus set sail; and camels indigenous to the Mahgreb area of Morocco and the Canary Islands were found in South America by the first European explorers.

Plants provide still more evidence: the Europeans found fields of rice—a crop foreign to the Americas—in Mexico and Brazil; cotton with chromosomes common to West Africa grew in the Revillegado Islands; and coconuts brought from the South Pacific grew in Puerto Rico and right across the Isthmus of Darien to the Pacific coast, sugar cane in plantations besides the Amazon and Orinoco Rivers, and bananas beside tributaries of the Amazon, where there were also Chinese root crops. Tobacco, sweet potatoes and maize from the

same area were exported to south-east Asia and the Pacific. All of these animals and plants confirm that there were seaborne voyages to and from the Americas prior to Columbus.

Linguistics provides further evidence. The people of the Eten and Monsefu villages in the Lambayeque area of Peru can understand Chinese but not each other's patois, despite living only three miles apart. Stephen Powers, a nineteenth-century inspector employed by the government of California to survey the native population, found linguistic evidence of a Chinese-speaking colony in the state,<sup>1</sup> and research among the Othomis people of Mexico also suggest a Chinese connection.

In Mexico, a Nayarit legend tells of 'ships like houses' arriving off their coast, and a painting on linen of the Jucutácato tribe shows foreigners disembarking from such a ship; the leaders wore red robes and their followers white, they carried round Buddhist mirrors and had dogs resembling the Chinese shar-pei breed. One person is depicted riding a horse. At the nearby beach of Playa la Ropa, on the seaward end of the Rio Balsas, is a Chinese wreck that even now still disgorges Chinese cloth after storms at sea. There are also many other Chinese artefacts: a statue unearthed at Huehuetla, a vase at Azcapotzalco, ceramic horses on the coast, lions and horses on medallions at Palenque, amulets and earplugs found at Teotihuacan (Mexico City) and numerous carvings of horses on the Yucatan peninsula and at Teotihuacan.

There is also strong evidence of a Chinese presence in the old Mexican capital at Teotihuacan and another beside the River Balsas leading from Uruapan to the coast. A further search for records of finds focused on Teotihuacan-produced Chinese jade earplugs, jade medallions and, most fascinating of all, a tomb at the base of the Pyramid of the Sun which housed a Mongolian or Chinese body of an important person, for the tomb bore a small statue that was clearly a portrait of the buried individual<sup>2</sup> and the body itself was adorned with jade jewellery.<sup>3</sup> Professor William Niven 'found slabs at Teotihuacan containing Chinese characters that were easily read

by the secretary of the Chinese legation, as well as a tomb and statue said to be “wholly Chinese” in design. The “Mongol-type” skeleton in the tomb was said to have borne a necklace of green jade,<sup>74</sup> which was unknown in Mexico. A request to take DNA samples from this body is in hand, and should permission be granted, results will be posted on the 1421 website (www.1421.tv). The new information, together with the material I have already assembled, produces an overwhelming impression of a widespread and long-standing Chinese presence in the New World that was later ‘discovered’ by Columbus and the other European explorers.

Emboldened by the new evidence of Chinese colonies in Mexico, I next turned my attention to Vancouver Island, off British Columbia in Canada. The Waldseemüller map clearly depicts the island and the Kurashio current off the coast of north-west Canada could have carried Zhou Man’s junks there. If they had made a landfall, there should be evidence of the Chinese presence. Like the Waldseemüller chart, another map of Vancouver Island, called ‘colonie Chinois’ by its Venetian cartographer, Antonio Zatta, was published before Vancouver or Cook ‘discovered’ the island. The Squamish Indians there have more than forty words in common with Chinese, including *tsil* (wet), also *tsil* in Chinese; *chi* (wood), which is *chin* in Chinese; and *tsu* (grandmother), which is *etsu*.

Grant Keddie, Curator of Archeology at the Royal British Columbia Museum, Victoria, has analyzed the evidence that the native Indian cultures of the North Pacific coast may have been influenced by contact with ancient Chinese culture.<sup>5</sup> Thousands of Chinese coins have been found in the area, but Mr. Keddie considers that most were probably brought by later Chinese traders, and none provide direct evidence of pre-Columbian voyages by the Chinese. However, the discovery of a Taoist talisman and a Chinese stone lamp were far more significant. The talisman may be identified ‘with Shou Lau’,<sup>6</sup> whose talismans I have seen in many locations around the world.

In 1747, an Aleut boy from Attu (an island off the coast of British

Columbia) spoke of a legend in which ‘men dressed in long, many-colored silk and cotton clothing came to the Island Atu in small ships with one sail, their heads were shaved to the crown and the hair on the back was plaited into tresses.’<sup>7</sup> There are also a number of other early accounts of Chinese visits to the New World, and scholars have been discussing the parallels between the culture of ancient China and the advanced societies of the New World ever since the Dutch jurist and politician Hugo Grotius (1583–1645) wrote about them after reading the accounts of Spaniards who claimed to have observed ‘Asiatic’ shipwrecks on the Pacific coast of Mexico.<sup>8</sup> The Portuguese sailor Antonio Galvão is reputed to have been told about early Chinese voyages to the New World when he visited China in 1555, and he noted that ‘the people of China were sometimes lords of the most parts of Syria and sailed ordinarily the coast which seemeth to reach unto seventy degrees towards the north’<sup>9</sup>—the latitude of Baffin Island in Canada and the north coasts of Alaska and Siberia.

The advance royalties from my book enabled me to set up a small team of researchers who could read medieval Spanish and Portuguese, including Brazilian Portuguese. I put them to work on the first-hand accounts of the early Spanish and Portuguese explorers to the New World, many of which have never before been translated. I decided to concentrate on areas where the accumulation of evidence of Chinese influence was strongest: California, around San Francisco; the Mississippi River west of Kansas City; Florida; Mexico between the Pacific coast and Mexico City; the Caribbean coast of Venezuela, Columbia and Guyana; the Amazon, particularly around Santarém (where the Tapajós River branches south from the main Amazon stream); and the far south of Brazil near Cuiabá where the Parana River of Paraguay and the San Francisco branch of the Amazon both rise.

At first sight it appeared unlikely that the Chinese would have voyaged so far inland—nearly three thousand miles in the case of the Amazon—but there was compelling evidence in a series of charts

clearly showing the course of North and South American rivers before Europeans had reached and 'discovered' them. Just as the Toscanelli chart (1474) shows the Murray, Darling, Cooper, Diamantina and Flinders Rivers of Australia, so the Martellus map (1489) depicts the Magdalena in Colombia, the Orinoco in Venezuela, the Amazon and its tributary, the San Francisco, the Parana and Paraguay Rivers in Paraguay, the Colorado and Negro in Argentina, and the Chubut in Patagonia. The Magdalena River also appears on the Cantino (1502), as does the Cavra branch of the Orinoco, while the Waldseemüller (1507) shows nearly one thousand miles of the Mississippi as well as the Brazos, Alabama, Roanoke, Delaware and Hudson Rivers of North America.

The rivers of Columbia and Venezuela are also linked to the Chinese voyages by the DNA (transferins) of the people who lived beside them. Surinam, Guyana and the Orinoco delta also have a similar 'Chinese' connection and, as in parts of China, the native tribes of the Mato Grosso in Brazil have an absence of Duffy blood groups (a system of classifying blood used in tracing and predicting the spread of certain sorts of malaria). There are also skin diseases in the flood plains of the San Francisco and Xingu Rivers and the Mato Grosso of south Brazil that can only have been transmitted by seaborne voyages from south-east Asia.

Ancient stone carvings from the floodplains of the Mississippi and Missouri Rivers also yield fascinating evidence. There are clear depictions of horses in the Oklahoma Panhandle; near Springfield, Colorado; Hickling Springs, Colorado; and Le Flore County on the borders of Arkansas and Oklahoma. Somebody must have brought horses to the area, for how else could the unknown artists have drawn them? There are also many petroglyphs of ships, most in the same areas—Picture Canyon, Colorado, near the Oklahoma border; Le Flore County, Oklahoma; the Oklahoma Panhandle; Baka County, Colorado; and beside the Arkansas River in Colorado. In total there are more than fifty carvings of ships and forty of horses, strongly suggesting that the horses were brought by ship.

These findings prompted me to devote some effort to researching the diaries of the first European explorers to reach the Mississippi and its tributaries, especially the Missouri. In 1540, Francisco Vasquez de Coronado (c. 1510–1554), the Spanish governor of an important Mexican province, led an enormous expedition through what is now the American West, searching for the fabled 'seven cities of Cibola', first described to an earlier Spanish conquistador, Cabeza de Vaca, on his expedition from Florida to the Pacific coast of New Mexico in 1528–36. These lost cities were supposedly built on land rich in gold somewhere on the alluvial plains between the Mississippi and the Rio Grande.

The historian Pedro de Castaneda recorded de Coronado searching first for the lost city of Quivira, which he believed to be 'not far from the great bend in the Arkansas River whose course they had followed from the neighborhood of [Dodge City].'<sup>10</sup> Coronado described encounters with Indian hunters and then an entirely different people.

These people, since they are few, and their manners, government and habits so different from all the nations [peoples] that have been seen and discovered in these western regions, must come from that part of Greater India, the coast of which lies to the West of this country [i.e., China], crossing the mountain chains and following down the river, settling in what seemed to be the best place. The settlements and people already named were all that were seen 70 leagues wide and 130 long in the settled country along the river Tiguex [Missouri] . . . Silver metals were found in many of their villages, which they use for glazing and painting their earthenware.<sup>11</sup>

Even more fascinating, on the banks of the Missouri, 'vessels were found of which the sterns were gilded, and Pedro Menendez, in Acosta, speaks of the wrecks of Chinese vessels seen upon the coast. It is also an unquestionable fact that foreign merchants clothed in silk formerly came among the Catualcans. All of these accounts, added to those which we have adduced, became so many proofs that

the Chinese traded at the north of California, near the county of Quivira.<sup>12</sup>

The story is the same further east. Acosta, the great sixteenth-century historian, described meeting Chinese people in Mexico and wrote of:

the Strait which some hold to be in Florida . . . Even as Magellan found out this strait from the south [the Straits of Magellan], so some have pretended to discover another strait, which they say is in the north, and suppose it to be in Florida . . . Pedro Menendez, the Adelantado, a man very expert at sea, affirmeth for certaine that there is a strait and that the king had commanded him to discover it, wherein he showed a great desire; he propounded his reasons to prove his opinion, saying that they have seene some remainders of shippes in the North Sea [Atlantic] like unto those which the Chinois use, which had become impossible if there were no passage from one sea into another.<sup>13</sup>

The Caribbean, too, and the areas bordering it, are full of legacies of Chinese voyages, but the evidence strewn along the banks of the Amazon is perhaps the most compelling of all. The earliest maps of these regions show that seafarers had travelled far down the Amazon towards Cuiabá, and when I began research into the Tapajós tributary that joins the Amazon by the modern town of Santarém, I learned that a mass of jade and other Asian artefacts had been found there. Señor Rodrigues Barbosa, a Brazilian botanist and anthropologist, argued that the jade amulets he named *Muyrakyta* had come from China.<sup>14</sup> The written opinions of several professors supported his contention that at least some of the jade found by the first Europeans in Central and South America was 'unquestionably Chinese' in origin and a jade duck found in a hoard near Santarém was strikingly similar to a duck found in New Zealand. I now had evidence of jade talismans the length of Central and South America. Some of this may eventually prove to be Guatemalan but the bulk of it is undoubtedly of Chinese origin. Moreover, much of the jade,

especially that found in Brazil and Venezuela, was discovered in the places where the native people have DNA or intestinal afflictions otherwise unique to China and south-east Asia. As the book goes to press, it appears that yet another hoard of jade has been unearthed at Maracay in Venezuela.

The jade artefacts were found where today there is only jungle, but I was certain that the Chinese would only have traded these exquisite pieces if they gained something of real value in return. I returned to the diaries of the first Europeans to sail down the Amazon to Peru, notably the conquistador Francisco de Orellana (1511–1546), second in command of Pizarro's 1542 expedition to the east of the Andes; the Portuguese explorer Gabriel Soares de Sousa (1558) and the Spanish friar Gaspar de Carvajal (1539–1596). Carvajal's accounts are particularly riveting. At the confluence of the Amazon and the Tapajós, he discovered 'a vast city' of splendid buildings, filled with beautiful, multicoloured ceramics of very fine quality.

There may now be much more recent confirmation of his discovery. On 7 September 2002, Dr Denise Gomez of San Paulo University described a lost city amid a 'green hell entirely peopled by Indians,'<sup>15</sup> in the jungle near Santarém, but was it built by the indigenous people or by the Chinese eunuch admirals as the range of Chinese artefacts discovered there might suggest? The nephrite amulets are similar in origin, form, colour, density and chemical composition to Chinese jade amulets, as are items found in Nicaragua and Costa Rica. All are 'unquestionably Chinese jade.'<sup>16</sup> Terracotta amulets have also been found inscribed with the Chinese yin-yang symbol, and terracotta urns were found near Santarém. They were painted in the traditional symbolic colours of Asia—red, yellow, black and white; why were these four 'Chinese' mineral colours used, given the local availability of vegetable dyes? The mountain range near the site of the *Muyrakyta* find is named Serra da Chinella. *Chinella* means sandal/slipper in Brazilian Portuguese, an item of Chinese origin and possibly an early variation of the Portuguese word for the Chinese, *Chines*.

These finds, together with mortuary customs, folklore very similar to that of China, and the divination processes using chickens and chicken blood on paper, all signify indoctrination over an extended period. The substantial evidence of a Chinese presence, coupled with the vast wealth that could have been extracted from the Brazilian diamond mines and the silver mines of the Chapada Range, make it quite conceivable that the Chinese set up a network of trading posts and settlements along the Amazon and its tributaries. Several expeditions have been mounted in the search for these lost cities, yet the majority of explorers have returned empty-handed or indeed—like Colonel Percy Fawcett, who set off into the jungle in search of fabled riches but disappeared soon afterwards—never returned at all.

Over the years of researching and writing this book, I have been struck again and again by the truth and accuracy of the descriptions recorded by the early explorers. Far from being fanciful or bizarre exaggerations, almost everything that I have investigated as a result of reading their accounts has turned out to be true; for example, the 'Island of the Seven Cities' was Antilia, and the Portuguese did travel to and from it long before Columbus. Hence, there seems good reason to believe that many of the early European accounts of lost cities in North and South America will also turn out to be correct. Friar Gaspar de Carvajal recorded these impressions as he travelled down the Amazon in the 1540s:

We saw emptying into the river another very powerful and wider river on the right; so wide was it that at the place where it emptied in it formed three islands. . . . At this junction there were numerous and very large settlements and very fruitful country and very fruitful land. . . . There was a great deal of porcelain ware of various makes, both jars and pitchers, very large with a capacity of more than 25 arrovas [100 gallons] and other small pieces such as plates and bowls and candelabra of this porcelain of the best that has ever been seen for that of Malaga is not its equal for it is all glazed and embellished with all colours so bright that they astonish, and more than this, the drawings and paintings which they make on them are so accurately worked out . . . and

the Indians have told us that as much as there was porcelain in this house, so much there was back in the country in gold and silver . . . From this village there went out many roads and fine highways inland . . . Cristobal Maldonado . . . and some other companions started to follow them and had not gone half a league when the roads became more like royal highways and wider . . . Countries very rich in silver . . . and plentifully supplied with all kinds of fruit, pineapples, pears, plums and custard apples.<sup>17</sup>

After studying the rest of Friar Carvajal's account, I was certain that the 'very powerful and wider river on the right' was the Tapajós and the three islands were those in the stream to the north of Santarém. The mention of large royal highways is very important, for today this area is jungle. The people who created the highways that astonished the Spanish must have had substantial surplus capacity and engineering skill. The excavation of the lost city reported by Dr Gomez will be of great interest.

The Tapajós River splits into several tributaries further south, the southernmost of which rises in the Chapada Range in the Mato Grosso north-east of Cuíaba.<sup>18</sup> This small area is also where the Parana rises—a mighty river that runs first west, and then southeast to empty into the estuary of the River Plate. When the Portuguese reached this area a century after Friar Carvajal, they found a way of sailing with the wind from the coast against the current all the way up to Cuíaba; it is entirely possible that the Chinese had also done so—the first Europeans saw rice growing beside the Parana, and the skin diseases of south-east Asia are endemic among the native population. There are substantial silver mines around the headwaters of these rivers. The Chapada Range is a far healthier environment than the marshy plains below and therefore would have been a sensible place to build a city. A map of lost cities of the Americas<sup>19</sup> states that this is where Colonel Fawcett vanished in 1925, while searching for the legendary lost city of Moribeca.

In 1743 a native of Minas Gerais made a search for Moribeca, with a party of a few Portuguese, Indians and Negro slaves. After, a fruit-



less ten-year search, they were scouting for food one day when the pursuit of a deer led them through a deep crevice in a precipice. Gaining the summit, they 'stood dumb at the view spread before them.'

In the immediate foreground lay extensive plains brilliantly green, with patches here and there of silver water, changing to yellowish brown and dull greens as they drew near the foothills. On this was a sight that made the adventurers gasp and hastily draw back behind the crest line. For at a distance of some three or four miles and so clear that buildings could be distinctly made out, was a huge city. . . . The sun was well up for it was scarcely past midday and it was decided that two Portuguese and two negroes, all well armed, should reconnoitre as near the city as possible and discover what sort of people dwelt in this mysterious place. . . . To the Indians it was just as mysterious as it was to their more civilised companions. They had vague traditions and very definite superstitions regarding this part of the country which had kept its 'tabu' and they were fearful of they knew not what. . . . The trail led directly to an entrance through three lofty arches built of gigantic stones, the middle arch towering above the others. The stupendous masonry was black with age, and the grandeur of the architecture tied every man's tongue. . . .

The overwhelming dignity of the design, the awesome silence and mystery of an old abandoned city possessed them, rough men as they were. High above the crown of the central arch and deeply engraved into the weathered stone, were characters of some sort. They knew enough to realise this was no familiar script. The arches were in a good state of preservation, the very few huge blocks had fallen from the summit, and portions had slipped somewhere out of plumb. Passing through the archway they found themselves in a wide street, littered with fallen masonry and broken pillars. They gazed in amazement. There was not a sign of human occupation. It was all incredibly old, and yet in its age amazingly perfect. Here were two storeyed houses on either side all built up of carefully squared blocks carved in elaborate time-worn designs. In many cases roofs had fallen in, in others great stone slabs still covered the dark interiors, and he who had the temerity to enter the win-

dowless chambers through the vaulted doorways and to raise his voice, fled at the echoes hurled at him by the vaulted ceilings and solid walls. . . .

Dumb with amazement, the party, huddled together like a flock of scared sheep, passed down the street into a vast square or plaza. . . . In the centre of the plaza dominating its surroundings in sublime majesty, was a gigantic black stone column set upon a plinth of the same rock, and upon it the statue of a man, one hand on his hip, the other arm extended with the index finger pointing to the north. . . . Magnificent in design, perfect in preservation. In each corner of the plaza had been great obelisks in black stone covered with carvings. . . . The whole of the right hand side of the plaza was occupied by a building so magnificent in its design as to have been obviously a palace, its square columns intact with walls and roof partly demolished. A vast entrance hall was approached by a broad flight of steps, much of which was displaced. The interior of this hall was rich in exquisite carving, and still showed signs of a brilliance of colouring comparable with some of the finest relics of Egypt. . . .

In the plaza opposite the palace was the ruin of another huge edifice, evidently a temple by its magnificent façade and general appearance. It was entirely unroofed but on the weather-worn walls were still to be traced figures and designs of animals and birds. . . . Gaping chasms in the ground into whose fathomless depths a stone dropped without sound, left no doubt as to the agency of destruction. Around these dreadful gulfs, great blocks of stone elaborately carved, slabs of rock, portions of stone and broken columns were piled in awful confusion. The explorers could imagine something of the ghastly tragedy of this unknown cataclysm whose resistless force had displaced and thrown down monolithic stones of fifty tons and upwards and destroyed in perhaps less than one fearful minute the civilisation of a thousand years.

On the far side of the plaza the city was open to a river some 30 yards or so in width . . . evidently there had been a highly decorative terrace to this river, and most of it had been swallowed up or lay beneath the waters. . . . About a quarter of a mile outside the city and standing by itself was a palatial building with a front of 250 paces approached by a broad slight of steps of many coloured stones. It was heavily columned all round, and the noble portico opened up upon a vast hall, with mural decorations and gorgeous

colouring that still remained more or less intact. From this hall opened 15 smaller chambers, in each of which was the carved head of a serpent, from his opened jaws poured a small stream of water. . . .

The leader decided to follow the river down on the chance of striking some civilised settlement. . . . Soon after the departure of this party he found to the east of the fall unmistakable signs of mining. The shafts whose depths he had no means of plumbing excited his curiosity. On the surface of the ground were specimens of silver ore of great richness, presumably brought up from the shafts, encouraging him to believe he had really discovered the lost mines of Moribeca.<sup>20</sup>

It is hoped that a fresh expedition will be mounted to find the lost city of Moribeca, following in the footsteps of Colonel Fawcett. We have enough clues of where to look!

A third lost city, Quivira, another of the fabled 'seven cities of Cibola', was reputedly located in the area of modern Wichita. Coronado's expedition set out from Compostela on the Pacific coast and marched northwards along the Gulf of California to what is now Sonora. Near Zuni, he turned eastwards towards what is now Albuquerque, and then made his way north-east from there to the Missouri. The land between the Rocky Mountains and the Missouri, he named Tiguex, and there he encountered Chinese people. Coronado sent exploratory parties in all directions, one of which, under the command of Garcia Lopez de Cardeno, discovered the Grand Canyon of Colorado. In the spring of 1541, Coronado's main party reached what is now Wichita, but though they found 'ships with gilded sterns' there, they did not discover the lost city of Quivira that they were seeking. Is that the end of the matter? I certainly do not think so. There are far too many carvings of foreign ships and horses, especially those of the Anubis Caves, a group of five small caves in western Oklahoma, filled with a wealth of ancient writing and related petroglyphs.

Further up the Mississippi, in Wisconsin and Michigan, native American lore cites 'ancient maritime foreigners who came to mine

the "red rock"', and Rock Lake, Wisconsin, holds in its depths a possible clue to these 'ancient foreigners'. It is an area rich in copper, perhaps the 'red rock' of native lore. By AD 900 copper had become the coin of the Mayan realm. Mayan miners and astronomers knew of copper deposits in northern Michigan and sent expeditions to establish control of the area. They built a large settlement at 'Aztalan' that became the center of copper trading for several centuries, but in about 1300, copper deposits were found in Mexico itself and Aztalan was apparently abandoned.

For five centuries, including the period of the great Chinese voyages of exploration, its history went unrecorded, but between 1830 and 1840 early settlers in the Rock Lake area saw strange protrusions sticking out of the water, described by the natives as the 'rock tepees of the ancient foreigners'. Within twenty years, the sawmill dams built by the settlers led to a rise in the water level of Rock Lake and the structures were completely submerged. But after a prolonged drought in the fall of 1900, two local residents out duck shooting saw mysterious structures under the water. Dozens of local people converged on the lake, and several young boys dived down and touched the flat-topped pyramids, one of which was described as 'a long tent-shaped structure' approximately 800 feet in length. However, the very next day the drought broke, the water became murky and no more sightings were made.

In the 1980s a team led by local journalist and author Frank Joseph began sonar sweeps of the lake and photographed the underwater structures,<sup>21</sup> and between 2000 and 2002 the Rock Lake Research Society carried out further sonar scans, attempting to fix the location of the structures, using ground positioning systems. A diver recorded his impressions:

I would say the first one is about eight feet high, 12 to 15 feet wide, and more than 100 feet long. The second is 10 to 20 feet south of the first and about the same width, with a steeper slant to the sides, and is shorter in length. They look to be the same height and exactly north and south on a compass

alignment. . . . The area of rocks looks like a tent-shaped pyramid, collapsed. . . . It is like a pile of rubble, large stones on the bottom and smaller ones on top. . . . Some kind of plaster had been used on the sides. Slabs of fragments of cement or plaster, or at least something man-made were on top of the large one.<sup>22</sup>

Local historians developed a theory that these truncated pyramids of 'Aztalan' were used as observation points to record the movements of the sun and planets.

The Louisiana Mounds Society refers to remains of horses in Wisconsin,<sup>23</sup> and a horse's skull was found with other Indian artefacts in a burial mound in Wisconsin—long before Columbus's era. A vertebrate palaeontologist pronounced the bones to be 'those of a horse and not petrified.'<sup>24</sup>

Coronado's expedition met Chinese people in Tiguex and found 'gilded sterns' near Quivira, and Pedro Menendez saw Chinese junks on the Florida coast. Native American legends tell of foreign maritime people coming to mine copper, and there are the remains of horses and truncated, flat-topped pyramids just like the observation platforms I have seen throughout the world. It would have been natural for the Chinese to have built observation platforms to record the precise latitude and longitude of the immensely rich copper resources they had discovered. Taken together, all this evidence makes it at least arguable that the Chinese came to mine copper at Aztalan. There is certainly enough cause to mount further explorations near there; truth, after all, as I have found many times earlier in the course of my researches, really is far stranger than fiction.

When I began my research years ago, all I had was a blank sheet of paper. As I write this in the late fall of 2002, my book is soon to be published in the U.S.A., the United Kingdom, Canada, Australia, New Zealand, South Africa, China, Spain, Portugal, Italy, Poland, Finland, Holland, Scandinavia, West Germany, Japan and a host of other countries. Television rights have also been sold worldwide. A potential worldwide audience and readership of millions has the

opportunity to join in the quest for further evidence of those great Chinese voyages of the early fifteenth century. A 1421 website ([www.1421.tv](http://www.1421.tv)) has been established, and I welcome all contributions and help, especially in the search for those fabled lost cities. The great adventure has only just begun.

*Gavin Menzies*  
*London, October 2002*