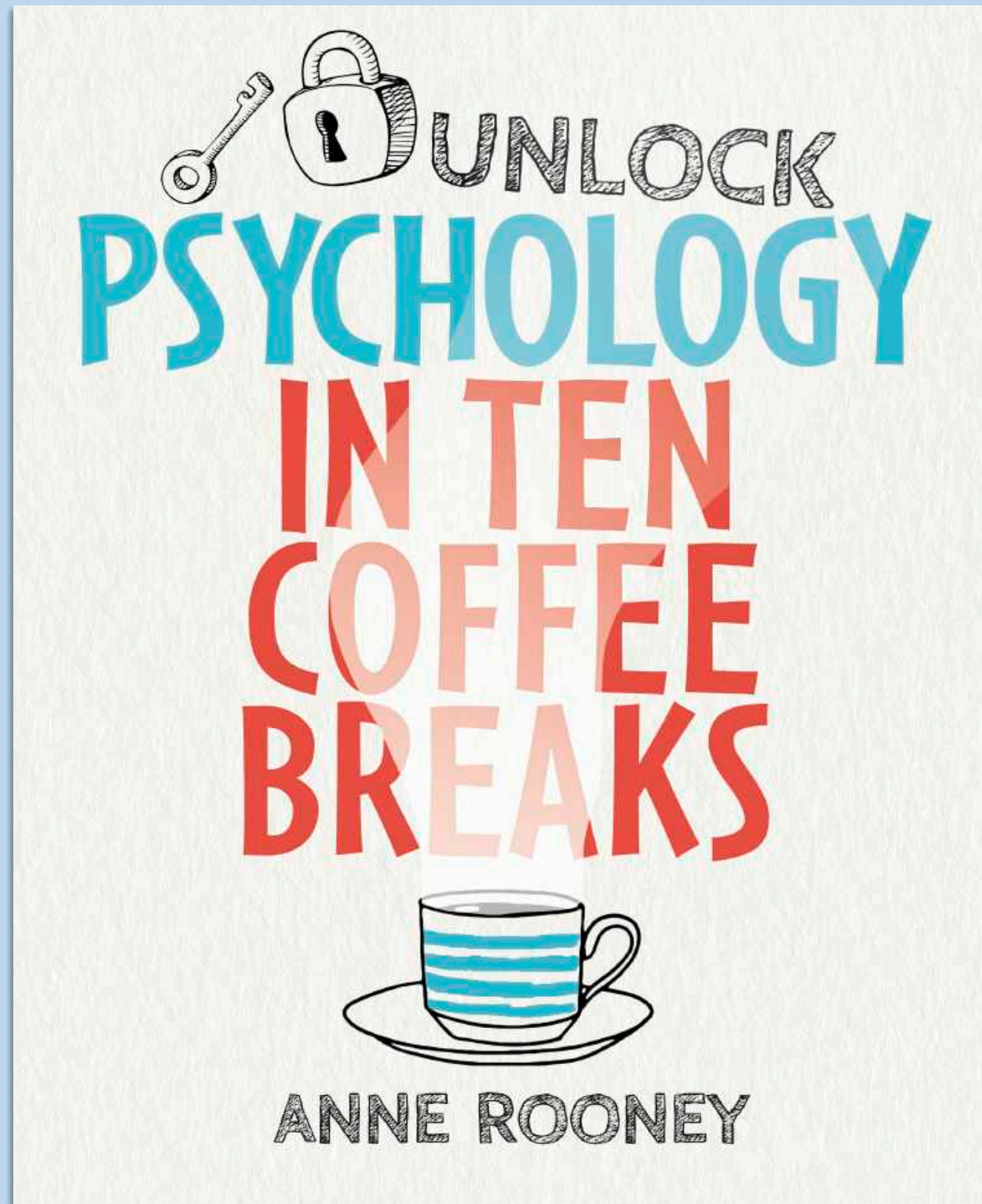
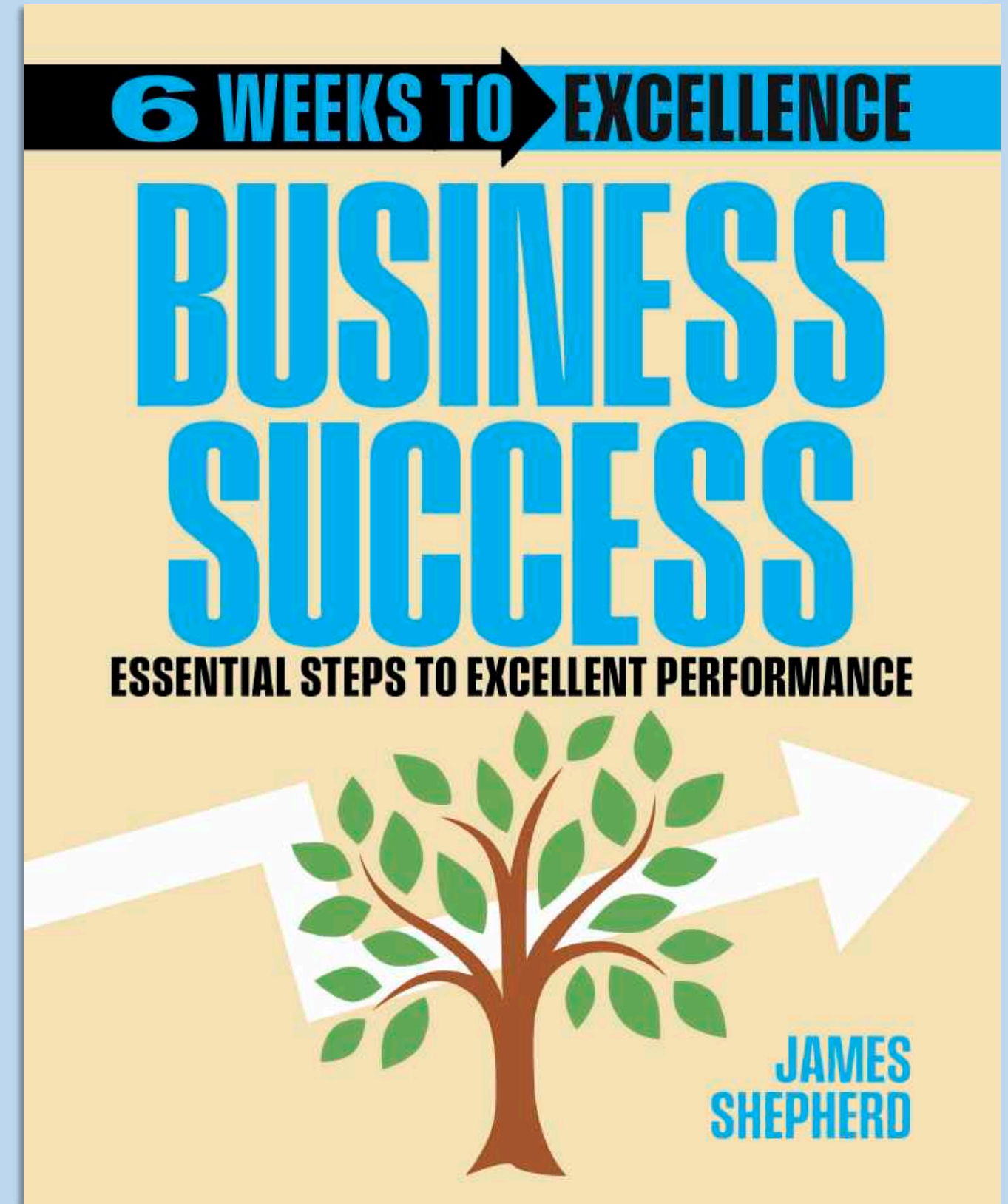
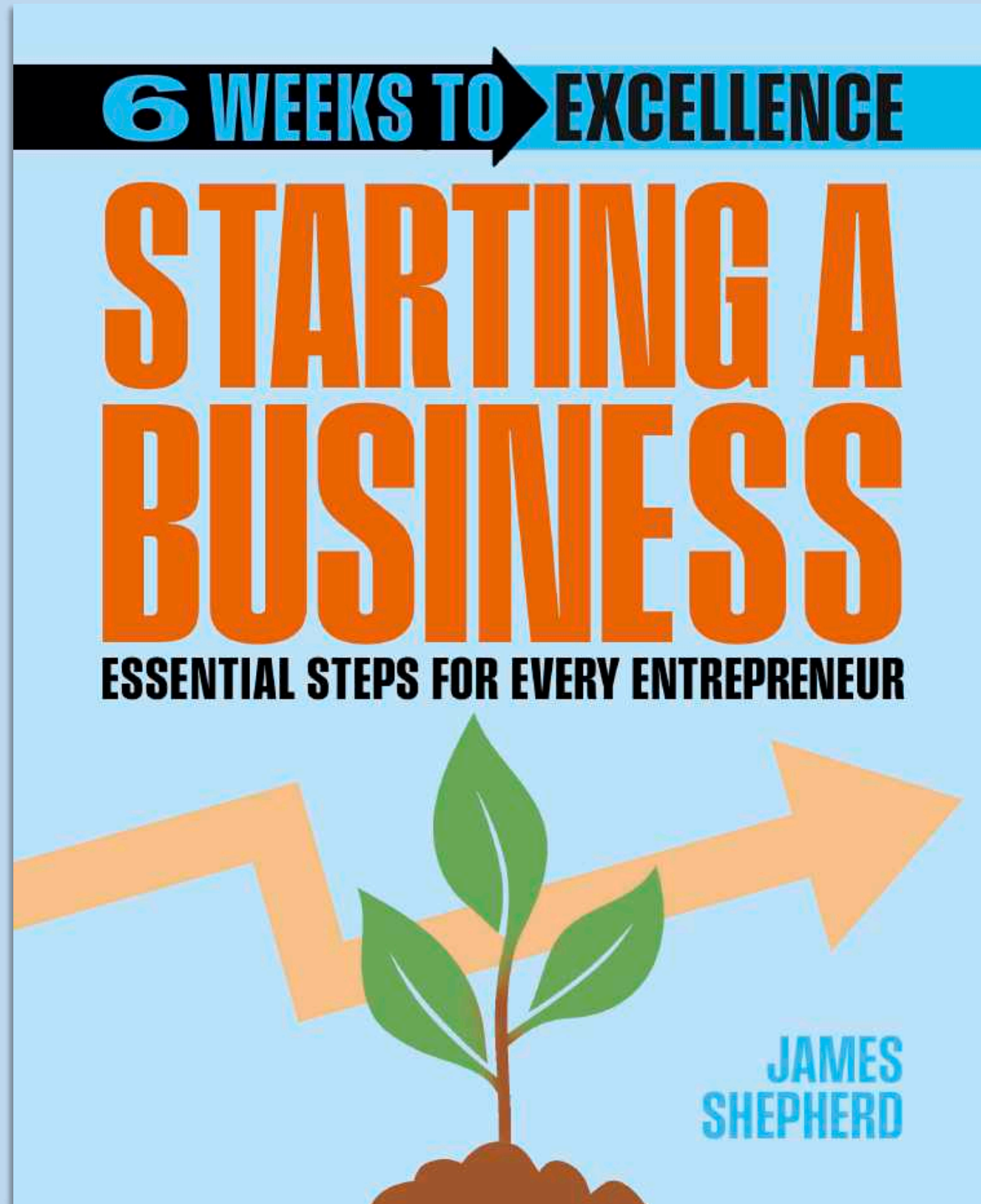


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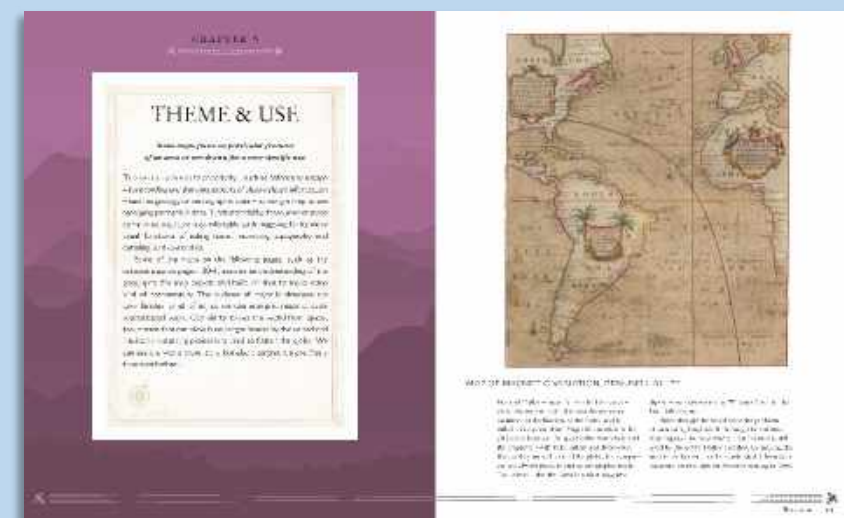
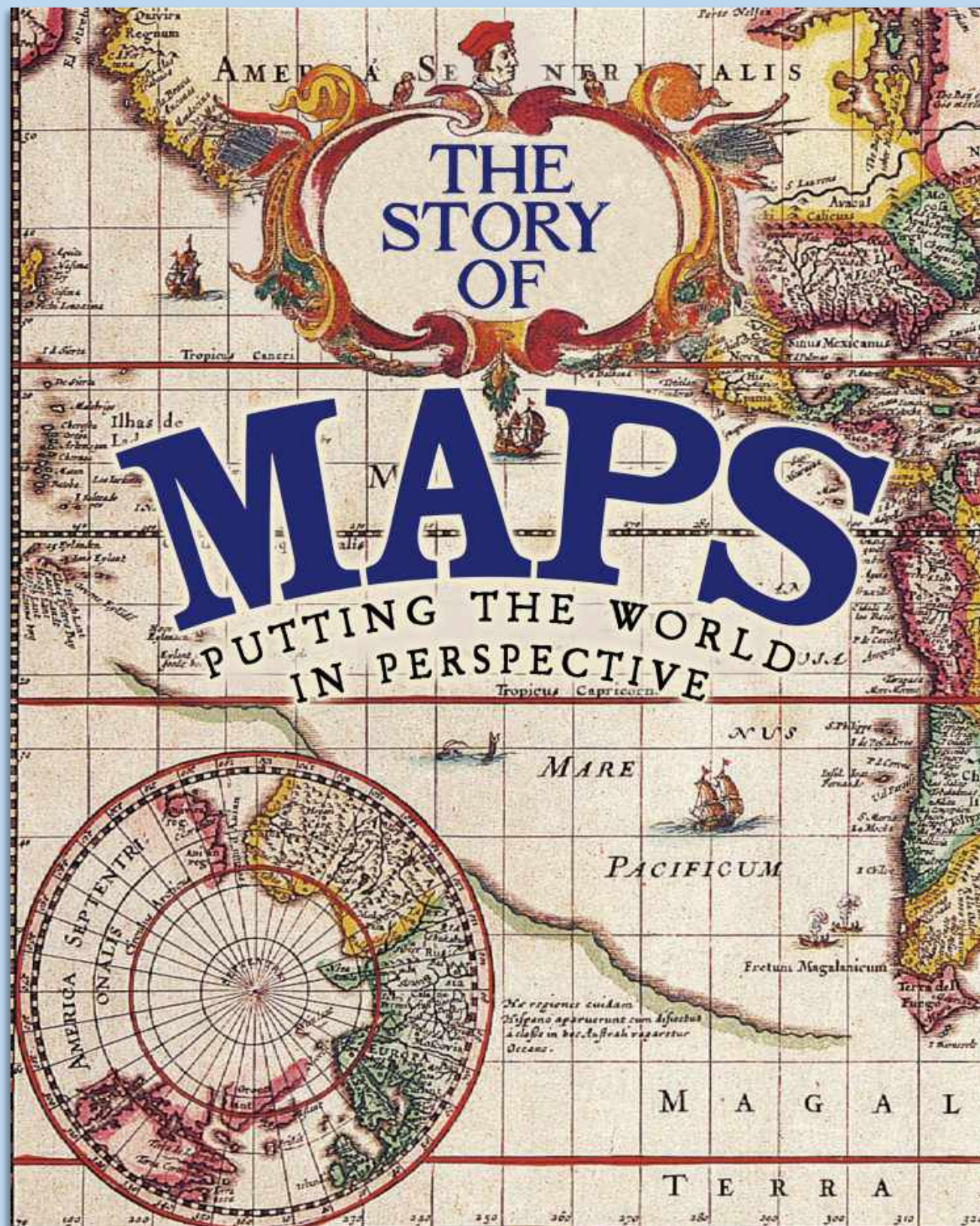


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The Story of Maps

280x225mm, 192pp, 4/4, Hardback,



MAP OF THE NILE, AL-KHWĀRIZMI

Al-Khwārizmī (780–850) compiled a manuscript catalogue of notable places, such as towns, mountains, rivers and springs listed by climate (following Ptolemy's division of the habitable world into seven 'climates', arranged as bands of latitude). The climate bands are vertical here because of the orientation of the map, with east at the top. This map is one of four from a manuscript copy made around 1000–1050; it's not known whether the maps originated with al-Khwārizmī or were added later. They are the earliest surviving maps from the Islamic world. The Nile is shown rising on the right as two groups of streams in the mythical Mountains of the Moon and disgoring into the Mediterranean at Alexandria on the left.



This map, drawn around 1536 or 1542, depicts one of three journeys made by French navigator Jacques Cartier to explore the St. Lawrence river in Canada. Cartier was seeking a new route to Asia and hoping to find gold, spices and other riches. His explorations prepared the way for France to claim Canada later, but were not successful in other ways. He annoyed the Iroquois, who had originally been keen to help him; the putative gold and diamonds he collected turned out to be worthless; and he abandoned the colonists who were following him when he realized the severity of the Canadian winter. However, he did give Canada its name, apparently misunderstanding the Iroquois word 'kanata', meaning village, and applying it to the area around Quebec. It was later adopted for the whole nation.

72 CHAPTER 2 Over land and sea 73

THEME & USE

Some maps focus on particular features of an area or are drawn for a very specific use.

THIS VARIES FROM AIDS to an activity – such as defence or escape – to recording and showing aspects of place-related information – such as geology or demographic data – to using a map to see emerging patterns in data. Understandably, these uses of maps come once a culture is comfortable with mapping for its more usual functions of aiding travel, recording topography and detailing land ownership.

Some of the maps on the following pages, such as the octopus map on pages 180–1, assume an understanding of the geography the map depicts and build on that to make some kind of commentary. The outlines of major landmasses are now familiar to all of us, so we can interpret maps in quite sophisticated ways. Our ability to see the world from space, too, means that our view is no longer bound by the varied and inevitably distorting projections used to flatten the globe. We can see the world more truly, but also interpret it more freely than ever before.



MAP OF MAGNETIC VARIATION, EDMUND HALLEY

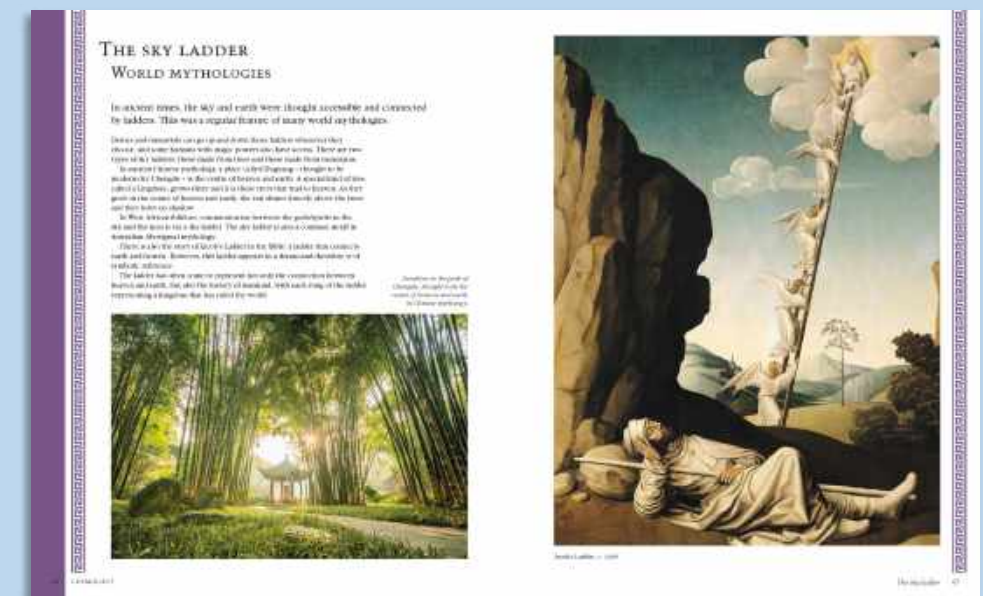
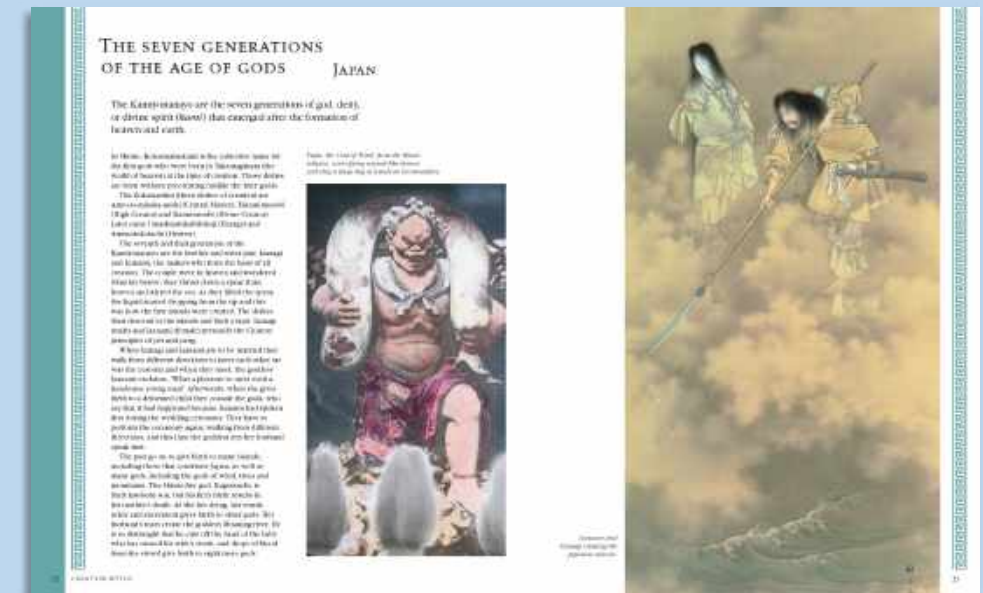
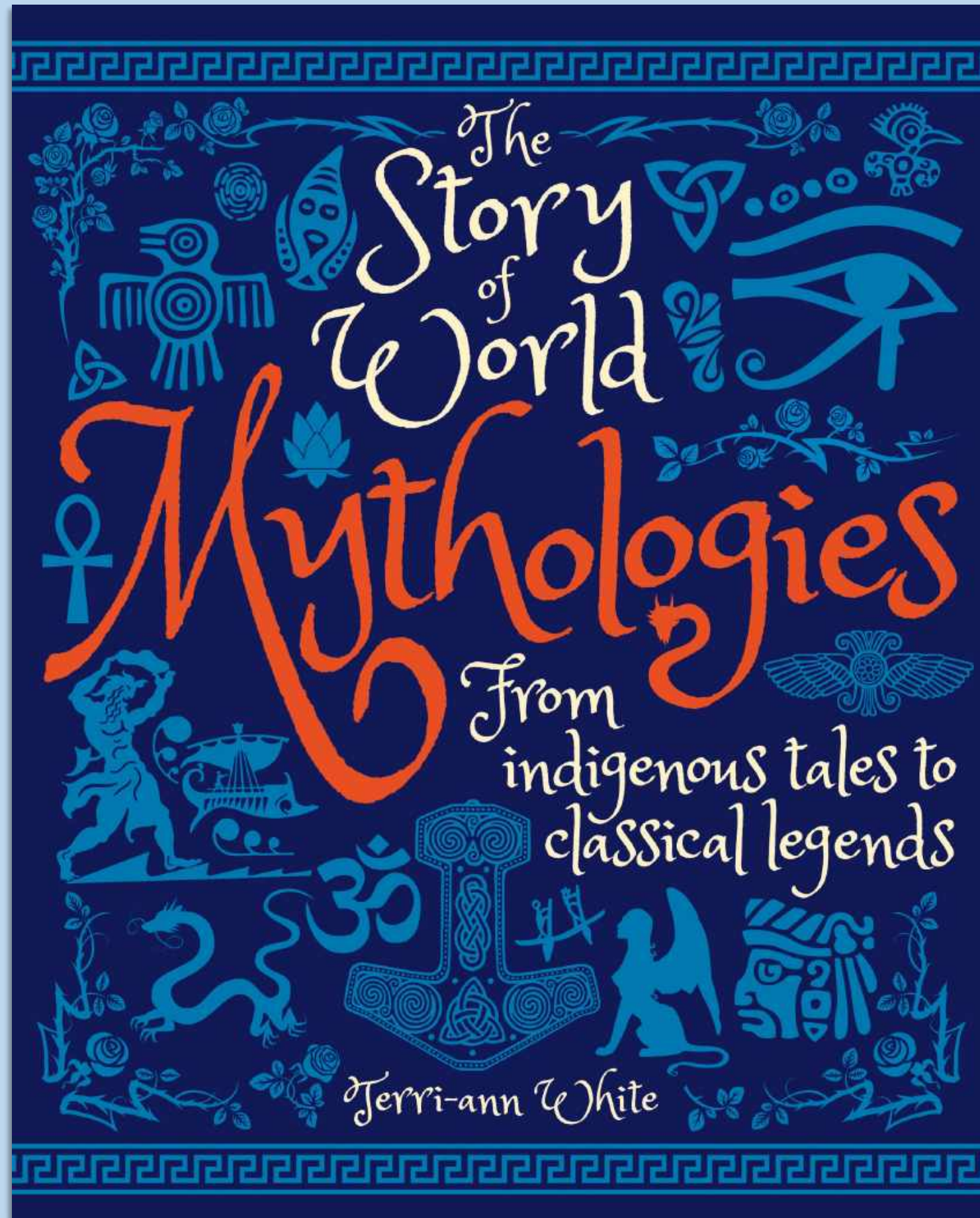
Edmund Halley – more famous for his comet – drew this map in 1701. It shows the magnetic variation, or declination, of the Earth, and is called an isogonic chart. Magnetic variation is the difference between the geographic North Pole and the magnetic North Pole. Sailors had discovered that, as they moved around the globe, the compass did not always point to true or geographic north. The reason – that the Earth is a giant magnetic

dipole – was discovered by William Gilbert in the late 16th century.

Halley thought he could solve the problem of measuring longitude if the magnetic variation was mapped. He was wrong – but his map is still used by physicists. Halley's method for making the map is not known, but he constructed it from data collected on two trips on *Panama*, starting in 1698.

The Story of World Mythologies

280x225mm, 256pp, 4/4, Hardback



THE SEVEN GENERATIONS OF THE AGE OF GODS JAPAN

The Kamiyonanayo are the seven generations of god, deity, or divine spirit (*kami*) that emerged after the formation of heaven and earth.

In Shinto, Kotoamatsukami is the collective name for the first gods who were born in Takamagahara (the world of heaven) at the time of creation. Those deities are born without procreating (unlike the later gods).

The Zokasanshin (three deities of creation) are Ame-no-minaka-nushi (Central Master), Takamimusubi (High Creator) and Kamimusubi (Divine Creator). Later came Umashiashikabihikoji (Energy) and Amenotokotachi (Heaven).

The seventh and final generation of the Kamiyonanayo are the brother and sister pair, Izanagi and Izanami, the makers who form the basis of all creation. The couple were in heaven and wondered what lay below; they thrust down a spear from heaven and stirred the sea. As they lifted the spear, the liquid started dropping from the tip and this was how the first islands were created. The deities then descend to the islands and built a land. Izanagi (male) and Izanami (female) personify the Chinese principles of *yin* and *yang*.

When Izanagi and Izanami are to be married they walk from different directions to meet each other (as was the custom) and when they meet, the goddess Izanami exclaims, 'What a pleasure to meet such a handsome young man!' Afterwards, when she gives birth to a deformed child they consult the gods, who say that it had happened because Izanami had spoken first during the wedding ceremony. They have to perform the ceremony again, walking from different directions, and this time the goddess lets her husband speak first.

The pair go on to give birth to many islands, including those that constitute Japan, as well as many gods, including the gods of wind, trees and mountains. The Shinto fire god, Kagutsuchi, is their last-born son, but his fiery birth results in his mother's death. As she lies dying, her vomit, urine and excrement gives birth to other gods. Her husband's tears create the goddess Moaning-river. He is so distraught that he cuts off the head of the baby who has caused his wife's death, and drops of blood from the sword give birth to eight more gods.

Fujin, the 'God of Wind' from the Shinto religion, a terrifying wizard-like demon carrying a large bag of winds on his shoulders.



Izanami and Izanagi creating the Japanese islands.



THE SKY LADDER

WORLD MYTHOLOGIES

In ancient times, the sky and earth were thought accessible and connected by ladders. This was a regular feature of many world mythologies.

Deities and immortals can go up and down those ladders whenever they choose, and some humans with magic powers also have access. There are two types of sky ladders: those made from trees and those made from mountains.

In ancient Chinese mythology, a place called Duguang – thought to be modern-day Chengdu – is the centre of heaven and earth. A special kind of tree, called a Lingshou, grows there and it is those trees that lead to heaven. As they grow in the centre of heaven and earth, the sun shines directly above the trees and they leave no shadow.

In West African folklore, communication between the gods/spirits in the sky and the men is via a sky ladder. The sky ladder is also a common motif in Australian Aboriginal mythology.

There is also the story of Jacob's Ladder in the Bible: a ladder that connects earth and heaven. However, this ladder appears in a dream and therefore is of symbolic reference.

The ladder has often come to represent not only the connection between heaven and earth, but also the history of mankind, with each rung of the ladder representing a kingdom that has ruled the world.

Sunshine in the park of Chengdu, thought to be the centre of heaven and earth in Chinese mythology.



Jacob's Ladder, c. 1490.

OSIRIS, ISIS AND HORUS AGAINST SET EGYPT

The central triad in ancient Egyptian mythology consists of Osiris, Isis and Horus. There are four children born of Geb, the sky god, and Nut, the earth goddess. The oldest is Osiris, then comes his evil brother Set, and then twin sisters – Isis and Nephthys. Osiris is both a god and the first pharaoh to rule Egypt and, by extension, the world. His queen is his sister, the goddess Isis, who rules Egypt whenever Osiris is travelling. Osiris is a peaceful king who journeys across the earth bringing order and civilization, and teaching mankind about worshipping the gods and how to grow crops.



An ancient Egyptian artwork from the interior wall of a temple in Abydos. The image depicts the falcon-headed god Horus seated on a throne and holding a golden fly whisk. Before him are the Pharaoh Set and the goddess Isis.

Set is a violent and chaotic god who creates disruption and tries to undo all of Osiris' good work. Despite being kept under surveillance, Set finds the opportunity to attack his brother Osiris and murder him.

Isis is devastated when she discovers the body of her husband. She and Osiris do not have children, and with no heirs to the throne Set looks like becoming the next king. Isis is determined to use her magic powers to stop him.

The queen transforms herself into a bird and flies over Osiris' body, using her magic powers to draw Osiris' essence into herself. From this mystic union, Isis conceives and gives birth to Horus. Horus has a falcon's head and eyes that light the world, and as Osiris' son, he is heir to the throne.

An angry Set discovers Osiris's body and cuts it into pieces, scattering the remnants all over Egypt. Isis and her twin sister, Nephthys, journey across the lands to retrieve the body parts. The body is reassembled, treated and wrapped in linen and the twin sisters then stand guard over it.

When Horus grows up, he wants to avenge the death of his father and sets out to battle his uncle Set. In the battle, Set tears out one of Horus's eyes, but Horus ultimately triumphs. The god Thoth later uses his magic to restore Horus's eye. Horus places his healed eye inside his father's body, and Osiris is resurrected. Following the resurrection, the gods hold a trial in which Set is found guilty of murder and condemned to death.

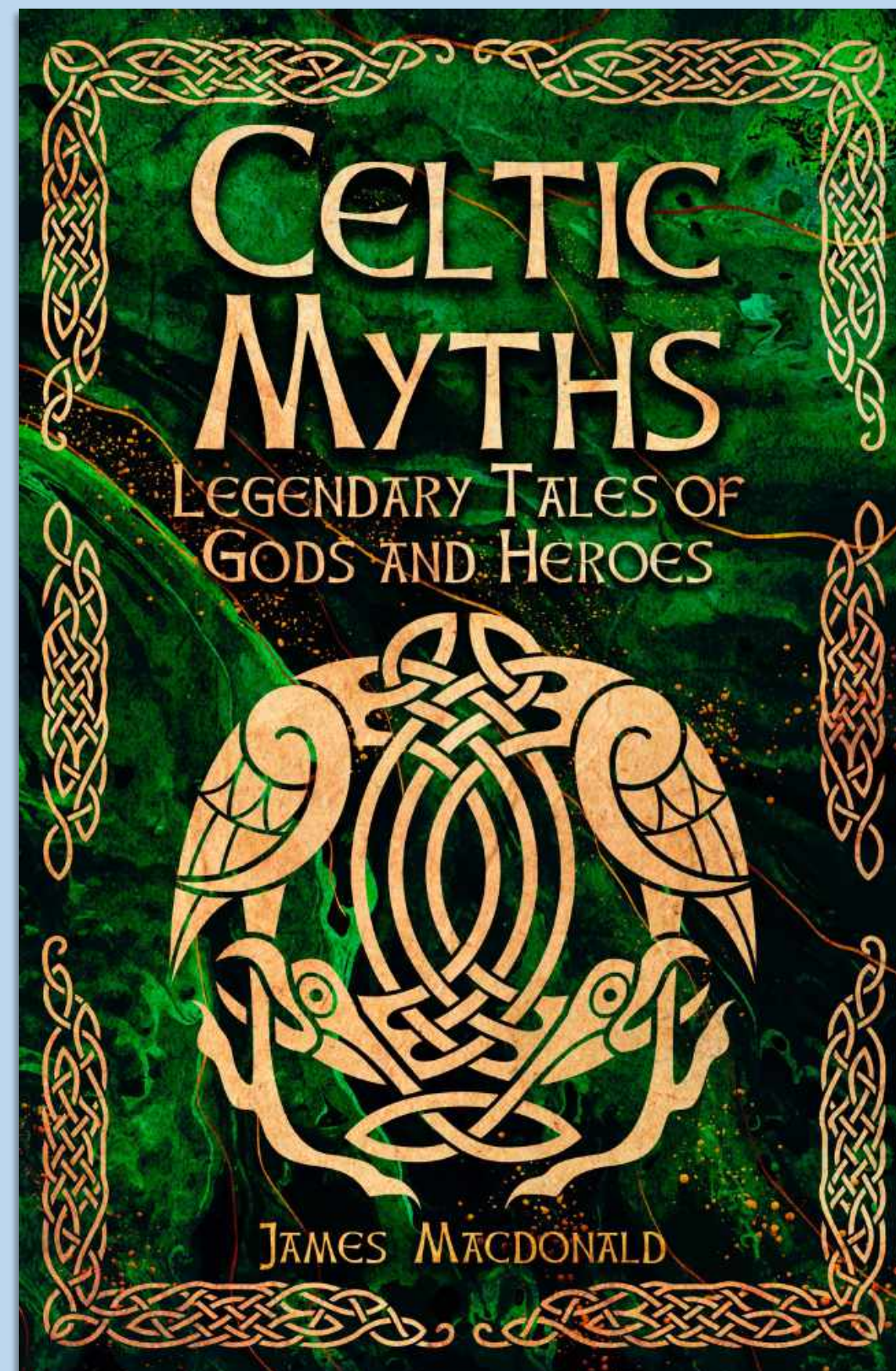
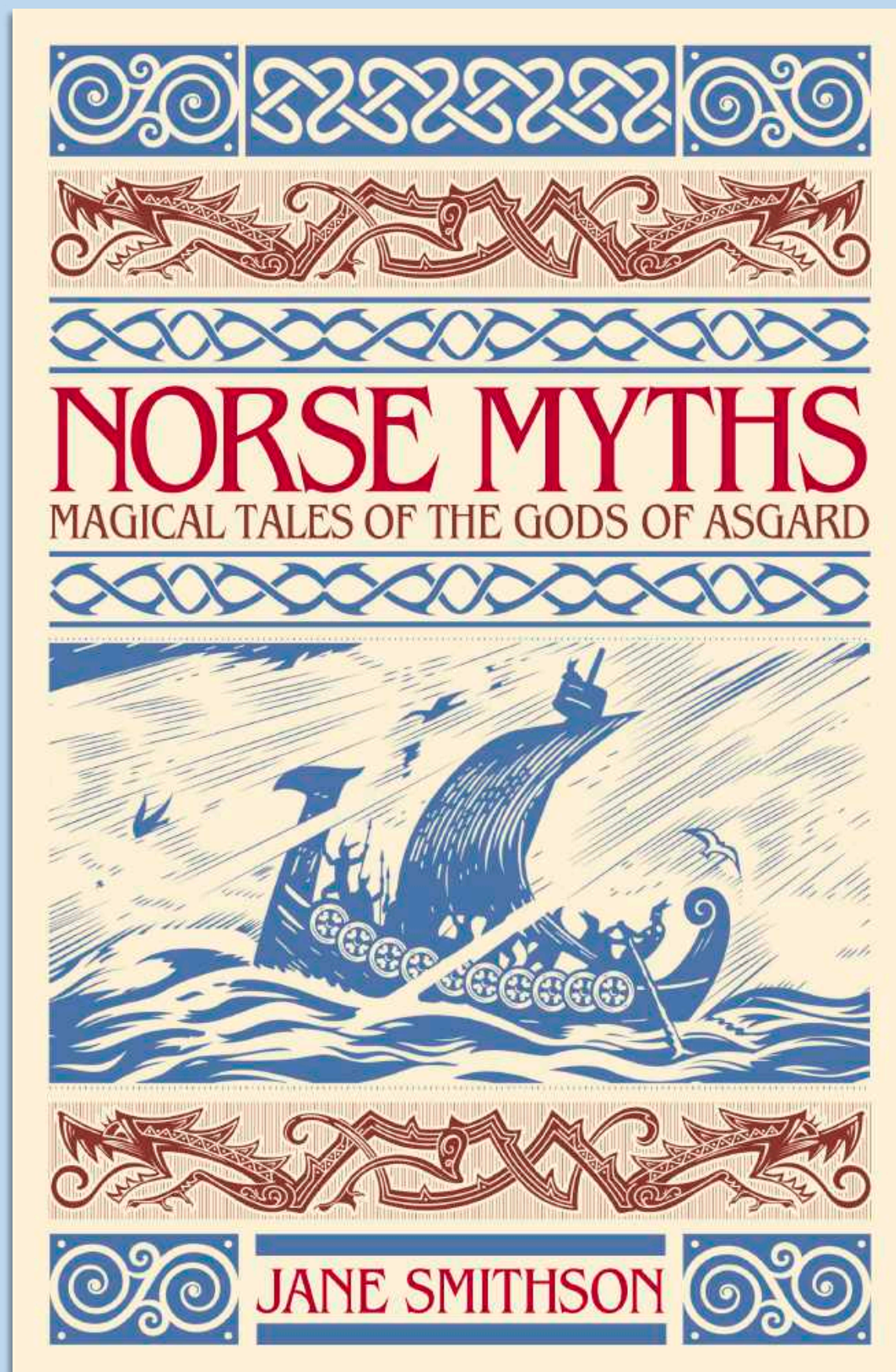
Osiris does not resume the throne; he hands the kingdom of Egypt over to his son Horus, and ascends to heaven where he becomes ruler of the underworld and judge of the dead. Horus remains the eternal king of Egypt. Every succeeding pharaoh is an incarnation of him.



An amulet from 664–630 BCE depicting Nephthys, Horus and Isis.

Myths in Slipcases

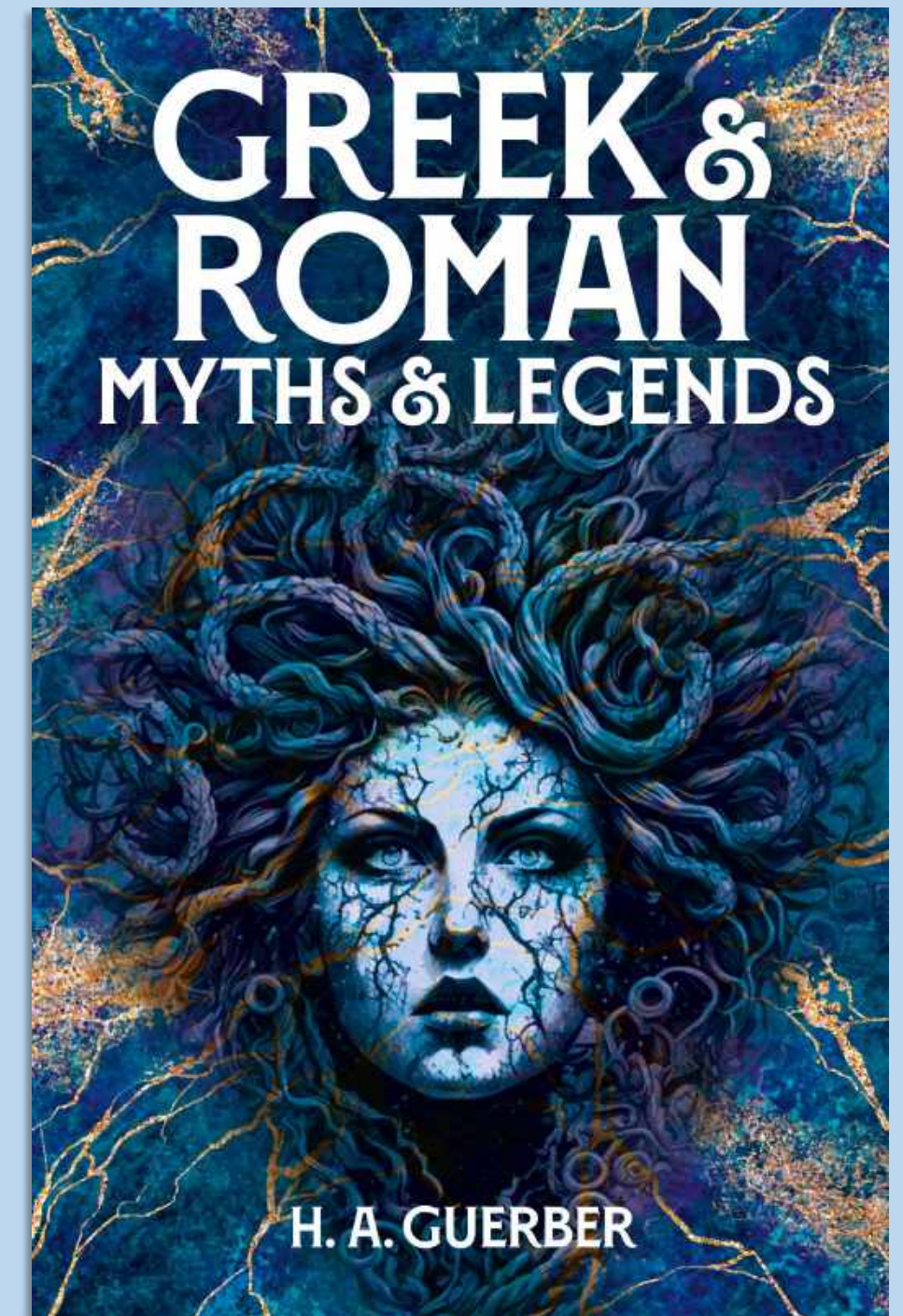
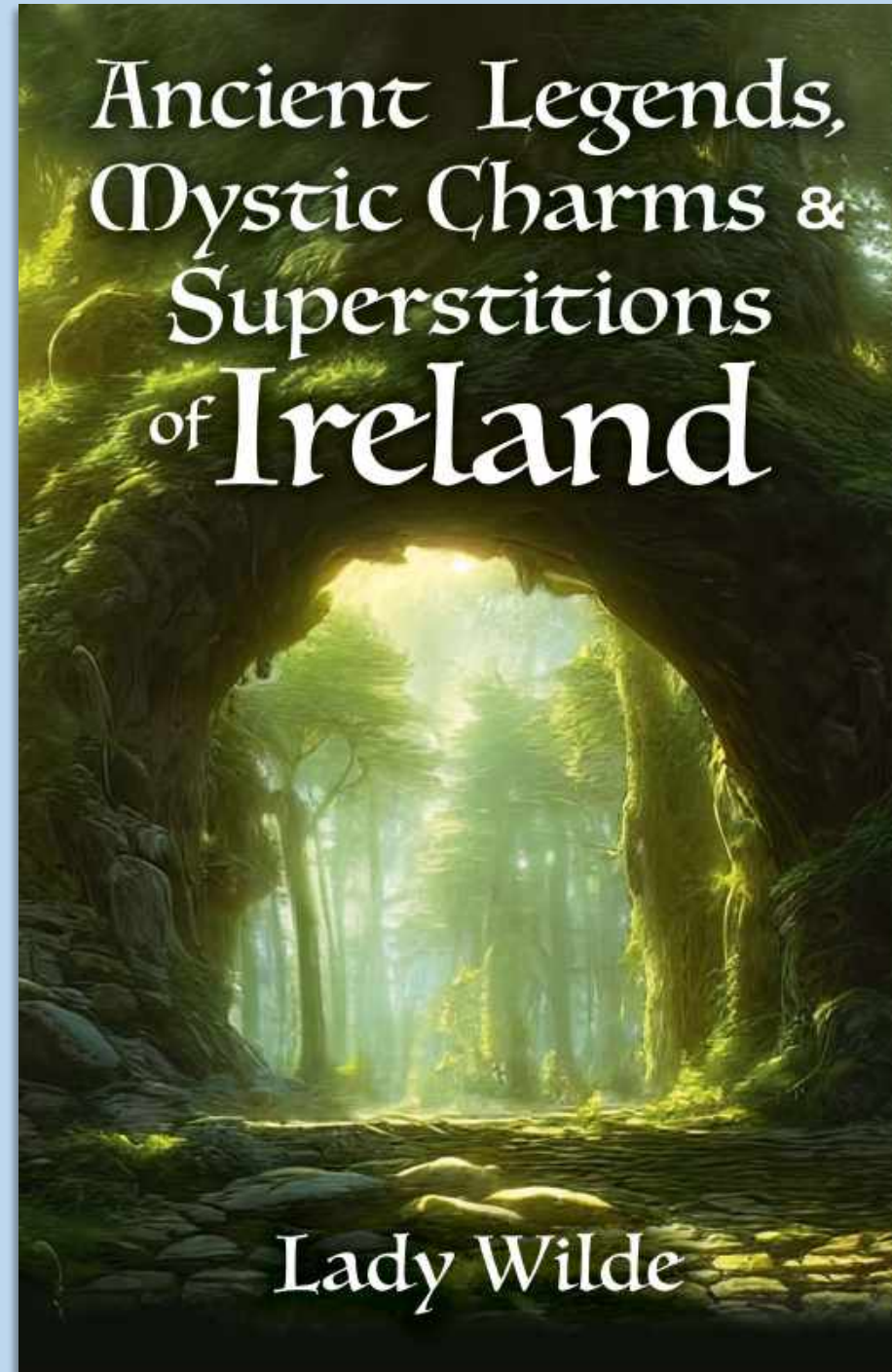
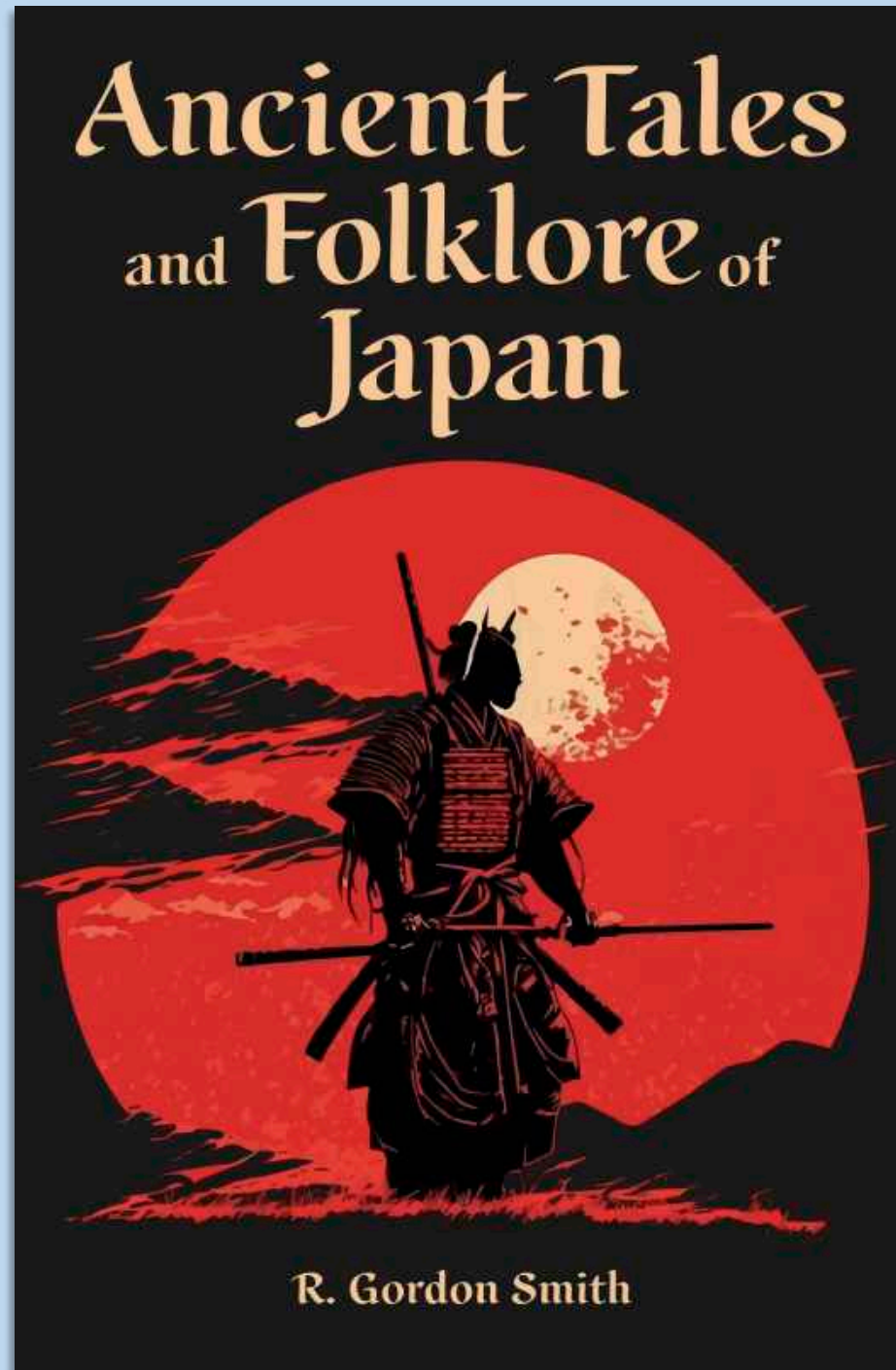
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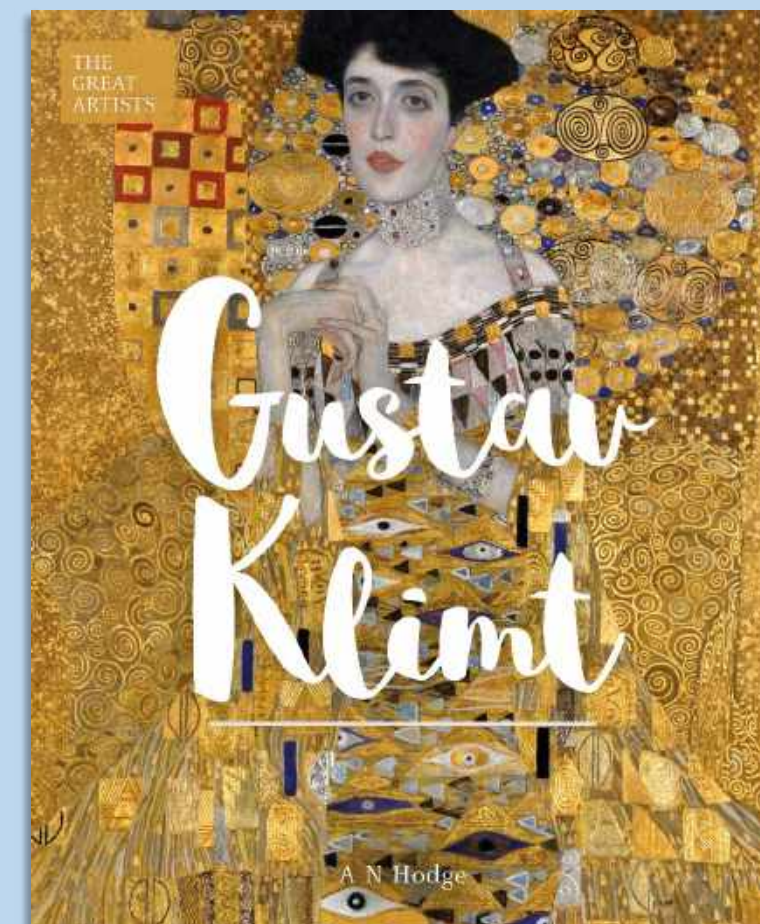
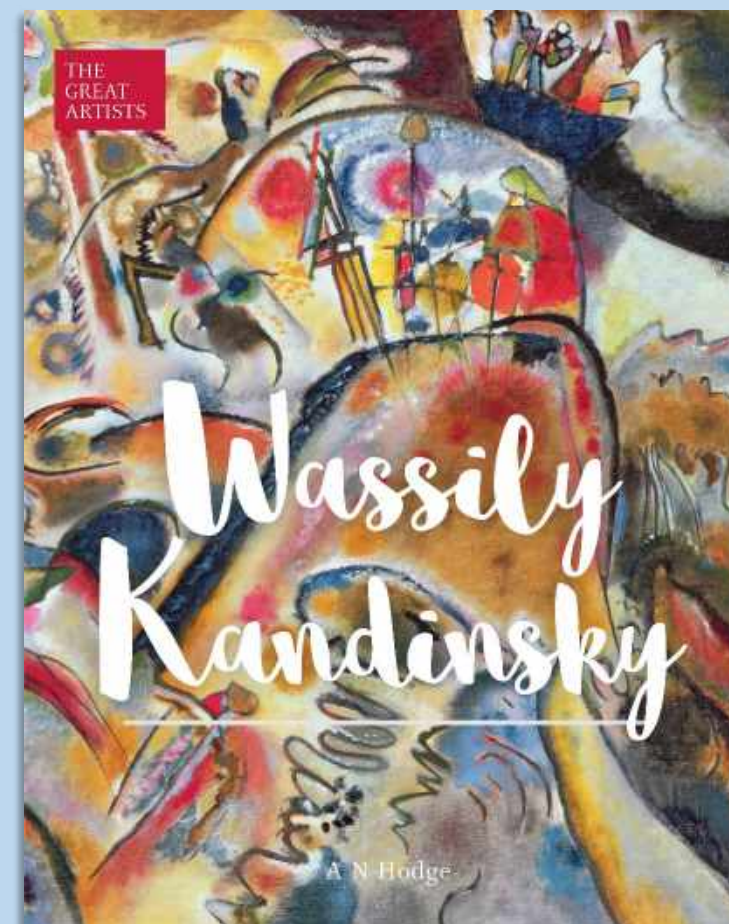
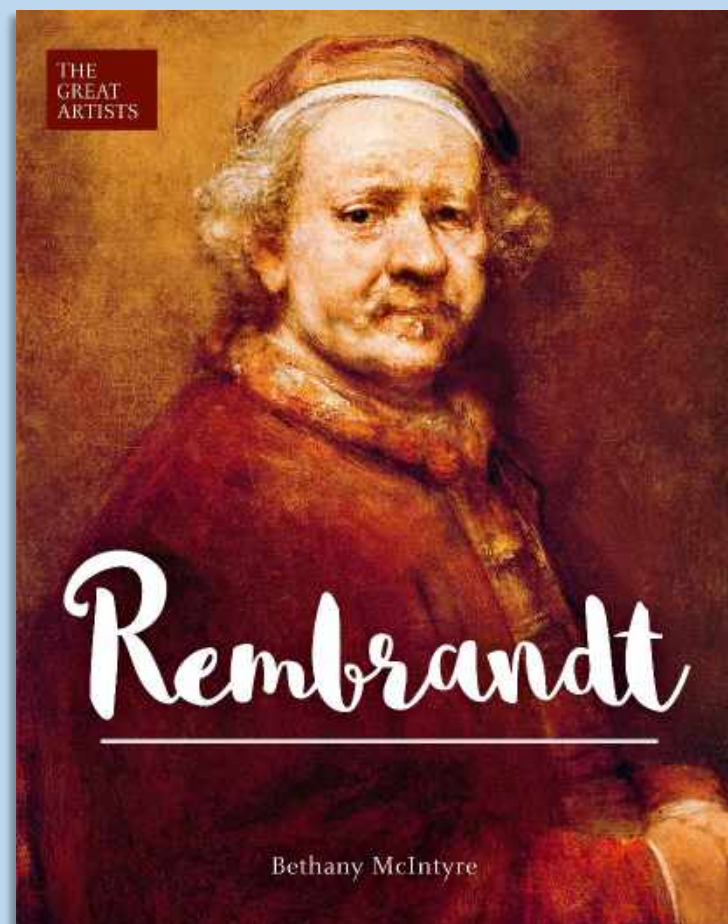
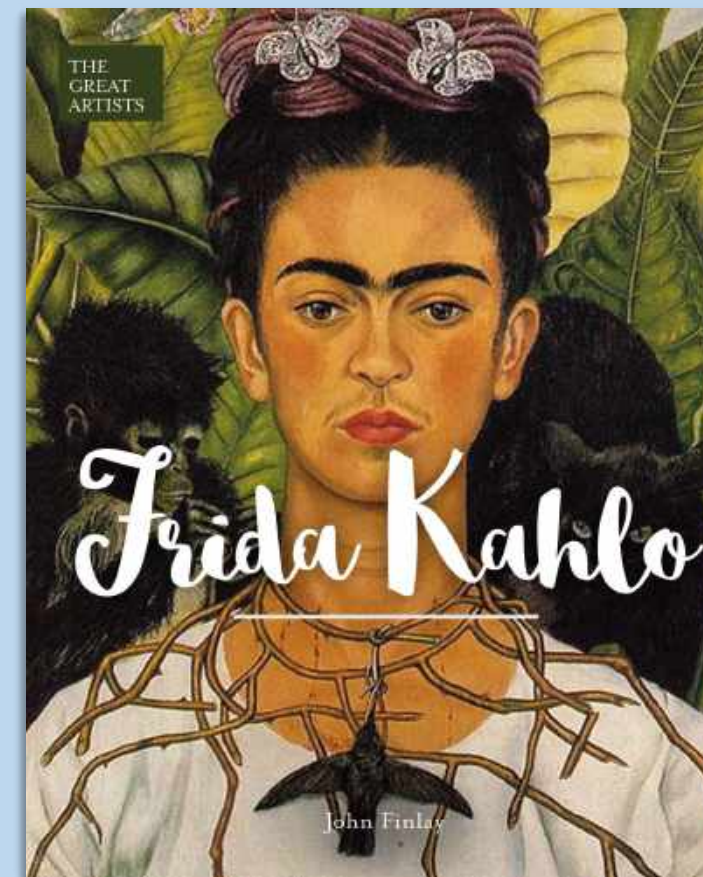
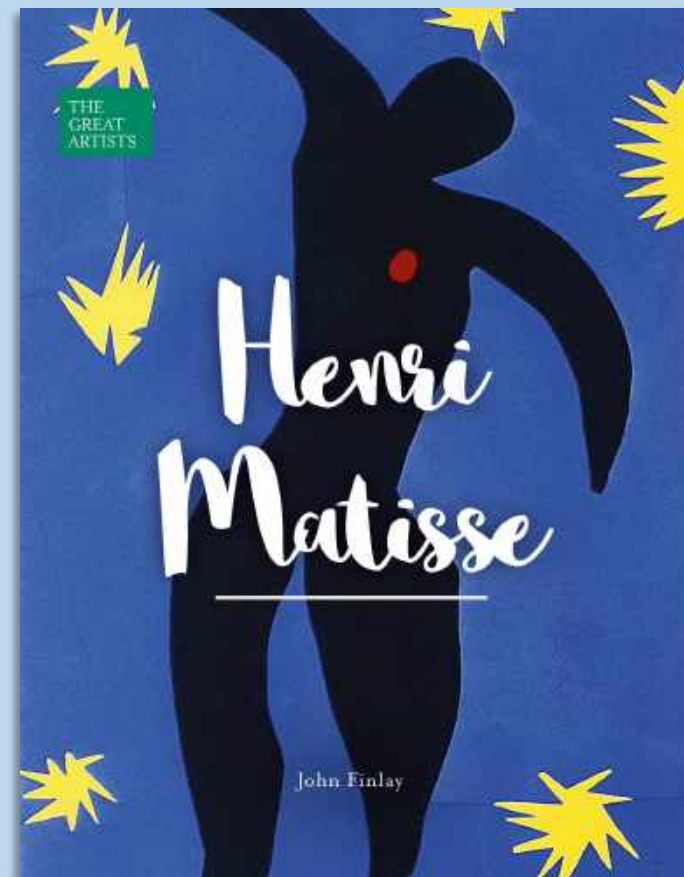
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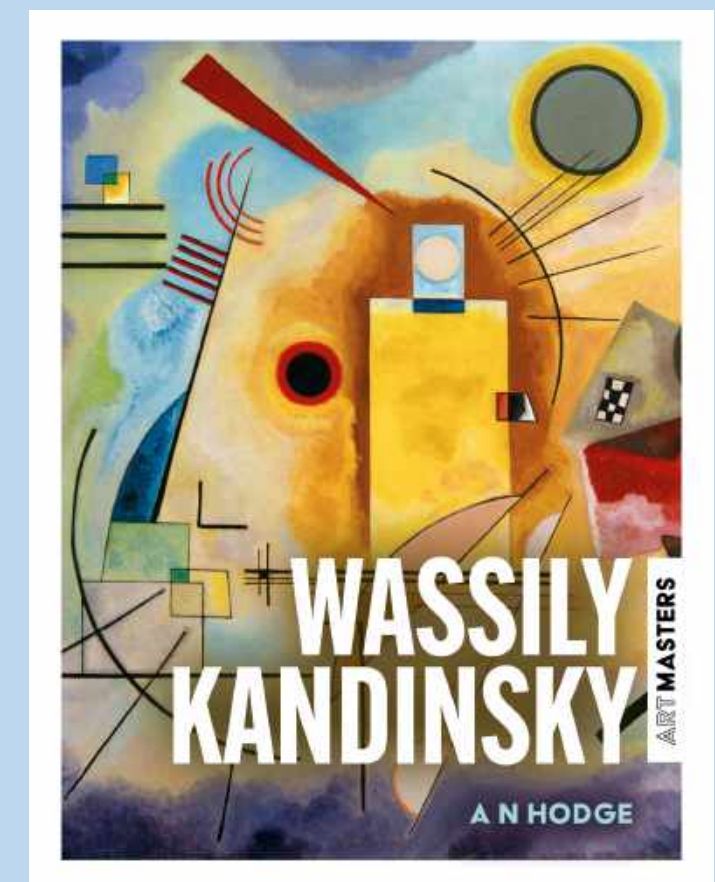
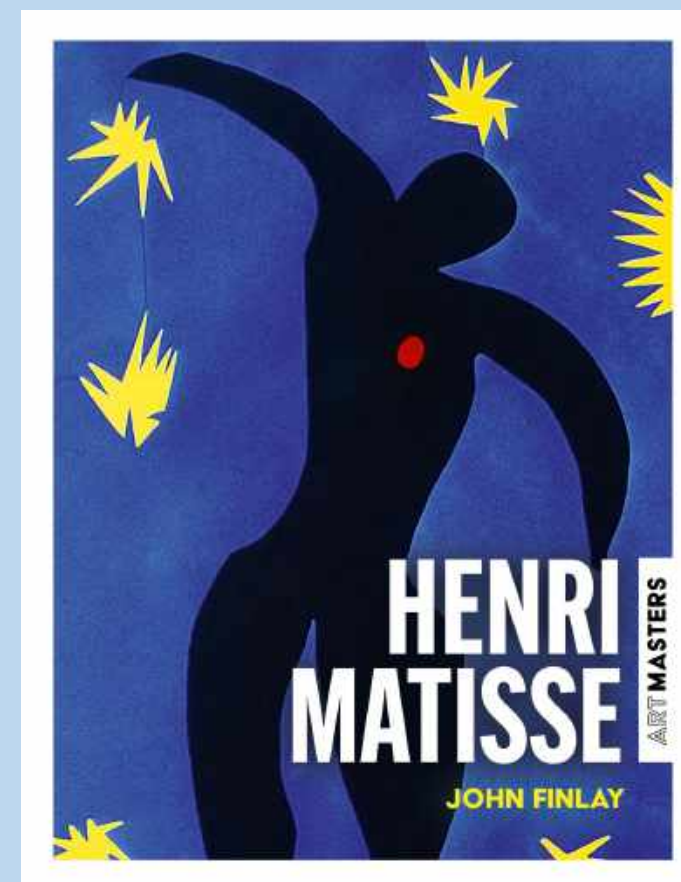
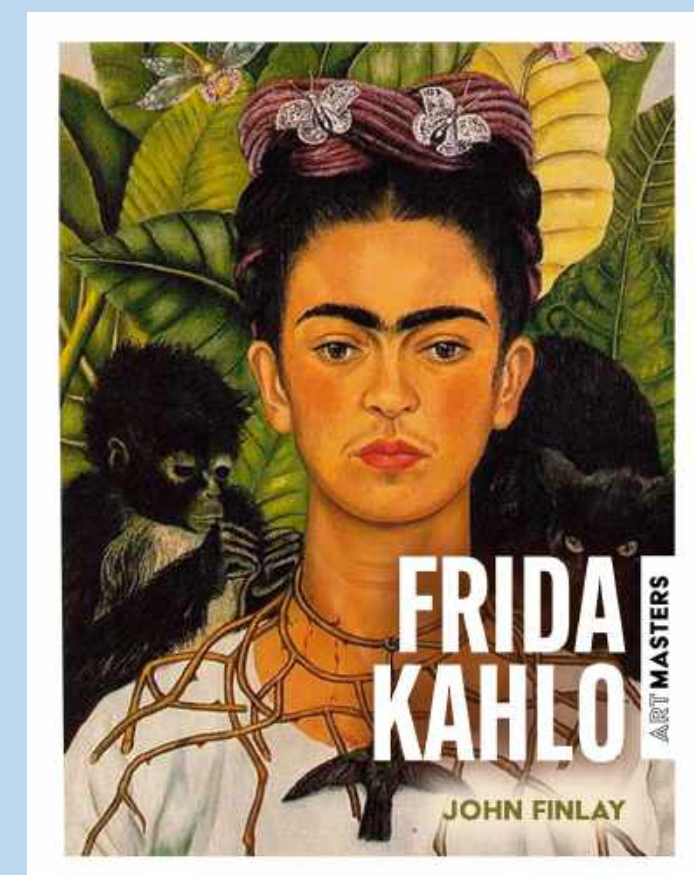
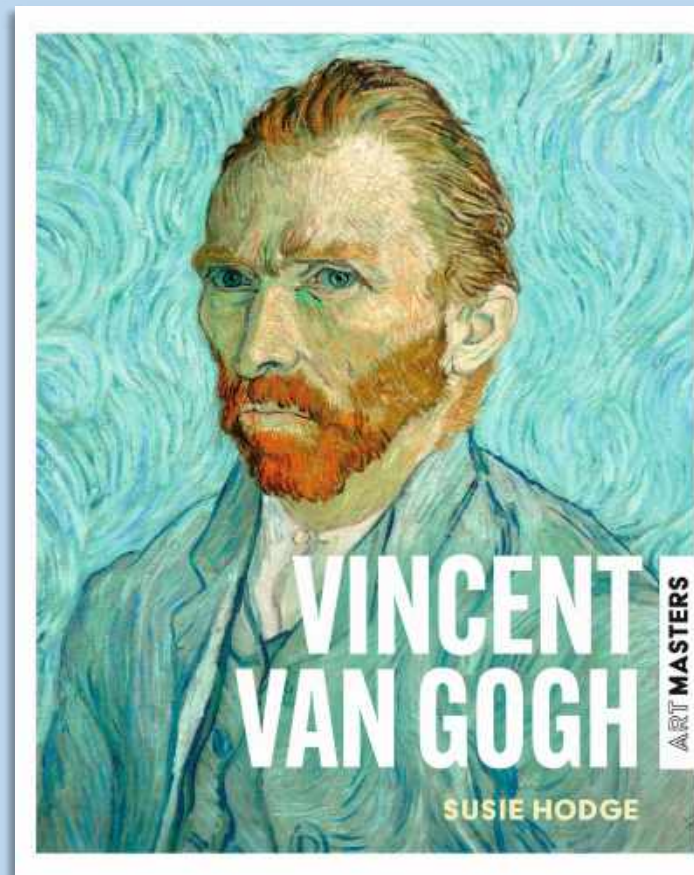
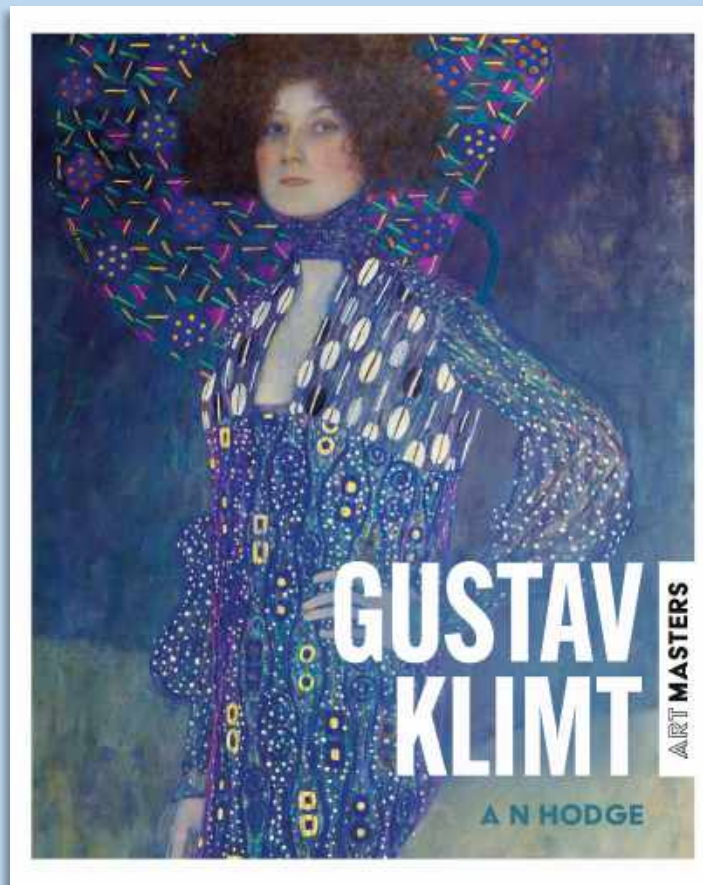
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Art Masters

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SELF-PORTRAITS AND TRONIES

Despite being kept very busy with endless requests for portraits from the wealthy of Amsterdam and beyond, Rembrandt continued with his passion for recording his own likeness. From the early 1630s, headwear becomes a recurring element in his self-portraits and he is often depicted wearing berets. In 1634 he painted *Self-Portrait Wearing a Helmet* (Staatliche Museen, Kassel) where he is dressed as a soldier with a gleaming helmet on his head that the light brilliantly reflects off. Rembrandt is not looking directly at the viewer, but over their shoulder into space. He has paid particular attention to his facial features, perhaps because he was doing so many portraits at this time. He has an uneasy look and his eyebrows are furrowed in a frown.



Self-Portrait Wearing a Helmet, 1634. Rembrandt frequently painted tronies capturing himself and others in fanciful costumes. This portrait has an intensity as he leans forward looking intently into the distance.

In fact, this painting is not strictly a self-portrait but a *tronie*. This was a genre that initially allowed Rembrandt to hone and showcase his skills and combine his success as a portrait painter with his desires as a history painter. Rembrandt had started to paint *tronies* while in Leiden and he continued to paint them with much success. One of the best examples from this period is *Bust of a Man in Oriental Dress*, 1635 (Rijksmuseum, Amsterdam). The sitter is dressed in an elaborately knotted turban with a gold band around it. Rembrandt had a fascination with the exotic, as did many others in the Dutch Republic, and these types of paintings were very popular. They were known as *Oriental tronies*. The light in this painting falls on the turban and the right side of the face, putting the left side in shadow.

HISTORY PAINTINGS

Rembrandt still held serious ambitions as a history painter. This was the most highly regarded art form, however good his portraits were and despite how much money he made from them. So it was a genre he continued to pursue alongside his portrait painting. At this time, most artists in the Dutch Republic at this time chose to specialize and find their niche in the market, but Rembrandt refused to be confined to a single specialism.

The most important commission of Rembrandt's early career came via Constantijn Huygens for the *Passion Series* of paintings for the Stadholder Frederik Hendrik. Rembrandt worked on this commission for a decade. Both Hendrik and Huygens were great admirers of the work of Rubens and Hendrik owned six paintings by him, but Rubens lived in the Spanish controlled south, so acquiring and commissioning works from him was almost impossible. Hendrik and Huygens looked for other artists to commission works from who they thought could rival or equal Rubens, and chose



Bust of a Man in Oriental Dress, 1635. The sitter has a serious, determined look of authority on his face. The popularity of these paintings of sitters in oriental costume was no doubt due in some part to the expanding trade between the Dutch Republic and the Middle East.

Composition II (1910) – the largest painting Kandinsky had created to date – was lost in World War II, but two sketches reveal the shifts that Kandinsky was beginning to make when planning his compositions. Both have the feel of orchestration, with Kandinsky acting like a conductor and inviting different elements into the piece in order to create mood. While there are still discernible human forms in these sketches, the scenes have a restless energy that prevents the eye from settling on anything in particular. Kandinsky himself, in a lecture in 1914 in Cologne, referred to *Composition II*, remarking that you can see ‘the free use of colour without perspective’, continuing that, for him, it was the start of the objects beginning ‘to dissolve more and more in my pictures’.

However, by spring 1911, a split started to open up in the New Artists’ Association, with some fellow artists unable to accept the radical moves that Kandinsky was making. Things came to a head in the third exhibition in December 1911, and in an argument over the alleged excessive size of Kandinsky’s *Composition V*, his submitted work. Kandinsky, Marc and Münter resigned and opened their own exhibition under the new name of ‘Der Blaue Reiter’ (‘The Blue Rider’).



Sketch for *Composition II*, 1910. In this sketch for one of the largest compositions he had made to date (now lost), Kandinsky acts like the conductor of an orchestra, seeking out the individual instruments and inviting them into the score.

VIENNA AND THE *BELLE ÉPOQUE*

Towards the end of the nineteenth century, Austria was a country of contradictions and compromise. In 1867, after various military defeats and negotiations with Hungary, Emperor Franz Joseph was the figurehead of the Austro-Hungarian Empire. The Emperor ruled his dual monarchy from the Schönbrunn Palace in Vienna. In spite of a backdrop of military and political manoeuvring, this date marked the beginning of an unparalleled era of wealth and ostentation in Vienna known as the *Belle Époque*. With two million inhabitants between 1867 and World War I, Vienna stood alongside Paris as the impressive and resplendent capital of Europe.

Emperor Franz Joseph made some sweeping changes to the city's geography, including knocking down the city walls in 1857 to make way for the Ringstrasse, a horseshoe-shaped perimeter road. Many public buildings were erected, including a new parliament, museums, the Opera and the Court Theatre. Otto Wagner, an architect known for his modernist sympathies, designed the Stadtbahn, an urban rail network in 1890. Alongside the civic buildings, new private residences sprung up with ornate façades and lavishly decorated interiors. Drinking water was improved, and electric lamps and trams were introduced. This was a new world on the move – with a need to show that it was on the move.

In this febrile and pleasure-loving atmosphere, the dominant haute bourgeoisie flourished – hosting magnificent banquets and packing the theatres and opera houses. The poor, by contrast, remained poor and in inadequate housing.

The most significant impact of the *Belle Époque* was on the cultural life of the city. Amid all the opulence and decadence, the contrasts between old and new, traditional and modern became ever wider, driving the artists and intellectuals who were ensuring that Vienna was right

at the heart of Europe's creative map. There was an astonishing array of musical talent centred around Vienna. Mozart, Haydn, Beethoven and Brahms had all lived and composed in the city. Now, Richard and Johann Strauss's waltzes and operettas were adopted with élan by the bourgeoisie for their lavish balls. Gustav Mahler lived in Vienna for 10 years, his work acting as a bridge between the nineteenth-century Austro-German tradition and the modernism of the early twentieth century. Initially, art and sculpture remained pretty much as it always had been – conservative, academic and based on rules and proportions – until Gustav Klimt and the Viennese Secession brought radical change.

The neurologist Sigmund Freud added to the new intellectual life of the city with his *Interpretation of Dreams*, published in 1899. Key to our understanding of psychoanalysis, the text built upon the analysis of Freud's own dreams and the personal crises surrounding the death of his father. His ideas about the power of the unconscious have played a central part in the way we view the self in the modern world, and the way in which we look at and interpret the way that the past can interact with the present.

With all the old certainties no longer providing the safe moral backdrop to the Hapsburg Empire, Vienna experienced the *Belle Époque* as a golden age – a period of innovation and sheer aesthetic brilliance that Klimt helped to define and in which he was the brightest star. If Klimt's art, with its focus on the beautiful and the erotic, helped to establish the period's obsessions more than anyone else in Vienna at this time, it also helped to sow the seeds of its decay. The elegance and gaiety of Vienna in the late nineteenth century went through a process of turmoil and dissolution, coming to a shuddering end in 1914 with the outbreak of World War I.



Auditorium at the Old Burgtheatre in Vienna, 1888. All the tiny figures in the audience in this gouache painting are actual portraits of Klimt's contemporaries, painted with astounding accuracy. One of Klimt's most celebrated early works, it won the Emperor's Prize in 1890.

100 Great Eastern Works of Art

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100 GREAT EASTERN WORKS OF ART

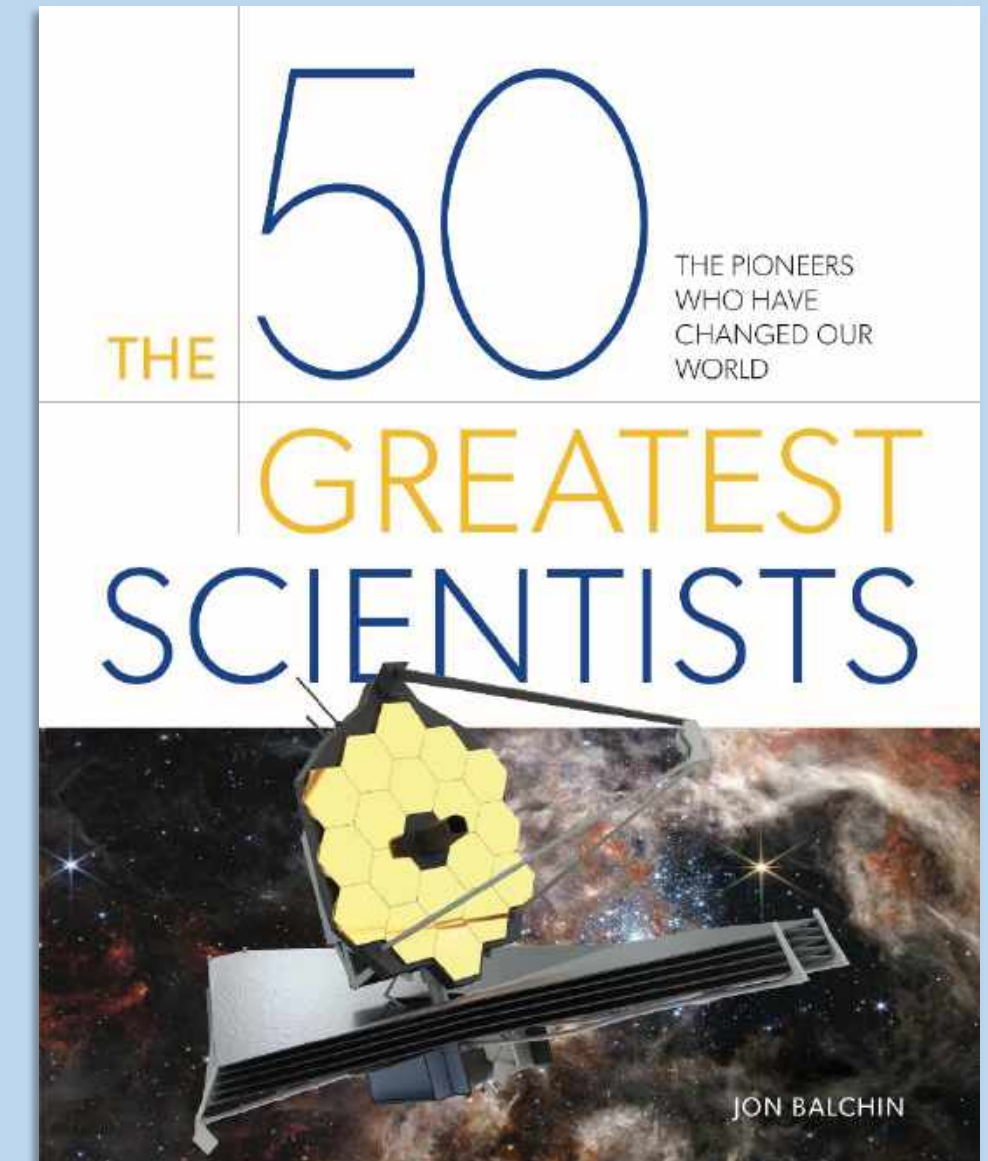
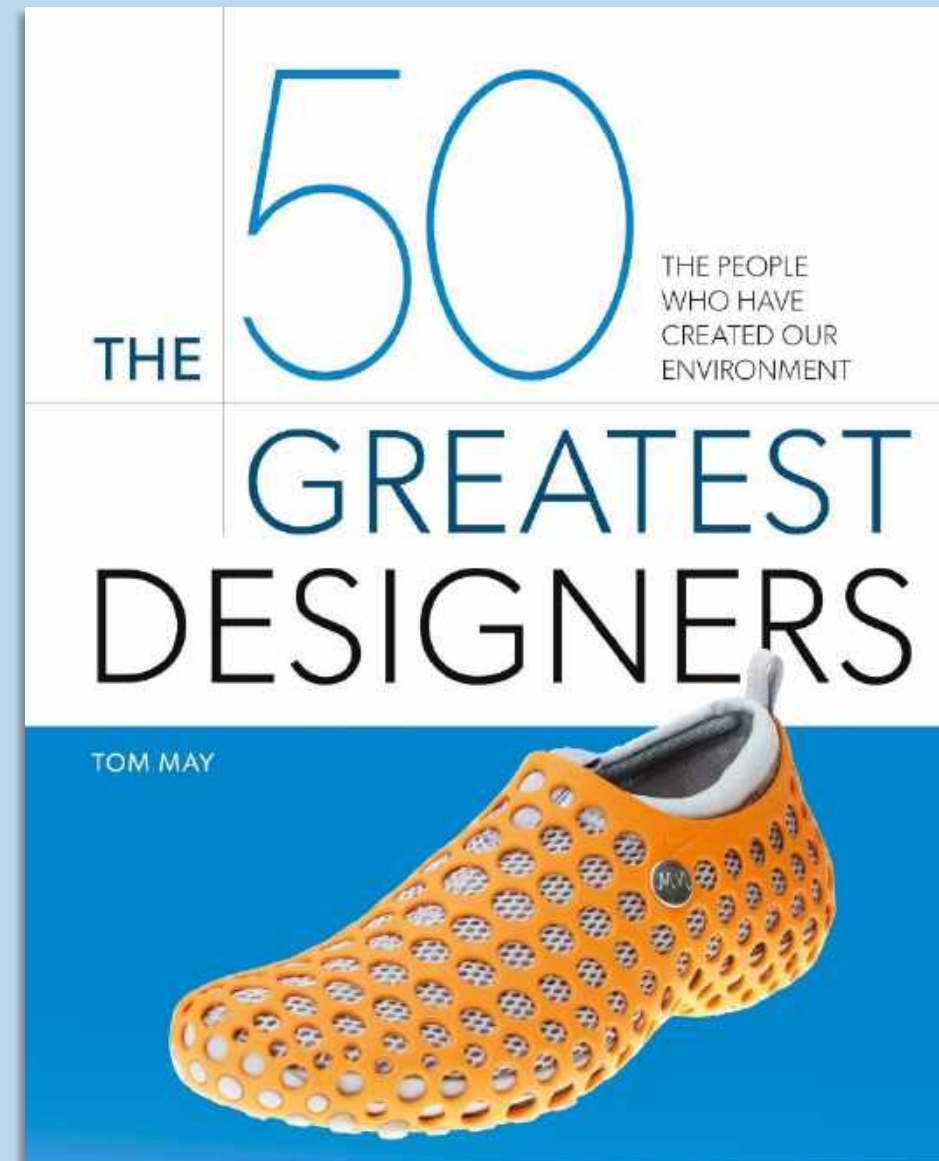
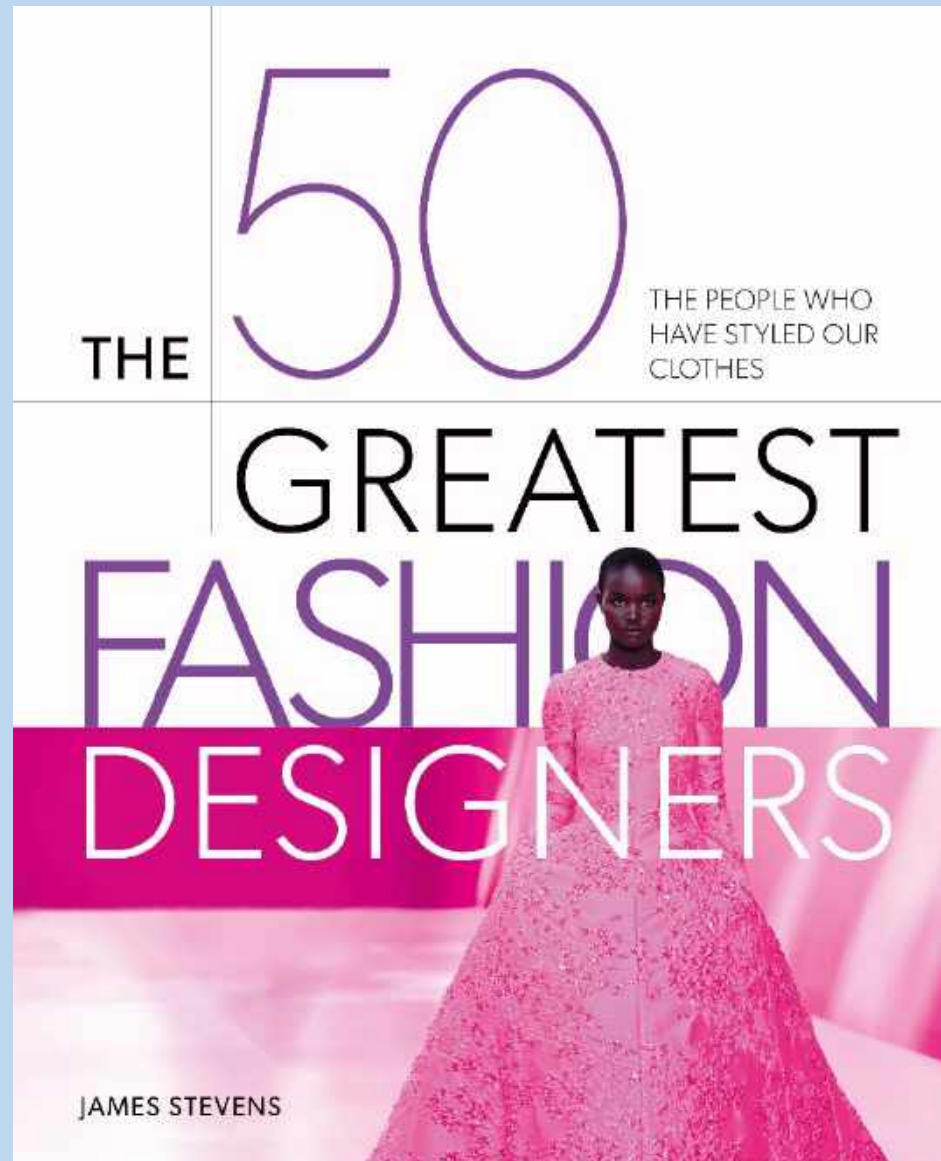


JOHN FINLAY



The 50 Greatest...

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ÉMILE GALLÉ



FRANCE (1846–1904)

ACHIEVEMENTS

Major innovator of the Art Nouveau style
Founder and first President of the École de Nancy
Commander of the Legion d'Honneur

ABOVE: Émile Gallé

'THE AIM OF MY WORK: THE STUDY OF NATURE, THE LOVE OF NATURE'S ART AND TO EXPRESS WHAT ONE FEELS IN ONE'S HEART.'

Émile Gallé

At the forefront of the Art Nouveau period of the late 19th and early 20th centuries, Émile Gallé was renowned as a designer of both glass and furniture. The characteristic traits of his work are grounded in a love of nature and how it could be depicted in all its manifold forms. But technically, his knowledge was accumulated by working with his father, Charles, who manufactured glassware and who grew his business by taking over a factory that made faience ware in addition to taking over his father-in-law's factory that made mirrors.

Initially, Émile Gallé studied philosophy and natural science at the Lycée Impériale in his home city of Nancy in north-western France, but he soon proved to be a keen botanist and took lessons in the subject from D A Godron, the director of the city's botanical gardens. Gallé's interest in botany would inform the rest of his career to the extent that he wrote much later that true beauty could only be found in applying the principles of the structural and linear growth of Nature.

In 1862, at the age of 16, Gallé went to Weimar,



LEFT: The 'Rose de France' cup (or vase), made in 1901.

TOP: Designs for a pair of vases by Émile Gallé, 1885.

ABOVE: Vase of multi-layered blown crystal featuring lilies and daisies.

where he continued his studies until 1866, when he returned to France and became an apprentice at the glass factory of Burgun and Schwerer in Meisenthal, learning much about the chemical processes of creating glass. As the Franco-Prussian war grew closer, Gallé enlisted in the army, but was demobilized after the defeat of France in 1871.

Rejoining the family business, he was sent to London to represent his father at an exhibition of French arts and followed that trip with an extended stay in Paris, where he spent time visiting the museums, especially the Louvre and the Cluny, fascinated by the art of the Ancient Egyptians as well as ceramics and glassware from many different cultures. Finally, after further travel to Switzerland and Italy, he returned, in 1873, to take up a position with the family firm in Nancy. The following year, his father handed him the reins of the business which he grasped firmly, training apprentices to learn the trade that he had fallen in love with, bringing to fruition his wonderful designs and experimenting with colour and new techniques in glass art such as cased glass and cameo glass.

In addition to his work in glass, Gallé had also

MARIE CURIE

MARIE CURIE



POLAND-FRANCE
(1867-1934)

ACHIEVEMENTS
Discoveries of polonium and radium
Nobel Prize for Physics, 1903
Nobel Prize for Chemistry, 1911

ABOVE: Marie Curie

'WHEN RADIUM WAS DISCOVERED, NO ONE KNEW THAT IT WOULD PROVE USEFUL IN HOSPITALS. THE WORK WAS ONE OF PURE SCIENCE. AND THIS IS PROOF THAT SCIENTIFIC WORK MUST NOT BE CONSIDERED FROM THE POINT OF VIEW OF THE DIRECT USEFULNESS OF IT.'

Marie curie



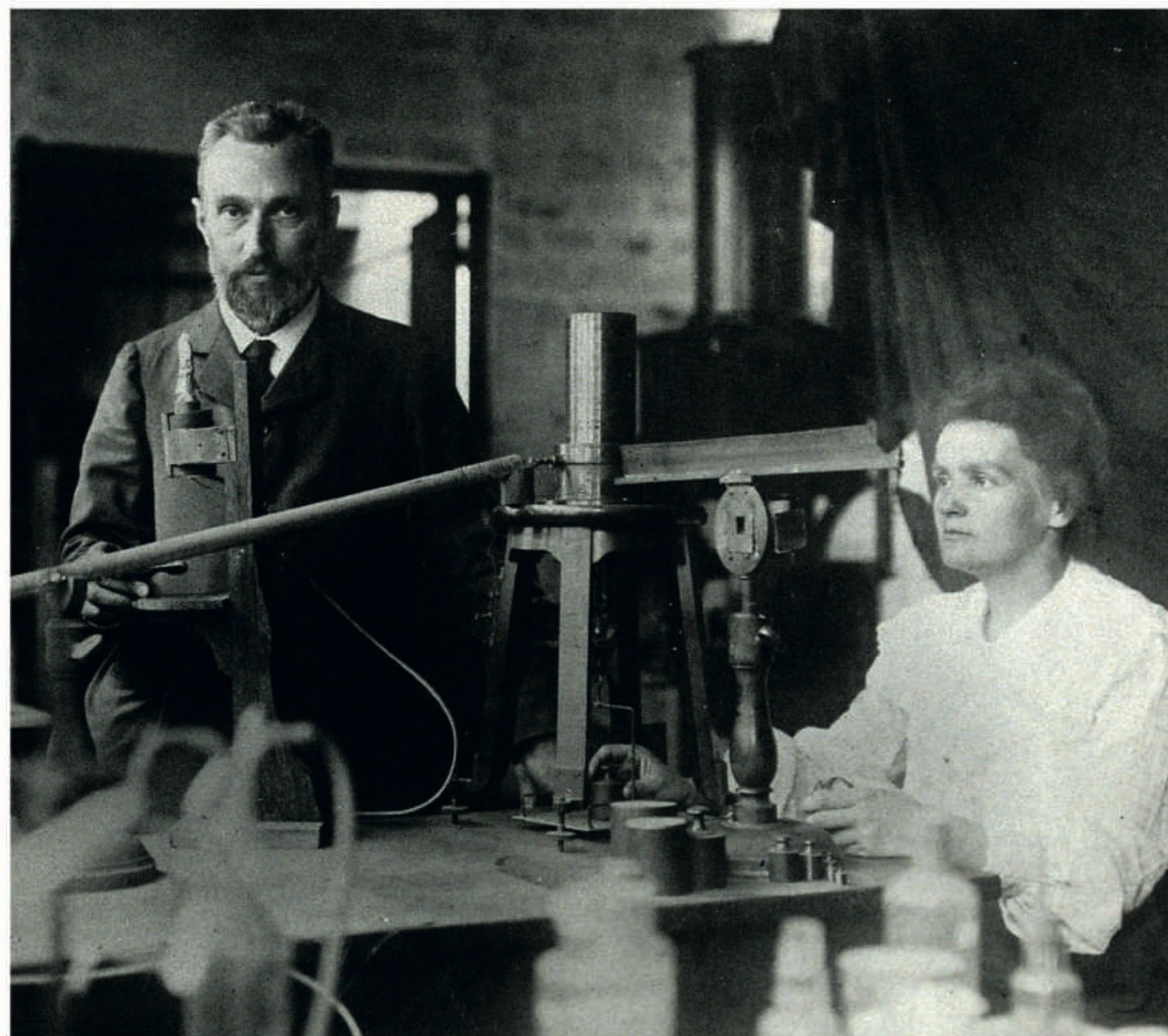
LEFT: Marie Curie at the age of 16.

Marie Curie's ground-breaking research in radioactivity has unequivocally marked her as one of the most revered scientists in history. Following her studies on the atomic weight (and other properties) of uranium, she discovered two new naturally-occurring elements: polonium and radium, both of which are more radioactive than uranium. Curie was the first woman to win a Nobel Prize and the first person in history to win the award twice.

Born in Warsaw, Poland in 1867, Marie Curie grew up with a remarkable memory and was awarded a gold medal for excellence in learning after completing her secondary education at age 16. She quickly picked up work as a teacher to fund her sister's studies in medicine with the promise of a role reversal later on. Her real career did not pick up until 1891 when she moved to Paris and began following the lectures of several established physicists.

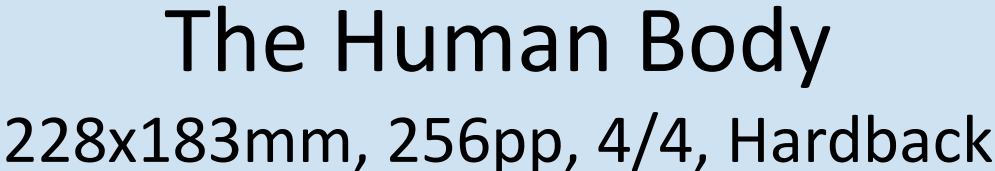
She began working in a research laboratory in 1894 and met Pierre Curie later that year. Their partnership and academic collaboration birthed the discovery of

RIGHT: Pierre and Marie Curie in their laboratory c. 1904.



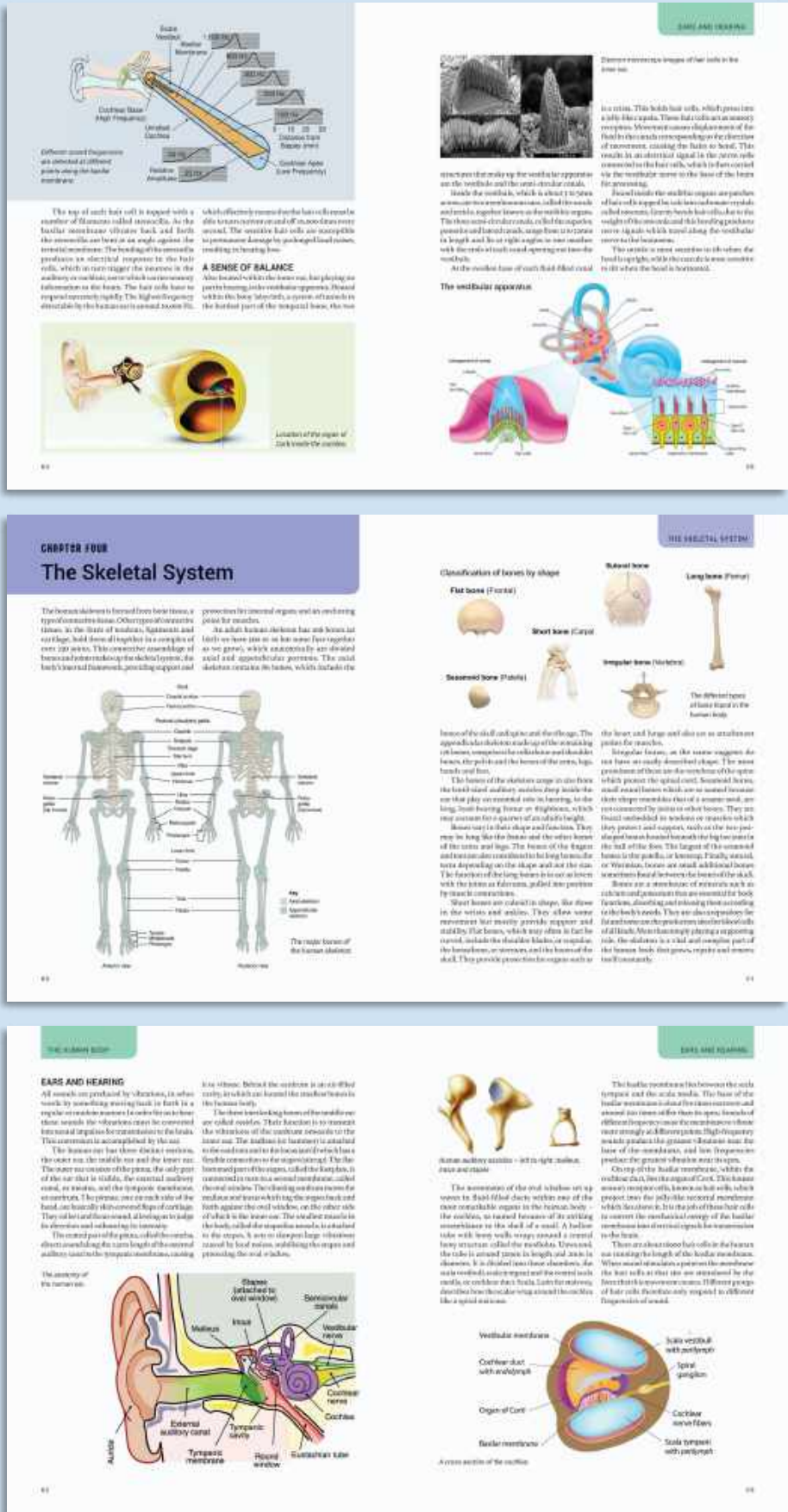
two new radioactive elements, polonium and radium. While Pierre dedicated his research to these elements on a physical level, Marie worked to obtain samples of pure radium, the research which resulted in the bestowal of her doctoral degree from the University of Paris.

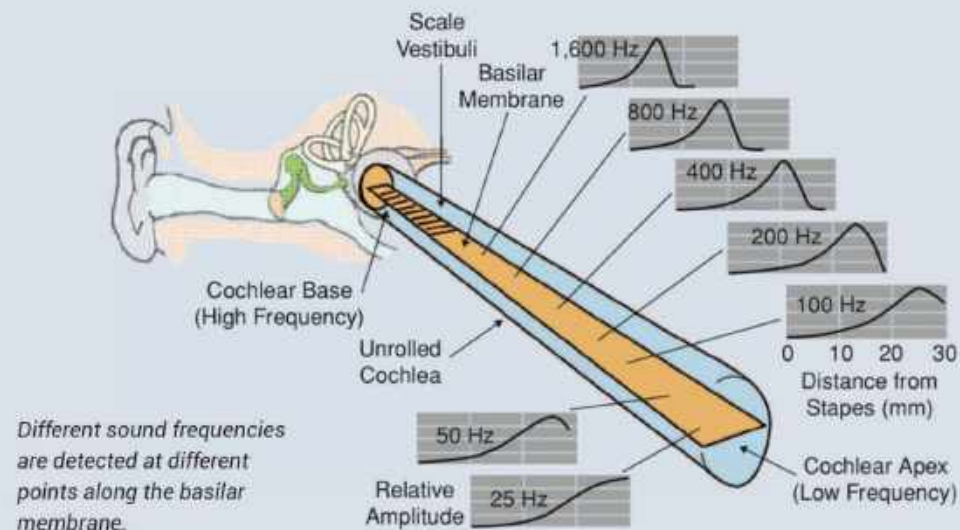
Between Marie's personal and professional life, work always came first. Marie was initially interested in Pierre due to his availability of extra lab space, and though they did eventually fall in love, she rejected his marriage proposal three times before he promised to give up his own academic career to follow her back to



AN ILLUSTRATED GUIDE TO ITS FORM, FUNCTIONS AND CAPABILITIES

ROBERT SNEDDEN



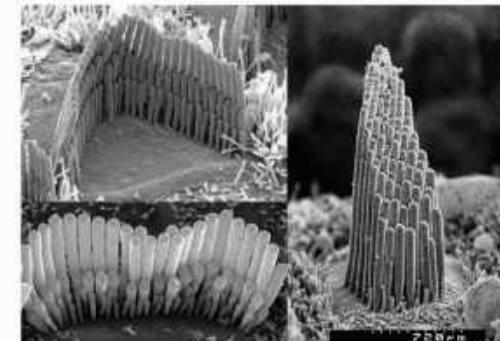


The top of each hair cell is topped with a number of filaments called stereocilia. As the basilar membrane vibrates back and forth the stereocilia are bent at an angle against the tectorial membrane. The bending of the stereocilia produces an electrical response in the hair cells, which in turn trigger the neurons in the auditory, or cochlear, nerve which carries sensory information to the brain. The hair cells have to respond extremely rapidly. The highest frequency detectable by the human ear is around 20,000 Hz,

which effectively means that the hair cells must be able to turn current on and off 20,000 times every second. The sensitive hair cells are susceptible to permanent damage by prolonged loud noises, resulting in hearing loss.

A SENSE OF BALANCE

Also located within the inner ear, but playing no part in hearing, is the vestibular apparatus. Housed within the bony labyrinth, a system of tunnels in the hardest part of the temporal bone, the two



Electron microscope images of hair cells in the inner ear.

is a crista. This holds hair cells, which press into a jelly-like cupola. These hair cells act as sensory receptors. Movement causes displacement of the fluid in the canals corresponding to the direction of movement, causing the hairs to bend. This results in an electrical signal in the nerve cells connected to the hair cells, which is then carried via the vestibular nerve to the base of the brain for processing.

Found inside the otolithic organs are patches of hair cells topped by calcium carbonate crystals called otoconia. Gravity bends hair cells, due to the weight of the otoconia and this bending produces nerve signals which travel along the vestibular nerve to the brainstem.

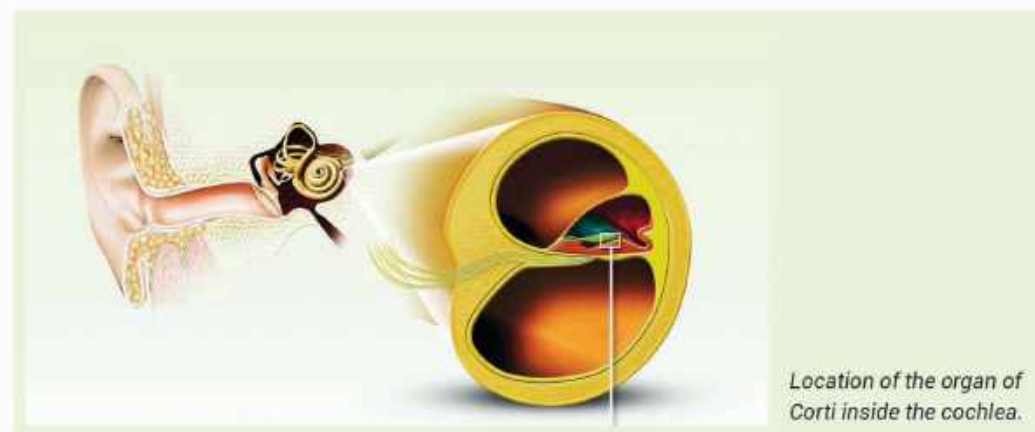
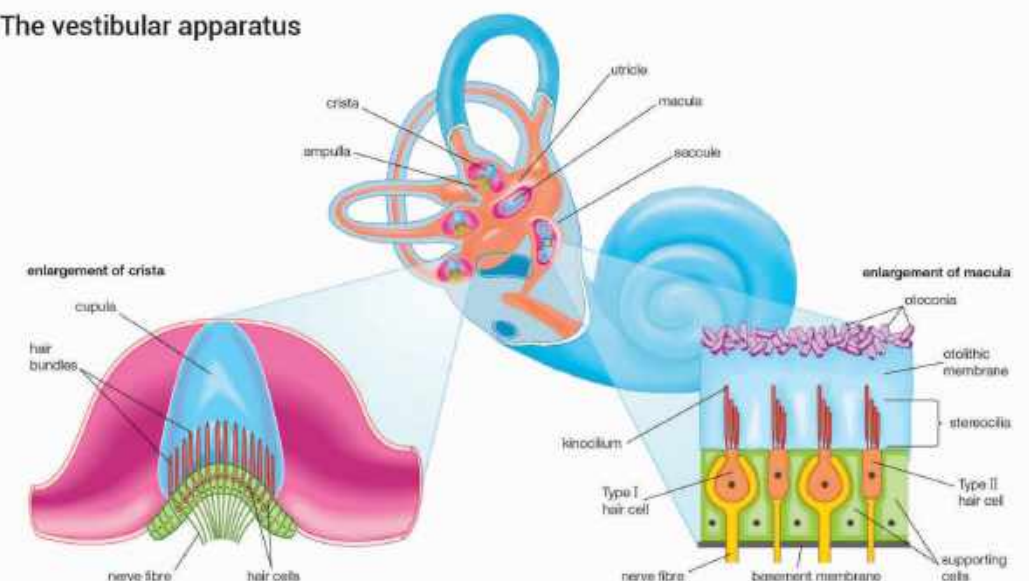
The utricle is most sensitive to tilt when the head is upright, while the saccule is most sensitive to tilt when the head is horizontal.

structures that make up the vestibular apparatus are the vestibule and the semi-circular canals.

Inside the vestibule, which is about 3 to 5mm across, are two membranous sacs, called the sacule and utricle, together known as the otolithic organs. The three semi-circular canals, called the superior, posterior and lateral canals, range from 12 to 22mm in length and lie at right angles to one another with the ends of each canal opening out into the vestibule.

At the swollen base of each fluid-filled canal

The vestibular apparatus



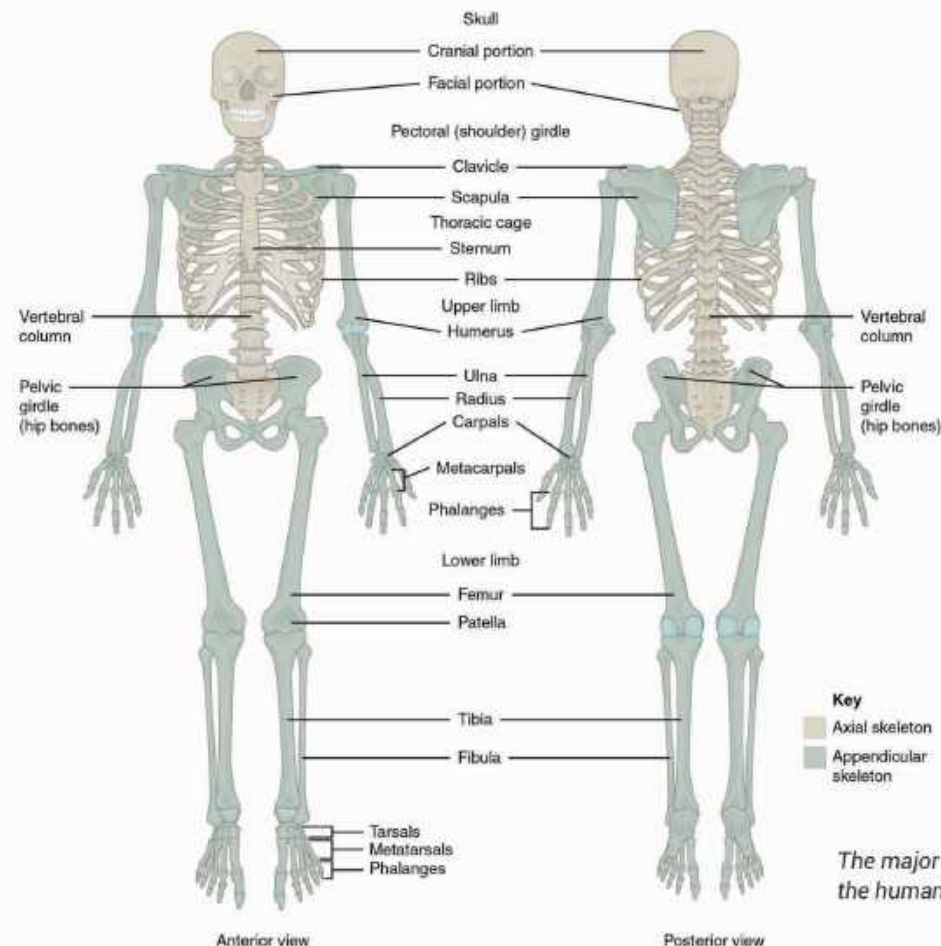
CHAPTER FOUR

The Skeletal System

The human skeleton is formed from bone tissue, a type of connective tissue. Other types of connective tissue, in the form of tendons, ligaments and cartilage, hold them all together in a complex of over 230 joints. This connective assemblage of bones and joints makes up the skeletal system, the body's internal framework, providing support and

protection for internal organs and an anchoring point for muscles.

An adult human skeleton has 206 bones (at birth we have 300 or so but some fuse together as we grow), which anatomically are divided axial and appendicular portions. The axial skeleton contains 80 bones, which include the



The major bones of the human skeleton.

THE SKELETAL SYSTEM

Classification of bones by shape

Flat bone (Frontal)



Short bone (Carpal)



Sesamoid bone (Patella)



Sutural bone



Long bone (Femur)



Irregular bone (Vertebra)



The different types of bone found in the human body.

bones of the skull and spine and the ribcage. The appendicular skeleton made up of the remaining 126 bones, comprises the collarbone and shoulder bones, the pelvis and the bones of the arms, legs, hands and feet.

The bones of the skeleton range in size from the lentil-sized auditory ossicles deep inside the ear that play an essential role in hearing, to the long, load-bearing femur or thighbone, which may account for a quarter of an adult's height.

Bones vary in their shape and function. They may be long like the femur and the other bones of the arms and legs. The bones of the fingers and toes are also considered to be long bones, the term depending on the shape and not the size. The function of the long bones is to act as levers with the joints as fulcrums, pulled into position by muscle contractions.

Short bones are cuboid in shape, like those in the wrists and ankles. They allow some movement but mostly provide support and stability. Flat bones, which may often in fact be curved, include the shoulder blades, or scapulae, the breastbone, or sternum, and the bones of the skull. They provide protection for organs such as

the heart and lungs and also act as attachment points for muscles.

Irregular bones, as the name suggests do not have an easily described shape. The most prominent of these are the vertebrae of the spine which protect the spinal cord. Sesamoid bones, small round bones which are so named because their shape resembles that of a sesame seed, are not connected by joints to other bones. They are found embedded in tendons or muscles which they protect and support, such as the two pea-shaped bones located beneath the big toe joint in the ball of the foot. The largest of the sesamoid bones is the patella, or kneecap. Finally, sutural, or Wormian, bones are small additional bones sometimes found between the bones of the skull.

Bones are a storehouse of minerals such as calcium and potassium that are essential for body functions, absorbing and releasing them according to the body's needs. They are also a repository for fat and some are the production sites for blood cells of all kinds. More than simply playing a supporting role, the skeleton is a vital and complex part of the human body that grows, repairs and renews itself constantly.

EARS AND HEARING

All sounds are produced by vibrations, in other words by something moving back in forth in a regular or random manner. In order for us to hear these sounds the vibrations must be converted into neural impulses for transmission to the brain. This conversion is accomplished by the ear.

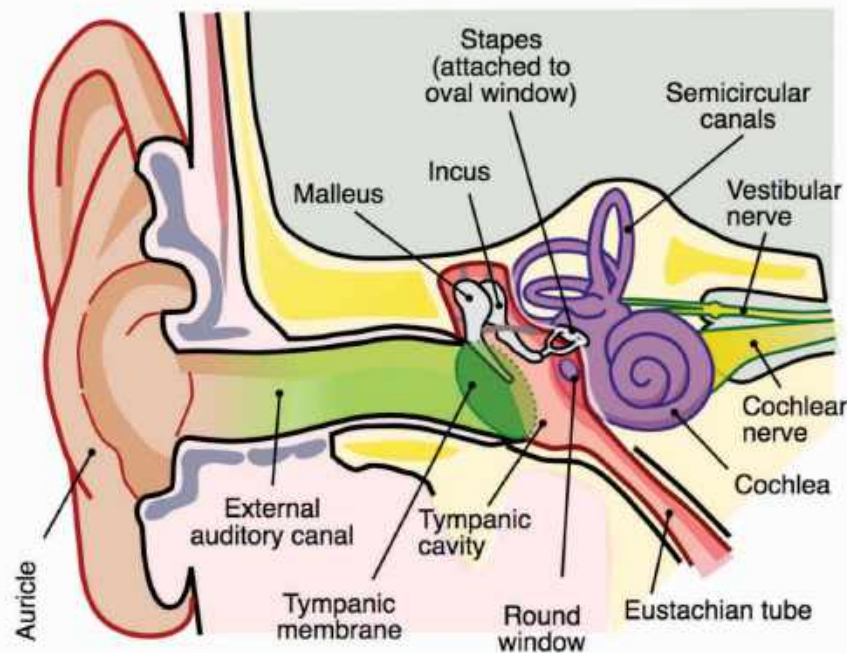
The human ear has three distinct sections, the outer ear, the middle ear and the inner ear. The outer ear consists of the pinna, the only part of the ear that is visible, the external auditory canal, or meatus, and the tympanic membrane, or eardrum. The pinnae, one on each side of the head, are basically skin-covered flaps of cartilage. They collect and focus sound, allowing us to judge its direction and enhancing its intensity.

The central part of the pinna, called the concha, directs sound along the 2.5cm length of the external auditory canal to the tympanic membrane, causing

it to vibrate. Behind the eardrum is an air-filled cavity, in which are located the smallest bones in the human body.

The three interlocking bones of the middle ear are called ossicles. Their function is to transmit the vibrations of the eardrum onwards to the inner ear. The malleus (or hammer) is attached to the eardrum and to the incus (anvil) which has a flexible connection to the stapes (stirrup). The flat-bottomed part of the stapes, called the footplate, is connected in turn to a second membrane, called the oval window. The vibrating eardrum moves the malleus and incus which tug the stapes back and forth against the oval window, on the other side of which is the inner ear. The smallest muscle in the body, called the stapedius muscle, is attached to the stapes. It acts to dampen large vibrations caused by loud noises, stabilising the stapes and protecting the oval window.

The anatomy of the human ear.



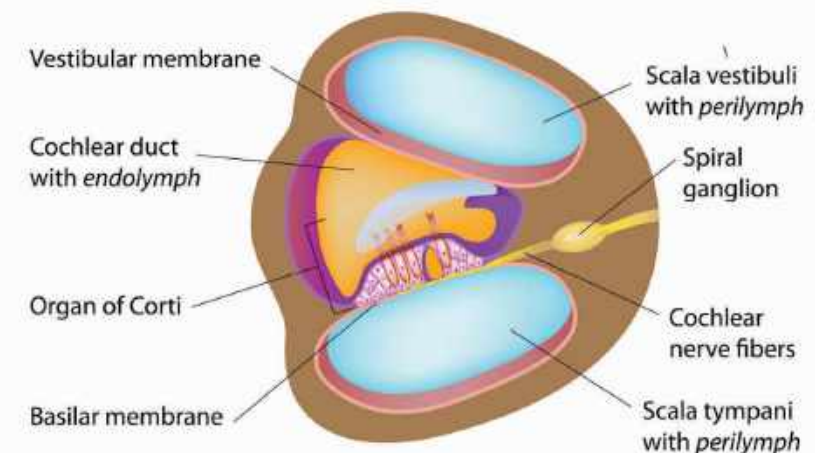
Human auditory ossicles – left to right: malleus, incus and stapes

The movements of the oval window set up waves in fluid-filled ducts within one of the most remarkable organs in the human body – the cochlea, so named because of its striking resemblance to the shell of a snail. A hollow tube with bony walls wraps around a central bony structure called the modiolus. Unwound, the tube is around 32mm in length and 2mm in diameter. It is divided into three chambers, the scala vestibuli, scala tympani and the central scala media, or cochlear duct. Scala, Latin for stairway, describes how the scalae wrap around the cochlea like a spiral staircase.

The basilar membrane lies between the scala tympani and the scala media. The base of the basilar membrane is about five times narrower and around 100 times stiffer than its apex. Sounds of different frequency cause the membrane to vibrate more strongly at different points. High-frequency sounds produce the greatest vibrations near the base of the membrane, and low frequencies produce the greatest vibration near its apex.

On top of the basilar membrane, within the cochlear duct, lies the organ of Corti. This houses sensory receptor cells, known as hair cells, which project into the jelly-like tectorial membrane which lies above it. It is the job of these hair cells to convert the mechanical energy of the basilar membrane into electrical signals for transmission to the brain.

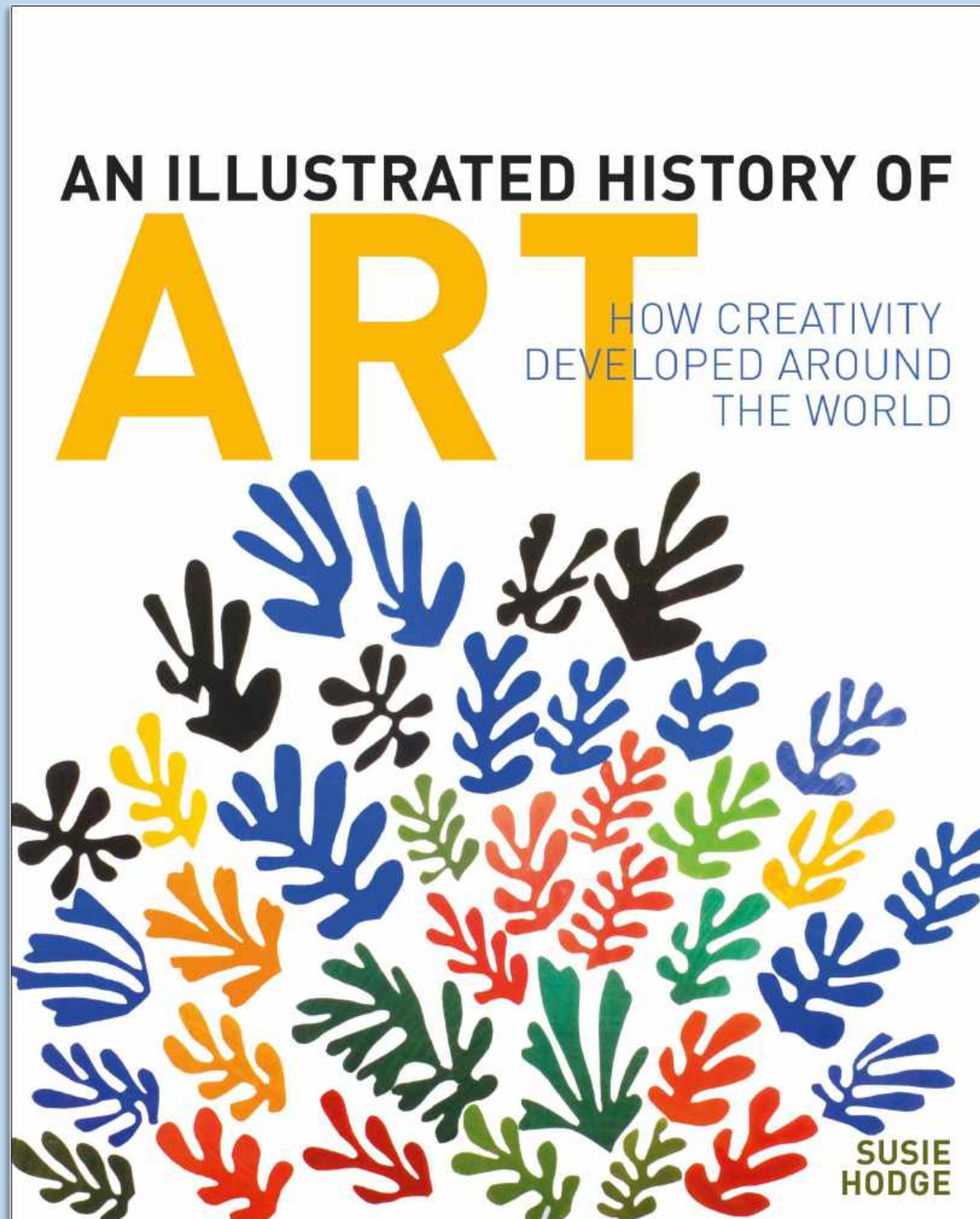
There are about 16000 hair cells in the human ear running the length of the basilar membrane. When sound stimulates a point on the membrane the hair cells at that site are stimulated by the force that this movement creates. Different groups of hair cells therefore only respond to different frequencies of sound.



A cross section of the cochlea

The Illustrated History of Art

280x225mm, 256pp, 4/4, Paperback



THE MING DYNASTY

WITH THE ESTABLISHMENT OF THE MING DYNASTY, China experienced a new period of cultural growth. The court appointed artists with the instruction that they should return to a style of more realistic representation. Though the techniques used were traditional (for example, ink and wash images were still much in evidence), Ming Dynasty artists had a better and wider palette of colours to select from and the various schools that were created began to mix calligraphy and images in compositions. Landscapes, figurative compositions and beautiful studies of flowers and birds were hugely popular.

The Ming period is usually divided into three overlapping stages: Early Ming (c. 1368–1505; Mid-Ming (c. 1465–1566) and Late Ming (c. 1567–1644). The main schools of painters included the Zhejiang School of Painting, which was centred in Hangzhou; the Yuanti School that served the royal court and moved from Nanjing to Beijing and the Wumen School in Suzhou as well as

school such as Xieyi Huaniao; Xieyi Shangshui; Songjiang; Huating and Susong. These centres of excellence produced numerous highly skilled artists (often members of the same family), such as Dai Jin, Qiu Ying, and Shen Zhou.

Delicate, intricate and with great attention to the placing of motifs within the image, the art of this era continues to fascinate and to inspire modern artists just as it did those of the 18th and 19th centuries, from the furniture and pottery makers, who created the French style of chinoiserie, to painters such as Claude Monet and Vincent van Gogh who collected samples of the later Edo School. Ironically, although from a Western viewpoint, the intricacies of this era of Chinese art are much admired, the artists themselves were encouraged to focus on the execution of their work, as if it were a performance, building up brushstrokes as Chinese calligraphers did. Now personality became an important part of the development of style.

ARTISTS TO LOOK OUT FOR:

Dai Jin (1388–1462)

Dong Qichang (1555–1636)

Lan Ying (c. 1585–1664)

Qiu Ying (1744–1808)

Shen Zhou (1427–1509)

Xu Wei (1521–93)



▲ *Journey to Shu* by Qiu Ying with calligraphy by Wen Zhengming (16th/17th century, ink and colour on silk).

► *Chrysanthemums and Bamboos* by Xu Wei (16th century, ink on paper).



DUTCH FLOWER PAINTINGS

ART IN THE NETHERLANDS boomed in the late 16th century as the Dutch Golden Age got into its stride: It is estimated that between 1580 and 1800 some 10 million works of art were produced, but probably less than 1 per cent has survived. In those years, as Dutch trade continued to grow stronger, so did the demand for pictures to showcase the wealth of the people who bought them, and among the subjects that became popular, flower paintings were much in demand.

In the 1600s, tulip fever gripped the Low Countries with bulbs exchanging hands for hundreds of pounds (thousands in today's money) and the varieties of flowers available for people to add to their gardens increased rapidly as explorers found new plants on their travels and botanical gardens became increasingly popular. Some of the earliest exponents of flower paintings included the likes of Jan Brueghel the Elder (albeit that he wasn't Dutch) and Roelant Savery, whose flower painting of 1603 is the first known example of such a work.

Lush, colourful and vibrant, flower painting celebrated nature in all its glory. Artists added insects, animals, exotic fruit and various ephemera to conjure up the abundance of Mother Earth and indicate opulence. So realistic were the images that you could almost smell the aroma of the flowers in the paintings of Ambrosius Bosschaert the Elder, Rachel Ruysch and Jan van Os. This fashion for flower paintings and still life groups allowed artists to perfect their skills to the extent that Balthazar van der Ast became recognized as a pioneer of shell painting.

ARTISTS TO LOOK OUT FOR:

Balthazar van der Ast
(1593/4–1657)

Jan Brueghel the Elder (1601–78)

Jan van Huysum (1682–1749)

Jan van Os (1744–1808)

Rachel Ruysch (1654–1750)

Roelant Savery (1576–1639)

► **Large Flower Piece with Kaiser's Crown** by Roelant Savery (1624, oil on panel) contains more than 44 species of animal and 63 species of flowers.

► **Still Life with Flowers in a Glass Vase** by Rachel Ruys (c. 1690–c.1720, oil on canvas).

▼ **Still Life with Flowers, Fruit and Birds** by Jan van Os (1774, oil on panel).



AMERICAN IMPRESSIONISM

WHEN THE IMPRESSIONIST PAINTERS of France first exhibited in the United States in the 1880s, the reception was not overwhelmingly positive, but their work resonated with a number of American artists who found the looser brushstrokes and choice of vivid colours a relief from the constraints of the refined, classical, academic work that had predominated until then.

American artists, such as Mary Cassatt and Theodore Robinson, studied in France. Cassatt formed a strong friendship with Edgar Degas while Robinson visited Claude Monet at Giverny. Cassatt was the only American to exhibit with the French Impressionists in France, but both Cassatt and Robinson promoted this new style among the wealthy Americans who began to collect Impressionist works in the late 1880s and 1890s.

Other prominent exponents of the style included Childe Hassam, who became known for his dramatic coastal scenes as well as urban life, and Frank Weston Benson, who was influenced heavily by Monet's use of colour.

Other artists who developed the Impressionist style came together to form creative colonies in towns and cities across the United States, such as Old Lyme in Connecticut and Carmel in California. They took the impressionistic vision a step further than the French, favouring a variety of different perspectives – cropped or asymmetrical and using paint straight from the tube to add vibrancy and depth to their work. Landscapes were still a favoured subject area (vast ones in the case of the US), but domestic scenes also grew in popularity, both subjects being an antidote to the increasing

industrialization across the country.

However, in the 1910s, the strength of Impressionism in America started to fade as the Jazz Age approached and the ground-breaking Armory Show of 1913 signalled a shift in style.



▲ *Summertime*, Mary Cassatt (1894, oil on canvas) is a smaller version of a larger painting that she produced of the same subject in the same year.



ARTISTS TO LOOK OUT FOR:

Frank Weston Benson 1862–1951

Mary Cassatt 1844–1926

William Merritt Chase 1849–1910

Childe Hassam 1859–1935

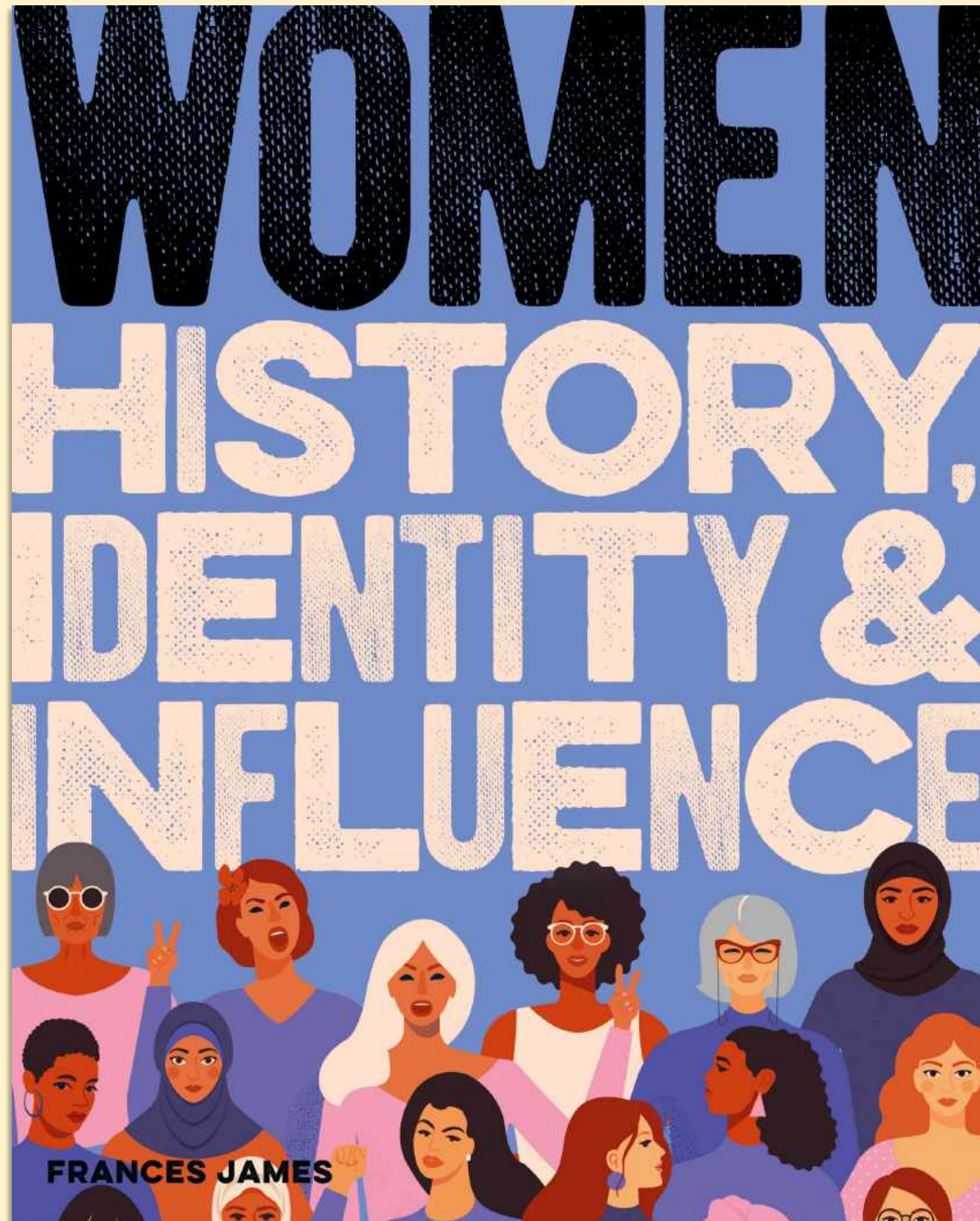
Theodore Robinson 1852–96

Edmund C. Tarbell 1862–1938

▲ *Bailey's Beach, Newport, Rhode Island* by Childe Hassam (1901, oil on canvas). *Bailey's Beach* was an upmarket seaside town frequented by the wealthy. The perspective indicates that Hassam was merely an observer and excluded from the events he depicts.

Women: History, Identity & Influence

280x225mm, 256pp, 4/4, Hardback with Jacket



Women and the right to vote

It may seem obvious in a modern democracy that every adult member of society ought to have a say in who their political leaders are, but this was not always the case. In fact, even as late as the early 19th century very few people had the right to vote. The subsequent reforms that took place to change this situation were attained through enormous social effort, and the right of women to vote was a hard-won victory achieved through a movement known as 'suffrage'.

What is suffrage?

The term 'suffrage' is no longer widely used, so needs some explanation. It is not related to the idea of suffering, but is derived from the Latin *suffragium*, meaning the right or privilege to vote. In most democracies, suffrage involves the right to choose government representatives and to take part in referendums about specific issues or proposals. It is normally granted once a citizen reaches the voting age (usually 19 years old, although sometimes as low as 16 or as high as 25, depending on a country's voting laws).

The women's suffrage movement took place globally over a period of many years, from the mid-19th century until the early 20th century. In the United States, those who supported it – whether male or female – became known as 'suffragists'. This was modified in Britain to the pejorative 'suffragettes', used as an offensive insult when referring to females, however many women appropriated the term for themselves, removing its power to mock them.



A postcard showing a woman being force-fed with milk shows the frequently contemptuous attitudes to women who fought for the vote. Hunger strikes became a frequent ploy of women arrested for suffrage activities.

Suffrage around the world

Women achieved the right to vote in different countries at different times, and various national and international organizations were formed in order to fight for women's rights. At first suffrage was only granted for local or rural elections, and was limited to women who fulfilled certain conditions such as owning land, paying taxes, being a spinster or widow, or being able to read and write. Gradually these rights were extended.

New Jersey was the first state in the US to grant women's suffrage in 1776, but this was later revoked. The Pitcairn Islands were next; from 1838 they allowed all women descended from the Bounty mutiny to vote. The first sovereign nation to give women the vote was Norway in 1913. There was a hiatus at the beginning of the First World War, but by the end of the war many Western nations – notably Canada, Britain and Germany – extended voting rights to women. The United States followed suit in 1920, but black women were excluded until 1965.

The Women's Coronation Procession, held in London, in June 1911, attracted suffragists from around the world including this group of activists from India.



TIMELINE: KEY DATES IN WOMEN'S SUFFRAGE

1776

In the new colonies of the United States, women who meet certain criteria are allowed to vote in New Jersey, New Hampshire, New York and Massachusetts.

1807

Women's right to vote in the US is taken away. Men dominate politics and all the decision-making.

1832

First British petition for suffrage is presented to Parliament.

1838

Pitcairn Islands give suffrage to the female descendants of the Bounty mutineers.

1848

Seneca Falls Convention in the US; Elizabeth Cady Stanton calls for women's equality and the right to vote.

1878

Amendment for women's suffrage is introduced in US Congress.

1894

Local Government Act is passed in the UK, allowing single women to vote in county and council elections.

1907

Women's Enfranchisement Bill is presented to British Parliament, but fails.

1908

Marion Wallace Dunlop is the first imprisoned suffragette in the UK to go on a hunger strike.

1910-13

Protest marches and violent clashes in London, including 'Black Friday' when 300 suffragettes are beaten, assaulted and arrested, windows are smashed and buildings are set on fire. In 1913, suffragette Emily Wilding Davison is killed after stepping into the path of King George V's horse at the Epsom Derby.

1913

Norway becomes the first sovereign nation to grant women the vote. Meanwhile, English activist Emmeline Pankhurst campaigns throughout Britain and the United States, giving her famous 'Freedom or death' speech in Connecticut. Alice Paul, founder of the National Women's Party, instigates demonstrations, protest marches and hunger strikes in England and the United States, and is arrested and imprisoned three times.

1916-17

Various protests and hunger strikes by the Congressional Union for Woman Suffrage.

1918

Women in Britain and Ireland over the age of 30 are given the right to vote. US President Woodrow Wilson supports women's suffrage and the 19th Amendment is passed by the House of Representatives, but fails to reach the necessary two-thirds vote in the US Senate.

1920

The 19th Amendment is finally passed, giving female citizens of the US the right to vote, however it excludes indigenous and black women.

1924

The Snyder Act grants citizenship to Native Americans.

1928

In the UK, the Representation of the People Act entitles every citizen over the age of 21 to vote.

1944

Women in France are granted suffrage.

1965

Following the Civil Rights Movement in the US, the Voting Rights Act is passed, giving black women the vote.

2015

Women in Saudi Arabia are given suffrage, a milestone meaning that women are able to vote in every country that has elections.

Dedicated to THE WOMEN'S SOCIAL AND POLITICAL UNION.



THE MARCH OF THE WOMEN

(Popular Edition in F. To be sung in Unison)

By **ETHEL SMYTH**, Mus.Doc.

Price: One Shilling & Sixpence net.

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A 1911 song sheet for 'The March of the Women', written by Ethel Smyth is printed in the suffragette colours of purple, green and white and shows women and children marching with the banner of the Women's Social and Political Union, demanding votes for women.

Matriarchy

Although it may feel as if we have always lived in a patriarchal society, one in which men hold all the positions of power and that this is somehow the 'natural' state of affairs, there is a school of thought that suggests this was not always the case. Anthropological studies of ancient communities reveal the existence of matriarchal societies in which women held the primary roles of political leadership and moral authority, as well as owning and controlling property and being accorded the highest social status.

Ancient matriarchies

Going back to ancient times, there is certainly archaeological evidence to suggest that women were worshipped as priestesses and for their ability to create life. Arguably, all the most important classical deities were female – the Greeks revered Aphrodite, Artemis, Athena, Demeter and Hera, and the Romans honoured Ceres, Diana, Juno, Minerva and Venus. Each possessed important virtues such as beauty, love, sexuality, fertility, motherhood and creativity. Eastern faiths praised the sacred female too. Shakti, for example, is the Hindu goddess who represents the primordial cosmic energy that first animated the world.

From hunter-gatherers to patriarchy

It is thought that early hunter-gatherer societies were egalitarian in nature. For these nomadic groups, the division of labour was evenly spread among all members of the extended family. Men, women and children hunted for wild game and foraged for edible plants, and by necessity they had to move around to find enough food to sustain them.

The advent of agriculture around 12,000 years ago changed all that, as humans began building permanent settlements and raising domesticated livestock. This acquisition of valuable resources meant that power inevitably shifted to males, who were stronger and better able to defend their property compared to females. Fathers, grandfathers, sons and uncles took over ownership of land and possessions, and passed them down to their male descendants – and patriarchy was born.



The Roman goddess Diana, portrayed with a stag and her bow and arrow.



A modern-day matriarchy?

There is much debate about the benefits of matriarchy and what a modern-day society run by women might look like. There's no doubt that women do benefit from having autonomy, but there is always a constant give-and-take involved in running a household and raising a family while simultaneously trying to break the glass ceiling in the workplace. Whatever happens next, it is widely agreed that a healthy community is egalitarian rather than domineering.

A ceremony involving the Indian goddess Shakti.

MATRIARCHIES AROUND THE WORLD

While most modern societies are patriarchal, there are still a number of matriarchal communities around the world. The following are some examples.

- In China, Mosuo women remain unmarried and pass property down the female line.
- The BriBri tribe of Costa Rica similarly hand down their land from mother to child, and only women are permitted to prepare the sacred cacao drink for religious ceremonies.
- The Umoja tribe in Kenya is a female-only village specifically set up for sexually abused women.
- The Minangkabau people of Indonesia are a large group (4 million people) who place mothers at the pinnacle of society.
- The Akan people of Ghana are a 'matrilineal', in which females decide on identity, inheritance, wealth and politics.
- In the Khasi tribe in India, mothers and mothers-in-law are the only people permitted to look after children, and their surname is passed down the generations.

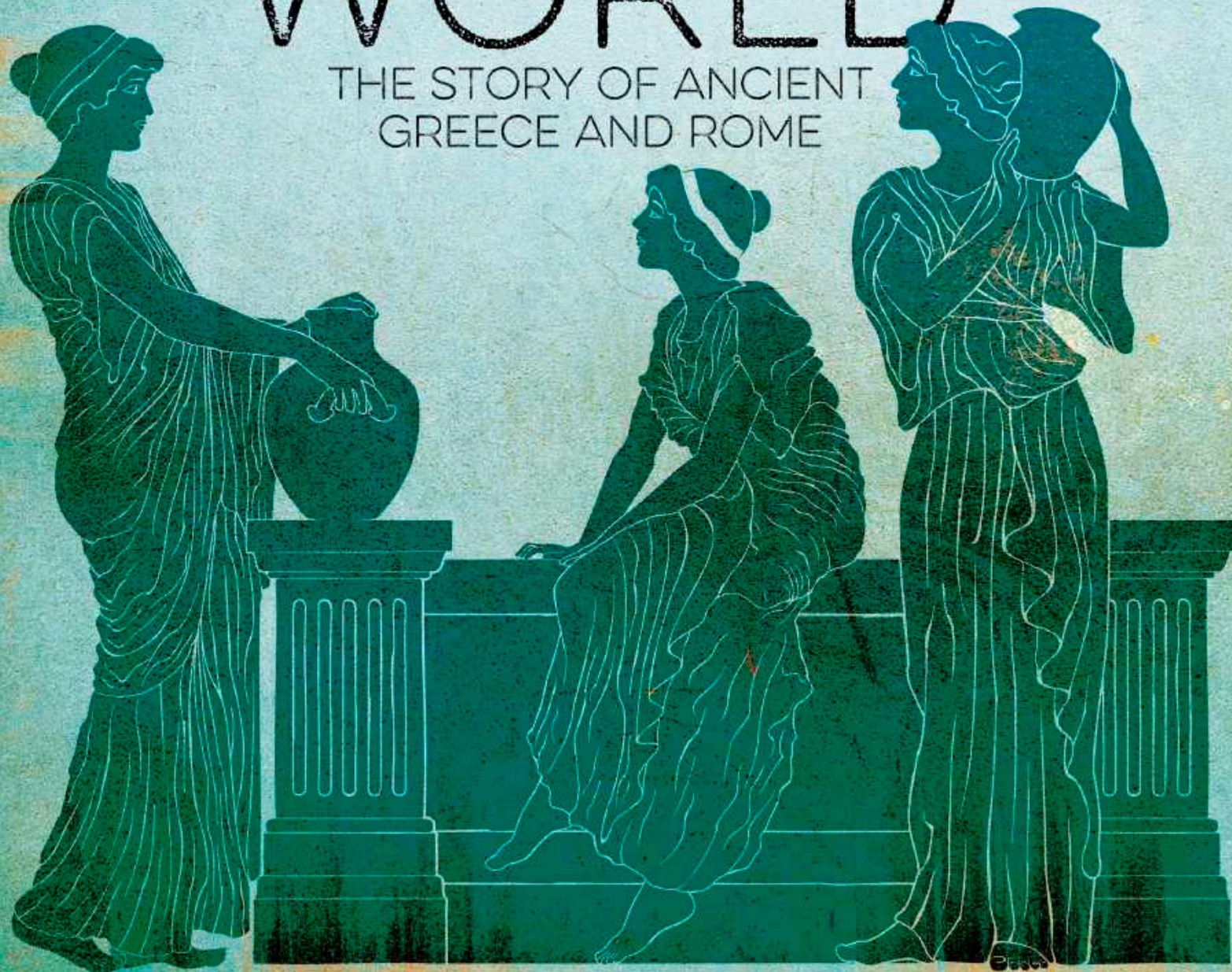
BELOW: Two young Mosuo women wearing different styles of dress. The woman on the right wears a traditional headdress.



ABOVE: 'Queen Mothers' in Ghana, a movement of c.10,000 women that seeks to reclaim ancestral powers to bring economic and social change to women and children across the country. Where the Akan culture is dominant, each town has a chief and queen mother who rule alongside the modern political system.

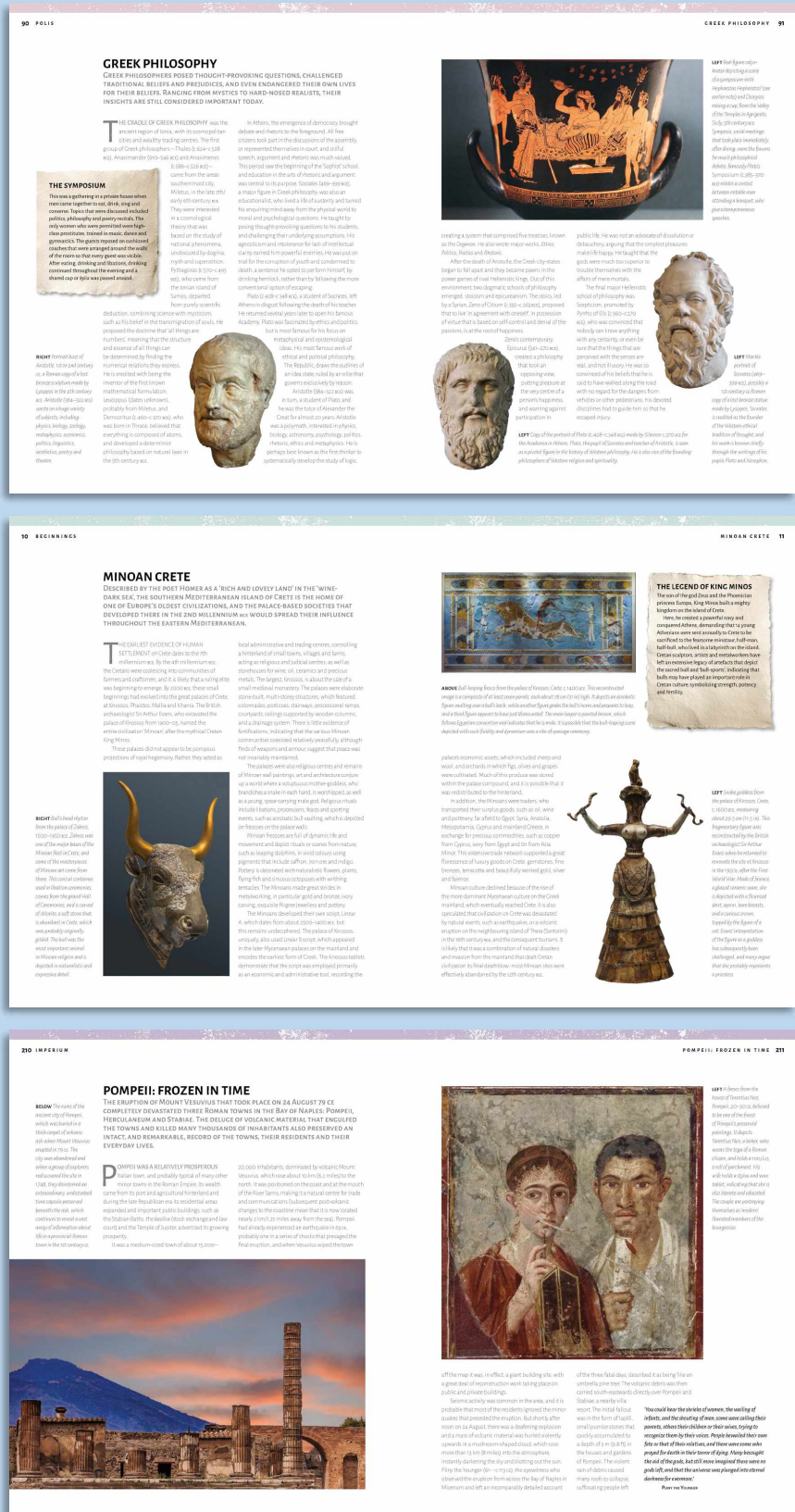
A HISTORY OF THE CLASSICAL WORLD

THE STORY OF ANCIENT GREECE AND ROME



SARAH JEFFRIES

280x225mm, 256pp, 4/4



LIFE IN REPUBLICAN ROME

REPUBLICAN ROME WAS THE CAPITAL CITY OF A GROWING POWER, BUT FOR ALL ITS GRANDIOSE BUILDINGS AND MONUMENTAL PUBLIC WORKS, ITS NARROW STREETS WERE CRAMPED AND SEETHING WITH LIFE, AND LARGE NUMBERS OF THE PLEBEIANS LIVED IN SLUM CONDITIONS, FAR REMOVED FROM THE ELEGANT STREETS, PIPED WATER AND CLEAN AIR OF THE PALATINE HILL.

BELOW An ancient Roman relief of a coppersmith's shop, with a square box and anvil at the centre. The copper to be moulded is spread on the anvil, and a smith kneeling beside it taps it with a hammer (now lost), while the standing assistant strikes with the sledgehammer. To the right, another smith is busy making the last touches to a copper vessel. To the left, a man stands near a pair of scales that hang from a yoke attached to the ceiling by two chains. Various vessels and moulds hang on the wall.



SPACE WAS AT A PREMIUM in walled cities like Rome, and the solution was to create six- or seven-storied apartment buildings or *insulae*. As early as 150 BCE, it is recorded that there were more than 46,000 *insulae* in the city of Rome. These were basically ramshackle tenements, built of timber and mud-brick, which were overcrowded and dangerous. Residents lived in perpetual fear of fire or collapse, and these risks were compounded by extremely narrow streets, which could be as little as 2 m (6.6 ft) wide.

The lower floors of the *insulae* were the most luxurious, and apartments there boasted several rooms, natural light, and even glazed windows. They had access to running water and even, in some cases, indoor toilets – Rome had a sewerage system that dated to the 6th century BCE when the Cloaca Maxima was constructed. The upper floors were cramped and

hot, with families living together in single rooms. They had no access to running water or to a latrine, relying on public troughs and fountains, and human waste was regularly dumped into the streets, which stank and were a breeding ground for disease. Since they also had no kitchens, they spilled out on to the crowded streets, where bars and cheap eating-houses flourished. Carts, horses, wagons, litters and manure added to the noise and confusion.

The wealthy residents were comfortably distant from the stinking, congested city streets. They lived in single-family houses (*domus*) on the Palatine Hill. While the ground floor might contain a shop, or business premises at the street front, the home was built around the open atrium that lay behind, where rainwater was collected in a rectangular pool to be used elsewhere in the house. The atrium was surrounded by an array of rooms: bedrooms, offices, a kitchen and *triclinium* (dining room). At the rear of the house was a garden, surrounded by a columned passage, the *peristylum*. Very wealthy people frequently abandoned the city altogether, taking refuge in elegant villas in the countryside, where they enjoyed central heating provided by the underfloor hypocaust system and running water. Frequently, villas were self-sufficient, with a farm that supplied produce, and supported a large number of farm labourers and slaves.

Romans in the early Republican era admired rugged austerity and did not indulge



LEFT The Via Diana in Ostia, the port of Rome, which is lined with brick-built tenements (*insulae*). Ostia, founded in the 3rd century BCE, was a city of high-rise apartments, generally up to four storeys high.

in luxuries, this was to gradually change. Ordinary Romans ate very simple food, comprising bread, salad, olives, cheeses, fruits and nuts. Wine was neither mass produced nor widely available until around 250 BCE, when it became a cheap, staple drink, although Romans always drank it mixed with water. It has been estimated that on average each Roman citizen drank a bottle of wine a day, though manual labourers and soldiers would certainly have drunk much more than ladies of leisure.

Most Romans worked a six-hour day, starting at dawn and ending at noon. Some shops reopened in the evening. The afternoon was given over to leisure: gladiatorial competitions, chariot races, theatre performances and baths. Young men probably participated in various sports, including wrestling, boxing and racing. Chariot racing was a popular spectacle, and supporters often gambled on the results. Bars and brothels provided entertainment in the evenings.

Bathing was all-important to the Romans, who usually visited

the baths once or twice a week. The bath complex contained a gym, health centre and swimming pool as well as three bathrooms, *tepidarium* (relaxation room), *caldarium* (hot room), *frigidarium* (cooling room). Most baths, which were funded by wealthy patrons, were extremely cheap, and occasionally free to users.

These lifestyles were eventually replicated all over the Roman Empire, in towns and cities founded by the Romans, but in the countryside large numbers of Roman subjects continued to lead timeless existences, quite divorced from the amenities, and deficiencies, of Roman towns. They cultivated the land and lived in small villages, as their ancestors had done before them.



BELOW Bath complexes were an amenity of Roman towns and cities from the Republican period onwards. The bath complex at the Roman settlement of Aquae Sulis (Bath) in England dates to c.70 CE, but is well preserved. Some 1.1 million litres (2.4 million gallons) of steaming spring water, reaching temperatures of 46 °C (115 °F), still fills the bathing site every day.

GREEK PHILOSOPHY

GREEK PHILOSOPHERS POSED THOUGHT-PROVOKING QUESTIONS, CHALLENGED TRADITIONAL BELIEFS AND PREJUDICES, AND EVEN ENDANGERED THEIR OWN LIVES FOR THEIR BELIEFS. RANGING FROM MYSTICS TO HARD-NOSED REALISTS, THEIR INSIGHTS ARE STILL CONSIDERED IMPORTANT TODAY.

THE CRADLE OF GREEK PHILOSOPHY was the ancient region of Ionia, with its cosmopolitan cities and wealthy trading centres. The first group of Greek philosophers—Thales (c.624–c.528 BCE), Anaximander (610–546 BCE) and Anaximenes

(c.586–c.526 BCE)—came from the area's southernmost city, Miletus, in the late 7th/early 6th century BCE. They were interested in a cosmological theory that was based on the study of natural phenomena, unobscured by dogma, myth and superstition. Pythagoras (c.570–c.495 BCE), who came from the Ionian island of Samos, departed from purely scientific

deduction, combining science with mysticism, such as his belief in the transmigration of souls. He proposed the doctrine that 'all things are numbers', meaning that the structure and essence of all things can be determined by finding the numerical relations they express. He is credited with being the inventor of the first known mathematical formulation. Leucippus (dates unknown), probably from Miletus, and Democritus (c.460–c.370 BCE), who was born in Thrace, believed that everything is composed of atoms, and developed a determinist philosophy based on natural laws in the 5th century BCE.



RIGHT Portrait bust of Aristotle, 1st or 2nd century CE, a Roman copy of a lost bronze sculpture made by Lysippos in the 4th century BCE. Aristotle (384–322 BCE) wrote on a huge variety of subjects, including physics, biology, zoology, metaphysics, economics, politics, linguistics, aesthetics, poetry and theatre.

In Athens, the emergence of democracy brought debate and rhetoric to the foreground. All free citizens took part in the discussions of the assembly, or represented themselves in court, and skilful speech, argument and rhetoric was much valued. This period saw the beginning of the 'Sophist' school, and education in the arts of rhetoric and argument was central to its purpose. Socrates (469–399 BCE), a major figure in Greek philosophy, was also an educationalist, who lived a life of austerity and turned his enquiring mind away from the physical world to moral and psychological questions. He taught by posing thought-provoking questions to his students, and challenging their underlying assumptions. His agnosticism and intolerance for lack of intellectual clarity earned him powerful enemies. He was put on trial for the corruption of youth and condemned to death, a sentence he opted to perform himself, by drinking hemlock, rather than by following the more conventional option of escaping.

Plato (c.428–c.348 BCE), a student of Socrates, left Athens in disgust following the death of his teacher. He returned several years later to open his famous Academy. Plato was fascinated by ethics and politics but is most famous for his focus on metaphysical and epistemological ideas. His most famous work of ethical and political philosophy, *The Republic*, draws the outlines of an idea state, ruled by an elite that governs exclusively by reason. Aristotle (384–322 BCE) was, in turn, a student of Plato, and he was the tutor of Alexander the Great for almost 20 years. Aristotle was a polymath, interested in physics, biology, astronomy, psychology, politics, rhetoric, ethics and metaphysics. He is perhaps best known as the first thinker to systematically develop the study of logic,



LEFT Red-figure calyx-krater depicting a scene of a symposium with Hephaestus Hephaistos? (see earlier note) and Dionysos raising a cup, from the Valley of the Temples in Agrigento, Sicily, 5th century BCE. Symposia, social meetings that took place immediately after dining, were the forums for much philosophical debate, famously Plato's *Symposium* (c.385–370 BCE) relates a contest between notable men attending a banquet, who give extemporaneous speeches.

creating a system that comprised five treatises, known as the *Organon*. He also wrote major works, *Ethics*, *Politics*, *Poetics* and *Rhetoric*.

After the death of Aristotle, the Greek city-states began to fall apart and they became pawns in the power games of rival Hellenistic kings. Out of this environment, two dogmatic schools of philosophy emerged: stoicism and epicureanism. The stoics, led by a Syrian, Zeno of Citium (c.335–c.263 BCE), proposed that to live 'in agreement with oneself, in possession of virtue that is based on self-control and denial of the passions, is at the root of happiness.

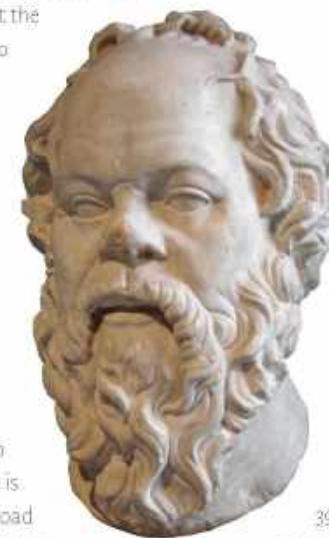
Zeno's contemporary, Epicurus (341–270 BCE), created a philosophy that took an opposing view, putting pleasure at the very centre of a person's happiness, and warning against participation in

public life. He was not an advocate of dissolution or debauchery, arguing that the simplest pleasures make life happy. He taught that the gods were much too superior to trouble themselves with the affairs of mere mortals.

The final major Hellenistic school of philosophy was Scepticism, promoted by Pyrrho of Elis (c.360–c.270 BCE), who was convinced that nobody can know anything with any certainty, or even be sure that the things that are perceived with the senses are real, and not illusory. He was so convinced of his beliefs that he is said to have walked along the road with no regard for the dangers from vehicles or other pedestrians; his devoted disciples had to guide him so that he escaped injury.



LEFT Copy of the portrait of Plato (c.428–c.348 BCE) made by Silanion c.370 BCE for the Academy in Athens. Plato, the pupil of Socrates and teacher of Aristotle, is seen as a pivotal figure in the history of Western philosophy. He is also one of the founding philosophers of Western religion and spirituality.



LEFT Marble portrait of Socrates (469–399 BCE), possibly a 1st-century CE Roman copy of a lost bronze statue made by Lysippos. Socrates is credited as the founder of the Western ethical tradition of thought, and his work is known chiefly through the writings of his pupils Plato and Xenophon.

MINOAN CRETE

DESCRIBED BY THE POET HOMER AS A 'RICH AND LOVELY LAND' IN THE 'WINE-DARK SEA', THE SOUTHERN MEDITERRANEAN ISLAND OF CRETE IS THE HOME OF ONE OF EUROPE'S OLDEST CIVILIZATIONS, AND THE PALACE-BASED SOCIETIES THAT DEVELOPED THERE IN THE 2ND MILLENNIUM BCE WOULD SPREAD THEIR INFLUENCE THROUGHOUT THE EASTERN MEDITERRANEAN.

THE EARLIEST EVIDENCE OF HUMAN SETTLEMENT on Crete dates to the 7th millennium BCE. By the 4th millennium BCE, the Cretans were coalescing into communities of farmers and craftsmen, and it is likely that a ruling elite was beginning to emerge. By 2000 BCE, these small beginnings had evolved into the great palaces of Crete, at Knossos, Phaistos, Mallia and Khania. The British archaeologist Sir Arthur Evans, who excavated the palace of Knossos from 1900–05, named the entire civilization 'Minoan', after the mythical Cretan King Minos.

These palaces did not appear to be pompous projections of royal hegemony. Rather, they acted as

local administrative and trading centres, controlling a hinterland of small towns, villages and farms, acting as religious and judicial centres, as well as storehouses for wine, oil, ceramics and precious metals. The largest, Knossos, is about the size of a small medieval monastery. The palaces were elaborate stone-built, multi-storey structures, which featured colonnades, porticoes, stairways, processional ramps, courtyards, ceilings supported by wooden columns, and a drainage system. There is little evidence of fortifications, indicating that the various Minoan communities coexisted relatively peacefully, although finds of weapons and armour suggest that peace was not invariably maintained.

The palaces were also religious centres and remains of Minoan wall paintings, art and architecture conjure up a world where a voluptuous mother-goddess, who brandishes a snake in each hand, is worshipped, as well as a young, spear-carrying male god. Religious rituals include libations, processions, feasts and sporting events, such as acrobatic bull vaulting, which is depicted on frescoes on the palace walls.

Minoan frescoes are full of dynamic life and movement and depict rituals or scenes from nature, such as leaping dolphins, in vivid colours using pigments that include saffron, iron ore and indigo. Pottery is decorated with naturalistic flowers, plants, flying fish and sinuous octopuses with writhing tentacles. The Minoans made great strides in metalworking, in particular gold and bronze, ivory carving, exquisite filigree jewellery and pottery.

The Minoans developed their own script, Linear A, which dates from about 2500–1400 BCE, but this remains undeciphered. The palace of Knossos, uniquely, also used Linear B script, which appeared in the later Mycenaean palaces on the mainland and encodes the earliest form of Greek. The Knossos tablets demonstrate that the script was employed primarily as an economic and administrative tool, recording the



ABOVE Bull-leaping fresco from the palace of Knossos, Crete, c. 1400 BCE. This reconstructed image is a composite of at least seven panels, each about 78 cm (31 in) high. It depicts an acrobatic figure vaulting over a bull's back, while another figure grabs the bull's horns and prepares to leap, and a third figure appears to have just dismounted. The main leaper is painted brown, which follows Egyptian convention and indicates that he is male. It is possible that the bull-leaping scene depicted with such fluidity and dynamism was a rite-of-passage ceremony.

palace's economic assets, which included sheep and wool, and orchards in which figs, olives and grapes were cultivated. Much of this produce was stored within the palace compound, and it is possible that it was redistributed to the hinterland.

In addition, the Minoans were traders, who transported their surplus goods, such as oil, wine and pottery, far afield to Egypt, Syria, Anatolia, Mesopotamia, Cyprus and mainland Greece, in exchange for precious commodities, such as copper from Cyprus, ivory from Egypt and tin from Asia Minor. This extensive trade network supported a great florescence of luxury goods on Crete: gemstones, fine bronzes, terracotta and beautifully worked gold, silver and faience.

Minoan culture declined because of the rise of the more dominant Mycenaean culture on the Greek mainland, which eventually reached Crete. It is also speculated that civilization on Crete was devastated by natural events, such as earthquakes, or a volcanic eruption on the neighbouring island of Thera (Santorini) in the 16th century BCE, and the consequent tsunami. It is likely that it was a combination of natural disasters and invasion from the mainland that dealt Cretan civilization its final deathblow: most Minoan sites were effectively abandoned by the 12th century BCE.

THE LEGEND OF KING MINOS

The son of the god Zeus and the Phoenician princess Europa, King Minos built a mighty kingdom on the island of Crete.

Here, he created a powerful navy and conquered Athens, demanding that 14 young Athenians were sent annually to Crete to be sacrificed to the fearsome minotaur, half-man, half-bull, who lived in a labyrinth on the island. Cretan sculptors, artists and metalworkers have left an extensive legacy of artefacts that depict the sacred bull and 'bull-sports', indicating that bulls may have played an important role in Cretan culture, symbolizing strength, potency and fertility.

RIGHT Bull's head rhyton from the palace of Zakros, 1500–1450 BCE. Zakros was one of the major bases of the Minoan fleet in Crete, and some of the masterpieces of Minoan art come from there. This conical container, used in libation ceremonies, comes from the grand Hall of Ceremonies, and is carved of chlorite, a soft stone that is abundant in Crete, which was probably originally gilded. The bull was the most important animal in Minoan religion and is depicted in naturalistic and expressive detail.



LEFT Snake goddess from the palace of Knossos, Crete, c. 1500 BCE, measuring about 29.5 cm (11.5 in). This fragmentary figure was reconstructed by the British archaeologist Sir Arthur Evans when he returned to renovate the site at Knossos in the 1920s, after the First World War. Made of faience, a glazed ceramic ware, she is depicted with a flounced skirt, apron, bare breasts, and a curious crown, topped by the figure of a cat. Evans' interpretation of the figure as a goddess has subsequently been challenged, and many argue that she probably represents a priestess.

POMPEII: FROZEN IN TIME

THE ERUPTION OF MOUNT VESUVIUS THAT TOOK PLACE ON 24 AUGUST 79 CE COMPLETELY DEVASTATED THREE ROMAN TOWNS IN THE BAY OF NAPLES: POMPEII, HERCULANEUM AND STABIAE. THE DELUGE OF VOLCANIC MATERIAL THAT ENGULFED THE TOWNS AND KILLED MANY THOUSANDS OF INHABITANTS ALSO PRESERVED AN INTACT, AND REMARKABLE, RECORD OF THE TOWNS, THEIR RESIDENTS AND THEIR EVERYDAY LIVES.

BELOW The ruins of the ancient city of Pompeii, which was buried in a thick carpet of volcanic ash when Mount Vesuvius erupted in 79 CE. The city was abandoned and when a group of explorers rediscovered the site in 1748, they disinterred an extraordinary, undisturbed time capsule preserved beneath the ash, which continues to reveal a vast array of information about life in a provincial Roman town in the 1st century CE.

POMPEII WAS A RELATIVELY PROSPEROUS Italian town, and probably typical of many other minor towns in the Roman Empire. Its wealth came from its port and agricultural hinterland and during the late Republican era its residential areas expanded and important public buildings, such as the Stabian Baths, the *basilica* (stock exchange and law court) and the Temple of Jupiter, advertised its growing prosperity.

It was a medium-sized town of about 15,000—

20,000 inhabitants, dominated by volcanic Mount Vesuvius, which rose about 10 km (6.2 miles) to the north. It was positioned on the coast and at the mouth of the River Sarno, making it a natural centre for trade and communications (subsequent post-volcanic changes to the coastline mean that it is now located nearly 2 km/1.25 miles away from the sea). Pompeii had already experienced an earthquake in 63 CE, probably one in a series of shocks that presaged the final eruption, and when Vesuvius wiped the town



LEFT A fresco from the house of Terentius Neo, Pompeii, 20–30 CE, believed to be one of the finest of Pompeii's preserved paintings. It depicts Terentius Neo, a baker, who wears the toga of a Roman citizen, and holds a rotulus, a roll of parchment. His wife holds a stylus and wax tablet, indicating that she is also literate and educated. The couple are portraying themselves as 'modern', liberated members of the bourgeoisie.



off the map it was, in effect, a giant building site, with a great deal of reconstruction work taking place on public and private buildings.

Seismic activity was common in the area, and it is probable that most of the residents ignored the minor quakes that preceded the eruption. But shortly after noon on 24 August there was a deafening explosion and a mass of volcanic material was hurled violently upwards in a mushroom-shaped cloud, which rose more than 13 km (8 miles) into the atmosphere, instantly darkening the sky and blotting out the sun. Pliny the Younger (61–c.113 CE), the eyewitness who observed the eruption from across the Bay of Naples in Misenum and left an incomparably detailed account

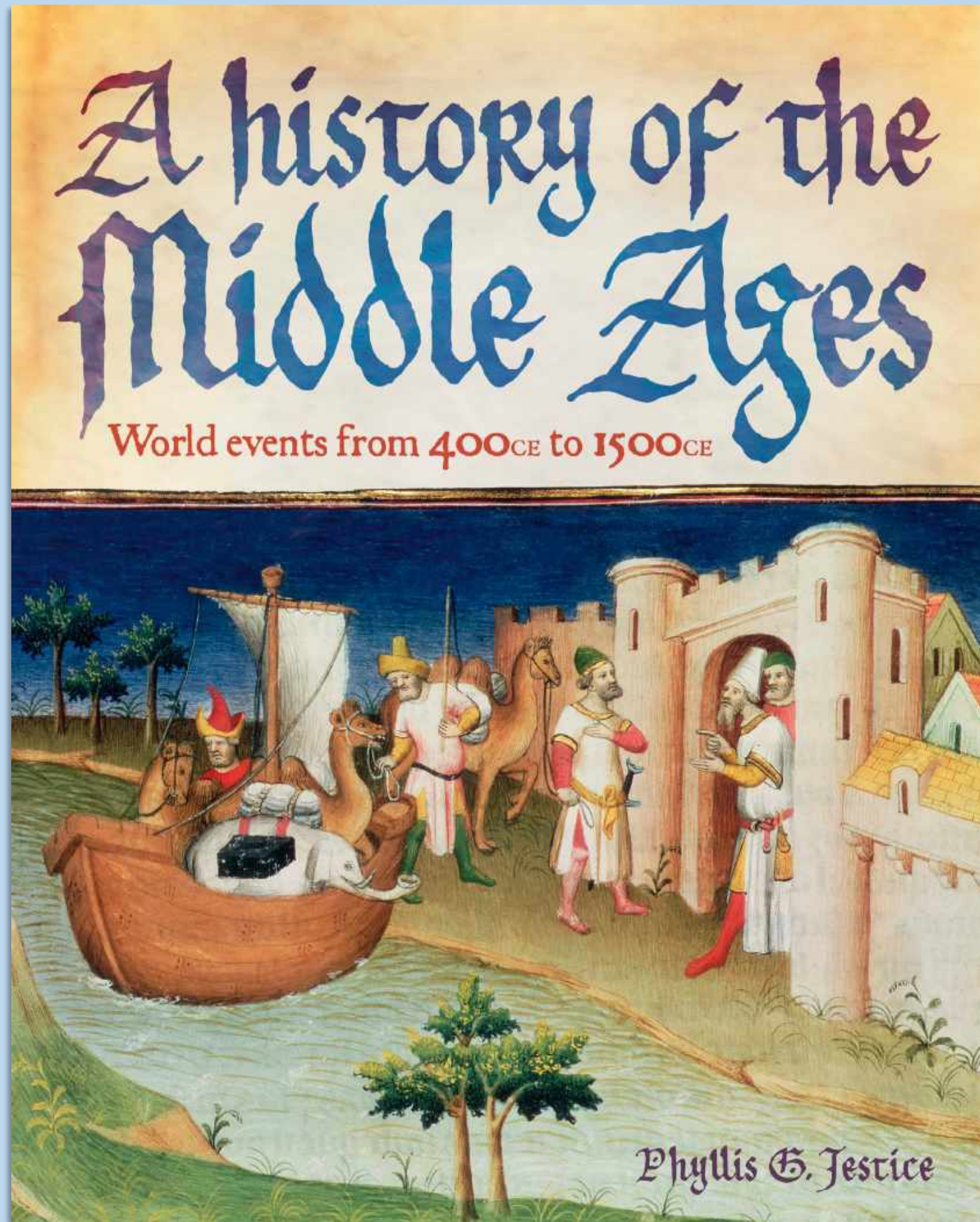
of the three fatal days, described it as being 'like an umbrella pine tree'. The volcanic debris was then carried south-eastwards directly over Pompeii and Stabiae, a nearby villa resort. The initial fallout was in the form of lapilli, small pumice stones that quickly accumulated to a depth of 3 m (9.8 ft) in the houses and gardens of Pompeii. The violent rain of debris caused many roofs to collapse, suffocating people left

'You could hear the shrieks of women, the wailing of infants, and the shouting of men; some were calling their parents, others their children or their wives, trying to recognize them by their voices. People bewailed their own fate or that of their relatives, and there were some who prayed for death in their terror of dying. Many besought the aid of the gods, but still more imagined there were no gods left, and that the universe was plunged into eternal darkness for evermore.'

PLINY THE YOUNGER

A History of the Middle Ages

280x225mm, 256pp, 4/4, Hardback



THE VIKING AGE, C. 750–1000

On the fringes of northern Europe, the peoples of Scandinavia were about to reshape the history of a continent. Voyaging far from their homelands, they were renowned as fearsome warriors and established new colonies as far afield as North America to the west and Ukraine to the East. Even as Christianity spread relentlessly through Europe, they held on to their old beliefs and distinctive culture. Meanwhile, the Islamic societies of the Middle East and North Africa underwent a golden

age, as the art flourished, trade burgeoned and new scientific discoveries emerged. In Asia, China solidified its control over its territory under the Tang dynasty and the Srivijaya empire based around the island of Sumatra created a thriving maritime empire.

THE VIKINGS

The name 'Viking' derives from an Old English word meaning 'raider'. For most of those living in western Europe, their primary encounters with the 'Northmen' would have been through violent incursions. From around 700 ce, small groups of warriors set out from the relatively impoverished fjords of Denmark and Norway in their famous longships in search of plunder, adventure and opportunity, before returning home.

The raid on the monastery of Lindisfarne in England in 793 dramatically announced to the people of that country that the Vikings could strike anywhere. By the end of the 8th century, they were roaming further abroad and the small scale raids they had once engaged in had now become an existential threat to the fledgling states in the British Isles and the Frankish kingdoms. Their ambitions soon grew from simple raids to more protracted campaigns and even complete armies of invasions, with ambitions of establishing kingdoms and colonies of their own in these territories.

Major ports like Rouen and Nantes fell to them as they made their way to Portugal in 844 and Tuscany in 859–62. In 866, the 'Great Viking Army' landed on the English coast and established the Danelaw, while the kingdoms of Wessex and Mercia struggled to hold back the encroaching Northmen tide. Cnut the Dane acceded to the English throne in 1016 and soon expanded his holdings to incorporate the crowns of both Denmark and Norway, forming what was perhaps the first Viking Empire.

In France, a great encampment was set up on the River Seine, leading to sieges of Paris in 845 and 885–6, as well as the permanent settlement of the Northmen along the banks of the river.

In 911, according to legend, one Viking leader, named Rollo, carved a new state out of the region in an agreement with King Charles III of West Francia, the Duchy of Normandy.

To the east, the Vikings were known as 'Varangians'. They found employment as mercenaries and traders as well as raiders and their influence was, if anything, even more pronounced here. A Varangian leader, Rurik, established the state of Kievan Rus in 882, which remained one of the most powerful states in the region until it fell to the Mongols in the 1240s. While Rurik was forced to fight off the Byzantine armies to establish his state, other Varangians fought for the Byzantine Army, forming the elite 'Varangian Guard', a unit of bodyguards for the emperor. The unit existed from the 10th century until the 14th century and was primarily manned by Scandinavian immigrants for the first 200 years of its existence.

Yet there was far more to Viking society than just raiding. They developed wide networks of trade, selling furs, seal fat, slaves and more along the Volga River, and venturing as far afield as Baghdad. They also established new colonies in Iceland in the later 9th century, Greenland in 986 and eventually 'Vinland' c. 1000, a location somewhere in the Gulf of St Lawrence in modern-day Canada.

BELOW A statue of the Varangian explorer Rurik, the founder of the kingdom of Kievan Rus.



ABOVE A medieval manuscript from the 12th century depicts an invading Viking force.



LEFT A Viking brooch from the 10th century. Such brooches would be worn by women to fasten their dresses.

THE COLLAPSE OF MAYA CIVILIZATION

Between 250 and 900 ce, the Maya civilization reached its peak, creating sprawling stone cities spanning across the jungles of Guatemala, developing elaborate religious rites, astonishing artwork and a hieroglyphic writing system. Yet the extensive Maya civilization collapsed suddenly in the early 10th century. The great cities were abandoned, the widespread trade

networks that had marked the earlier period disappeared and the population shrank dramatically. The great monuments, inscriptions and royal funerary cults seemed to disappear almost overnight. Why did this happen?

Historians and archaeologists have put forward a number of possible explanations: war, drought, volcanic eruptions, environmental

degradation and overpopulation may all have been factors. Some have even argued that the Maya didn't collapse at all – instead the period may be better understood as a transition of power from the southern lowlands to the Yucatan peninsula in the north. While cities like Tikal, Copan and Palenque were abandoned, others, like Chichen Itza and Uxmal thrived. Unlike

many major civilizations, even at its height, the Maya were not represented by a single unitary empire or kingdom. Instead, they consisted of a series of city states of varying power competing against each other. Shifting alliances between the ruling families of these cities, cemented by marriage and trade, led to a near-constant backdrop of warfare. Meanwhile, all authority in Maya society derived from a religious basis. High priests and rulers were often the same, and when rainfall became scarcer, they found it harder to convince their subjects that they were the true representatives of the divine on Earth.

Mayan cities had grown incredibly rapidly due to the spectacular productivity of the maize crop. During the Classic Maya period, there were as many as 40 cities, ranging in size from 5,000 to 50,000 inhabitants. The Maya population as a whole reached into the millions. Yet to support such a large population, vast swathes of rainforest were cut down to make room for agriculture. By removing the trees, the Maya depleted the soil, enhanced erosion and worsened the effects of drought.



LEFT *The dramatic Pyramid of the Magician in the Maya city of Uxmal rises from amidst the jungle. The city was constructed in the latter half of the 9th century and became a regional capital, but just over a century later, the city had been abandoned*



ABOVE Zhu Yuanzhang, the Hongwu Emperor, founder of the Ming Dynasty

MING CHINA

By the early 1350s, the Mongol-led Yuan dynasty was straining under the combined pressures of famine, corrupt governance and rising discontent across the country. In 1351 the Red Turban Rebellion, broke out in Anhui Province. Initially intended to restore the old Song dynasty to the throne, the rebellion grew rapidly. The regime sought to crush the rebels, sending Toghtogha to crush the rebels in 1354. Upon his return he was dismissed from office, leaving Toghton Temür to rely on a series of local warlords. The country appeared to be collapsing into chaos.

Meanwhile, to the south, a man of humble means named Zhu Yuanzhang, who had been variously a peasant, a Buddhist monk and a wandering beggar, had assumed the leadership of another insurgency, which joined ranks with the remaining Red Turbans. In 1356 his army conquered the city of Nanjing, which became the capital of the Ming dynasty. The new regime obtained a reputation for good government and quickly consolidated their power. A year later, Zhu Yuanzhang launched an attack on the Yuan capital at Beijing. By 1368, the Yuans had been utterly defeated, and a new era had begun in Chinese history.

PORCELAIN AND PAINTINGS

The Ming Dynasty was a time of cultural efflorescence and patronage of the arts. The most distinctive feature of the era was its porcelain, which found itself in high demand across much of the world. The art of making the classic white-and-blue translucent pots had been discovered during the Tang dynasty (618–906 CE), but it was not until the Ming that the industry reached its greatest heights. An imperial factory was set up in the city of Jingdezhen, with a remit to produce wares for the imperial palace, and was responsible for creating a vast amount of porcelain, with single orders asking for as many as 400,000 separate pieces.

The Ming court also sponsored painters, as they sought to revive the styles that had been used during the Song dynasty. Initially, two schools

of art predominated – the Zhe school, which employed the ink-wash style of the Southern Song, while the Wu school focused on calligraphy and expressed restraint, following the pattern set by the Yuan scholar-artists.

TRADE AND EXPEDITIONS

At the same time the Ming emperors strengthened their splendour at home, they sought to expand their influence abroad. A new system of tribute and trade was developed, seeing vast fleets of Chinese ships known as 'junks' voyaging across the Indian Ocean. These expeditions ranged further than ever before, and a trade network linking East Africa, the Persian Gulf, India and China came into being.

The expanding reach of the Ming empire was made most obvious in the treasure voyages of the Yongle Emperor. Between 1405 and 1433 seven major expeditions across the Indian Ocean took place, led by Admiral Zheng He. The scale of the missions was staggering. Zheng He led a fleet of 250 ships with a crew of more than 27,000 men and helped establish China as the dominant maritime power in the Eastern hemisphere.



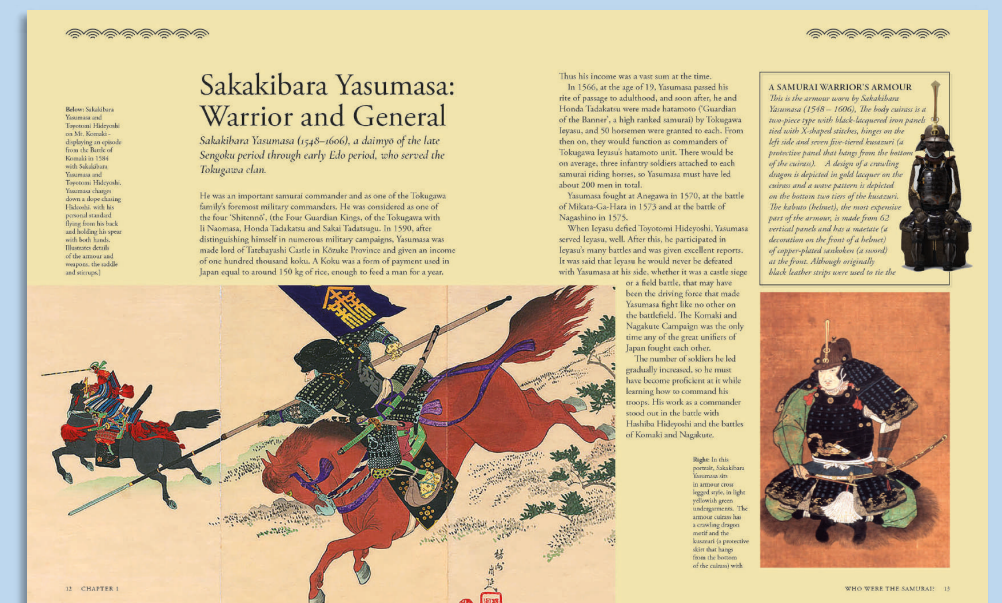
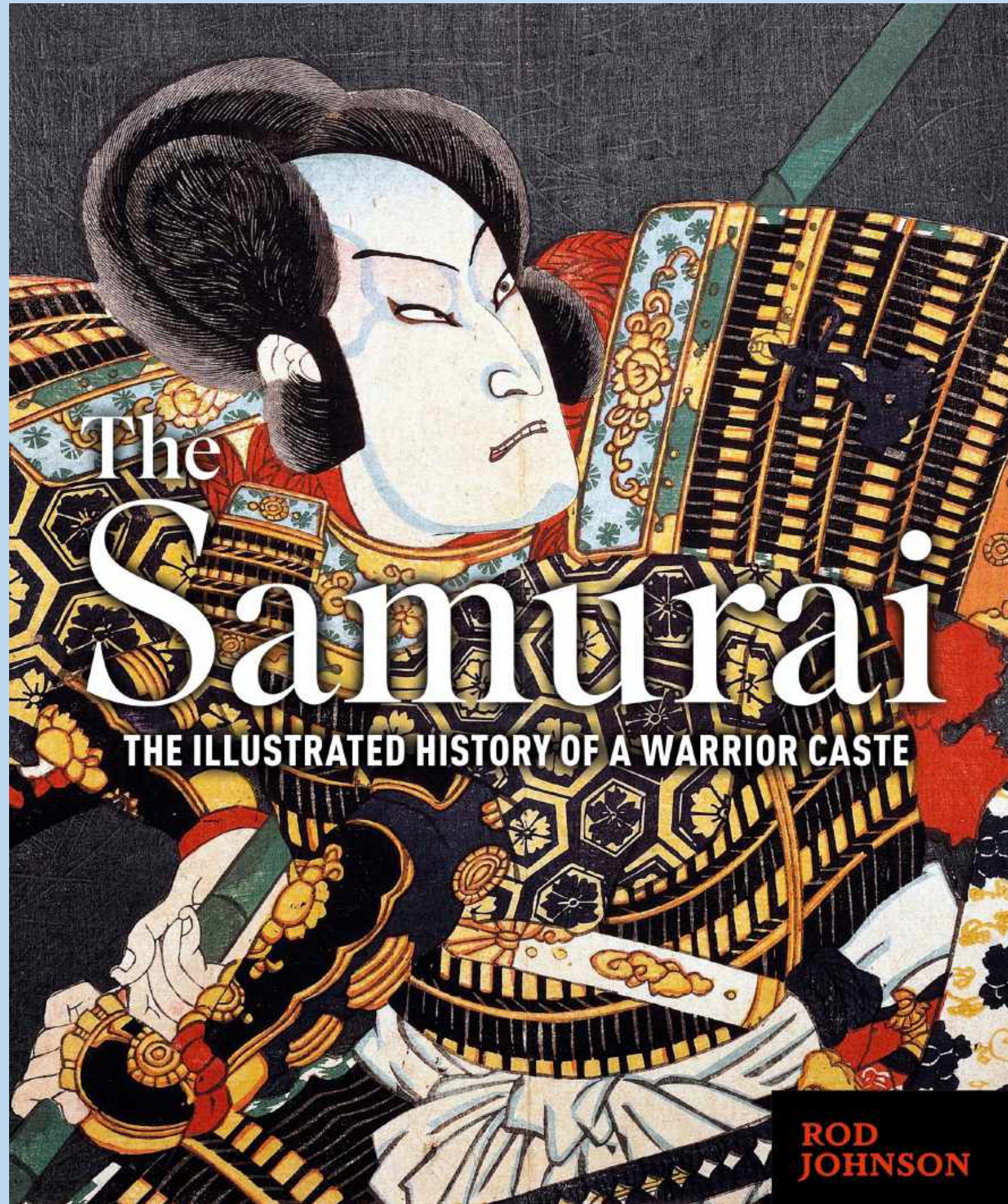
LEFT A porcelain vase from Jingdezhen, dating to the early 14th century



BELOW A modern illustration of Zheng He's treasure fleet.

The Samurai

280x225mm, 192pp, 4/4, Hardback





CHAPTER 1

Who Were the Samurai?

The samurai were, in early times, part-time 'soldiers' performing military service for their masters during times of need and who eventually became the ruling military force and part of a high-ranking, class elite that stood above ordinary citizens and soldiers. Although the function of the warrior was basic in the life of the samurai, they were also farmers, politicians, writers, law makers and enforcers. The samurai played a crucial role in the last centuries of Japanese history, shaping the history and culture of the country.

The Beginning

The Samurai: a fierce band of warriors, killing and fighting for a warlord with fearful swords striking down all those who fail to show subservience to them. Corse and vulgar men, taking whatever they need from the populace and fighting for personal gain. Or would it

be the fearless hero fighting for justice and right under a strict guidance of honour and respect for the enemy. Neither of these truly represent the samurai, these are images that the movies and novels would have we in the West believe, but these images are far from all the story, there is far, far more.

To understand the samurai it will be necessary to examine the intricacies of the samurai beliefs, feelings and values to become familiarised with the centuries-old history and culture of this original military class. Japan is about one and a half times larger than the UK and comprises of four main islands: Hokkaido, Honshu, Shikoku and Kyushu plus about 7000 smaller ones.

Its island geography enabled isolation from, yet nearness to, the Asian mainland. It is separated from Korea by the Straits of Tsushima, a distance of about 200 kilometres. This was a major barrier to foreign contact in Japan's early history.

In early times, families set up residence and farmed or fished to support their families and then took in non-family members to help and to serve. As occupational success and provision grew so others coveted their lands and provisions. There was then a need to employ others from out of the family to assist in the defence of the family holdings and gradually small armies of retainers developed. These in their turn needed household support to enable them to carry out their duties.

This process is identical to that which was being created in Western Europe with kings, lords, knights, soldiers, farmers and peasants and is known as the 'vassal system'. While the person who owes allegiance and service as subservient is called a vassal, the dominant person would be the feudal lord. This social system was crucial: the overlord was

Left: An ukiyo-e print of a victorious Samurai warrior.



Above: This group of samurai were among the first and last to be photographed. It was at the end of the 19th century. Each of them carries the two swords, symbols of the warrior class of feudal Japan. This samurai lord holds in his right hand a folded fan, a symbol of authority. Each wear the two swords 'Daishō' the symbol of the samurai class.

dependent upon his vassals to mobilize on his behalf in case of war. In return for the lord's protection the villagers supplied personnel for his troops. These personnel were engaged to serve in militaristic roles with total loyalty to their lord. The warriors then had then the opportunity to develop and impose themselves within an accepted combative society.

The history of the samurai is not as exceptional as it might initially appear, starting from unskilled levies to members of the ruling class. Throughout civilization there have been families, groups or nations that needed to defend themselves or even attack others who were considered a challenge. However, the remarkable situation in Japan extended the Japanese warrior group's power for more than a thousand years of existence, including seven centuries during which they ruled the country, from the end of the 12th to the end of the 19th centuries. During this time, the samurai would control three military governments. These were known as 'Shogunates' or 'Bakufu' and were named Kamakura, Ashikaga and the Tokugawa Shogunates.

The Yamato Court

In the 6th century, the Yamato dynasty, one of many tribes, of various origins, who had settled the lands in earlier times, founded a state modeled on the Chinese system which provided the main political influence at the time. This Yamato state steadily rose to become a respectable country ruled by the divine emperor and his Yamato Imperial Court. Starting from their humble beginnings in central Japan, the Yamato pushed south and eventually conquered the entire southern half of the country.

Japanese society at this was divided into three clear groupings. The 'uji', loosely translated as 'clan', were families bound together through loyalty to,

Below: Sakakibara Yasumasa and Toyotomi Hideyoshi on Mt. Komaki - displaying an episode from the Battle of Komaki in 1584 with Sakakibara Yasumasa and Toyotomi Hideyoshi. Yasumasa charges down a slope chasing Hidetsugu, with his personal standard flying from his back and holding his spear with both hands. Illustrates details of the armour and weapons, the saddle and stirrups.]

Sakakibara Yasumasa: Warrior and General

Sakakibara Yasumasa (1548–1606), a daimyō of the late Sengoku period through early Edo period, who served the Tokugawa clan.

He was an important samurai commander and as one of the Tokugawa family's foremost military commanders. He was considered as one of the four 'Shitennō', (the Four Guardian Kings, of the Tokugawa with Ii Naomasa, Honda Tadakatsu and Sakai Tadatsugu. In 1590, after distinguishing himself in numerous military campaigns, Yasumasa was made lord of Tatebayashi Castle in Kōzuke Province and given an income of one hundred thousand koku. A Koku was a form of payment used in Japan equal to around 150 kg of rice, enough to feed a man for a year.

Thus his income was a vast sum at the time.

In 1566, at the age of 19, Yasumasa passed his rite of passage to adulthood, and soon after, he and Honda Tadakatsu were made hatamoto ('Guardian of the Banner', a high ranked samurai) by Tokugawa Ieyasu, and 50 horsemen were granted to each. From then on, they would function as commanders of Tokugawa Ieyasu's hatamoto unit. There would be on average, three infantry soldiers attached to each samurai riding horses, so Yasumasa must have led about 200 men in total.

Yasumasa fought at Anegawa in 1570, at the battle of Mikata-Ga-Hara in 1573 and at the battle of Nagashino in 1575.

When Ieyasu defied Toyotomi Hideyoshi, Yasumasa served Ieyasu, well. After this, he participated in Ieyasu's many battles and was given excellent reports. It was said that Ieyasu he would never be defeated with Yasumasa at his side, whether it was a castle siege

or a field battle, that may have been the driving force that made Yasumasa fight like no other on the battlefield. The Komaki and Nagakute Campaign was the only time any of the great unifiers of Japan fought each other.

The number of soldiers he led gradually increased, so he must have become proficient at it while learning how to command his troops. His work as a commander stood out in the battle with Hashiba Hideyoshi and the battles of Komaki and Nagakute.

Right: In this portrait, Sakakibara Yasumasa sits in armour cross legged style, in light yellowish green undergarments. The armour cuirass has a crawling dragon motif and the kusazuri (a protective skirt that hangs from the bottom of the cuirass) with

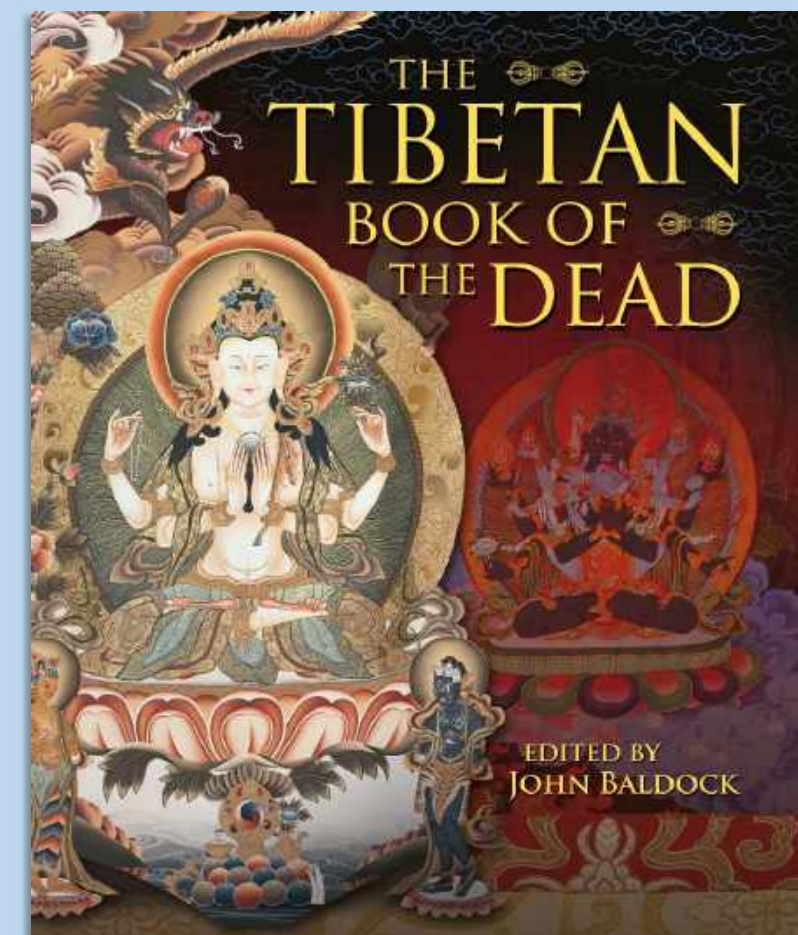
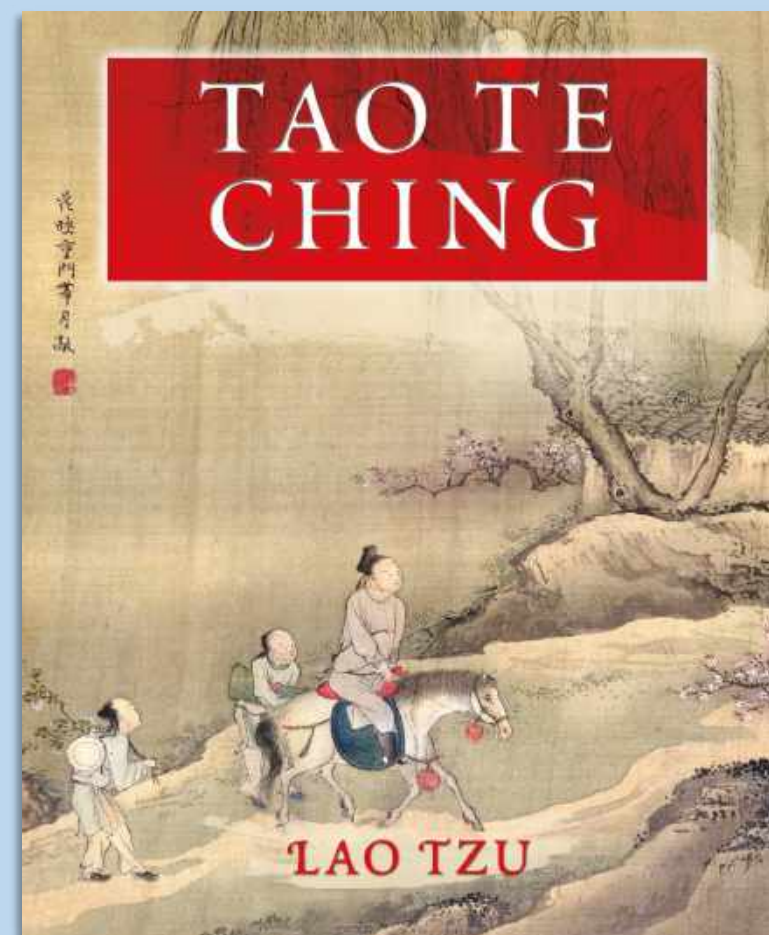
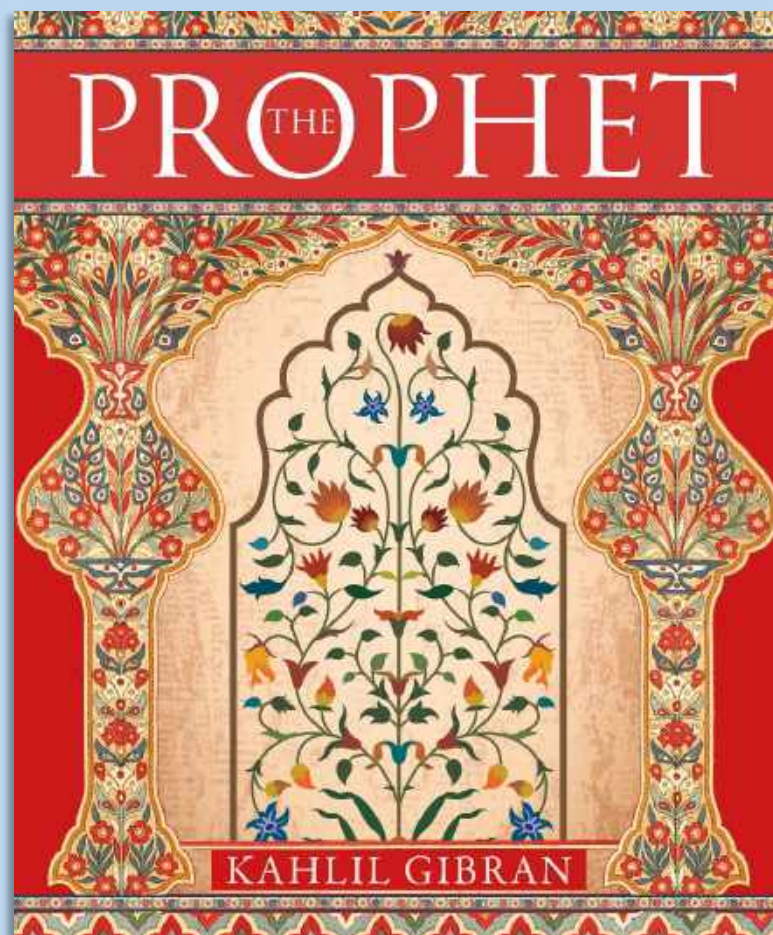
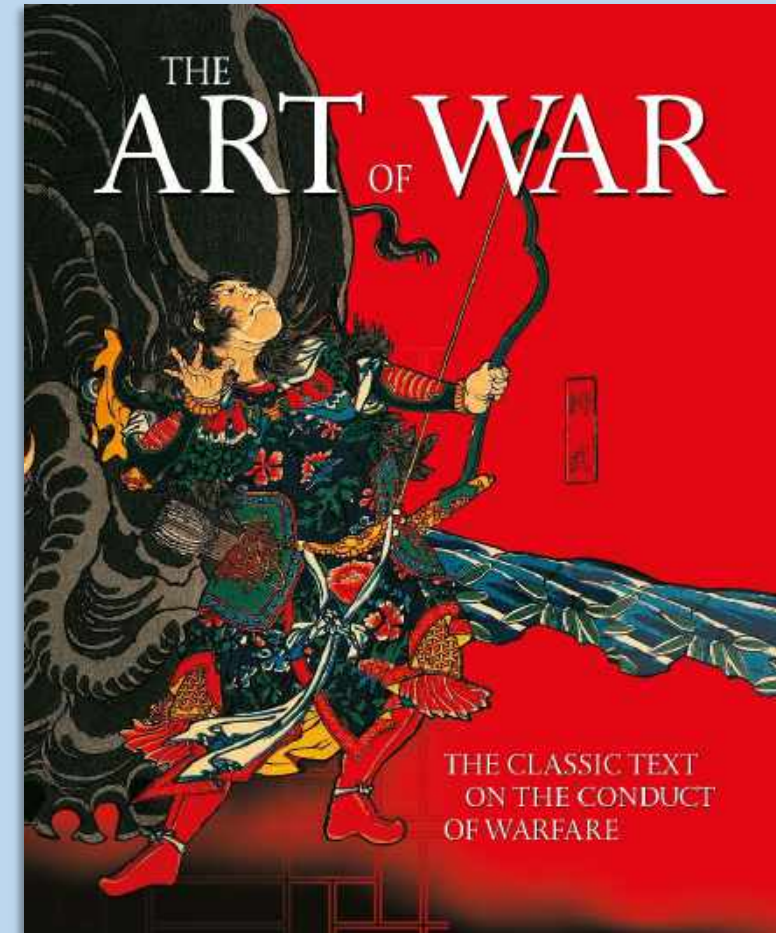
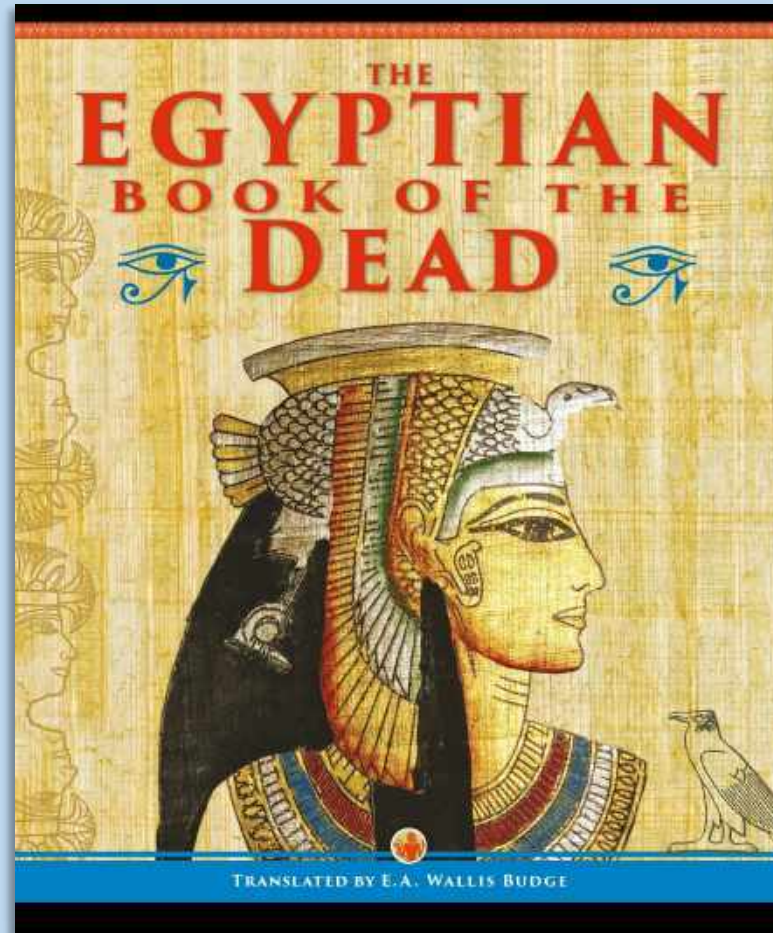
A SAMURAI WARRIOR'S ARMOUR

This is the armour worn by Sakakibara Yasumasa (1548 – 1606). The body cuirass is a two-piece type with black-lacquered iron panels tied with X-shaped stitches, hinges on the left side and seven five-tiered kusazuri (a protective panel that hangs from the bottom of the cuirass). A design of a crawling dragon is depicted in gold lacquer on the cuirass and a wave pattern is depicted on the bottom two tiers of the kusazuri. The kabuto (helmet), the most expensive part of the armour, is made from 62 vertical panels and has a maetate (a decoration on the front of a helmet) of copper-plated sankoken (a sword) at the front. Although originally black leather strips were used to tie the



Hardback Classics

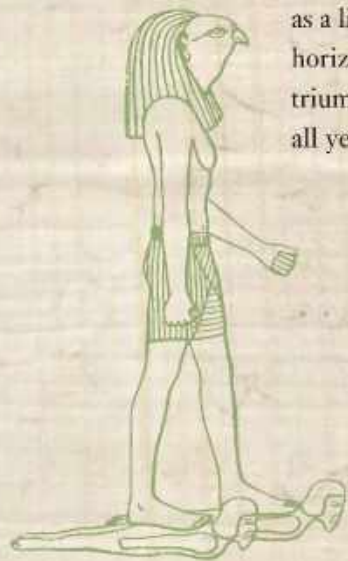
203x168mm, 128pp, 4/4, Hardback



I. A HYMN OF PRAISE TO RA WHEN HE RISETH IN THE EASTERN PART OF HEAVEN.

Behold Osiris Ani the scribe who recordeth the holy offerings of all the gods, who saith: 'Homage to thee, O thou who hast come as Khepera, Khepera, the creator of the gods. Thou risest, thou shinest, making bright thy mother [Nut], crowned king of the gods. [Thy] mother Nut doeth homage unto thee with both her hands. The land of Manu receiveth thee with content, and the goddess Maat embraceth thee at the two seasons. May he give splendour, and power, and triumph, and a coming-forth [*i.e.*, resurrection] as a living soul to see Horus of the two horizons to the *ka*¹ of Osiris, the scribe Ani, triumphant before Osiris, who saith: Hail all ye gods of the Temple of the Soul, who

weigh heaven and earth in the balance, and who provide food and abundance of meat. Hail Tatunen, One, creator of mankind and of the substance of the gods of the south and of the north, of the west and of the east. Ascribe [ye] praise unto Ra, the lord of heaven, the Prince, Life, Health, and Strength, the Creator of the gods, and adore ye him in his beautiful Presence as he riseth in the *atet*² boat. They who dwell in the heights and they who dwell in the depths worship thee. Thoth and Maat both are thy recorders. Thine enemy is given to the fire, the evil one hath fallen; his arms are bound, and his legs hath Ra taken from him. The children of impotent revolt shall never rise up again.



The House of the Prince keepeth festival, and the sound of those who rejoice is in the mighty dwelling. The gods are glad [when] they see Ra in his rising; his beams flood the world with light. The majesty of the god, who is to be feared, setteth forth and cometh unto the land of Manu; he maketh bright the earth at his birth each day; he cometh unto the place where he was yesterday. O mayest thou be at peace with me; may I behold thy beauties; may I advance upon the earth; may I smite the Ass; may I crush the evil one; may I destroy Apep in his hour; may I see the *abtu*³ fish at the time of his creation, and the *ant* fish in his creation, and the ant boat in its lake. May I see Horus in charge of the rudder, with Thoth and Maat beside him; may I grasp

the bows of the *seket*⁴ boat, and the stern of the *atet* boat. May he grant unto the *ka* of Osiris Ani to behold the disk of the Sun and to see the Moon-god without ceasing, every day; and may my soul come forth and walk hither and thither and whithersoever it pleaseth. May my name be proclaimed when it is found upon the board of the table of offerings; may offerings be made unto me in my presence, even as they are made unto the followers of Horus; may there be prepared for me a seat in the boat of the Sun on the day of the going forth of the god; and may I be received into the presence of Osiris in the land of triumph!

1 According to the Egyptian belief man consisted of a body *xa*, a soul *ba*, an intelligence *xu*, and *ka*. The word *ka* means 'image'.

2 A name for the boat of the evening sun.

3 The *abtu* and the *ant* fishes are sometimes depicted on coffins swimming at the bows of the boat of the sun.

4 A name for the boat of the rising sun.



Then almitra spoke again and said, And what of Marriage, master?

And he answered saying:

You were born together, and together you shall be for evermore.

You shall be together when the white wings of death scatter your days.

Aye, you shall be together even in the silent memory of God.

But let there be spaces in your togetherness.

And let the winds of the heavens dance between you.



Love one another, but make not a bond of love:
Let it rather be a moving sea between the shores of your souls.

Fill each other's cup but drink not from one cup.

Give one another of your bread but eat not from the same loaf.

Sing and dance together and be joyous, but let each one of you
be alone,

Even as the strings of a lute are alone though they quiver with
the same music.

Give your hearts, but not into each other's keeping.

For only the hand of Life can contain your hearts.

And stand together, yet not too near together:

For the pillars of the temple stand apart,

And the oak tree and the cypress grow not in each other's
shadow.





1

The tao that can be described
is not the eternal Tao.
The name that can be spoken
is not the eternal Name.

The nameless is the boundary of Heaven
and Earth.
The named is the mother of creation.

Freed from desire, you can see the hidden
mystery.
By having desire, you can only see what is
visibly real.

Yet mystery and reality
emerge from the same source.
This source is called darkness.

Darkness born from darkness.
The beginning of all understanding.

THE RISE AND FALL OF MARANZANO

Maranzano, the winner of the Castellammarese War, called a meeting of the Cosa Nostra in a big hall on Washington Avenue in the Bronx. Four or five hundred mafiosi turned up. Maranzano, still a shadowy figure, was introduced by Joe Profaci. He then made a speech explaining why Masseria had been eliminated. Things were going to be different, he said. In the new set-up, he was going to be the '*capo di tutti capi*' – the 'boss of all bosses'. The New York Mafia was going to be divided up into new families. Each would have a boss and an underboss and beneath them there would be lieutenants, or *capo régimes*. Soldiers would then be assigned to each lieutenant.

Maranzano then spelt out the rules. The Cosa Nostra came before anything else. The penalty for talking about it – or sleeping with another member's wife – was death. They were not even allowed to talk to their own wives about the Cosa Nostra, on pain of death. And mafiosi must obey orders from their bosses and lieutenants or die.

Members were not allowed to lay hands on another member in anger and disputes were to be decided by hearings. Maranzano insisted that the war was now

over. There was to be no more ill-feeling. They must forgive and forget.

'If your own brother was killed, don't try to find out who did it to get even,' said Maranzano. 'If you do, you pay with your life.'

These rules were adopted by other Mafia families across the United States.

Maranzano also set up New York's Five Families, naming Luciano, Profaci and his own chief of staff, Joe Bonanno, as bosses of their respective mobs. Vincent 'The Executioner' Mangano would be head of the Gambino family, while Tom Gagliano, who had originally been appointed by Masseria, would remain head of the Reina family. Vito Genovese would be underboss of the Luciano family, Albert Anastasia would become underboss of the Mangano family, and Tommy Lucchese would be appointed underboss of what now became the Gagliano family. Some of those who had been in the Schiro family under Maranzano would remain with him as a palace guard. The others would join the Gagliano family.

A huge banquet was then held in Maranzano's honour. Mafiosi across America were obliged to buy tickets. Even Al Capone sent \$6,000. As guests arrived,

they threw their contribution on to a table. 'I never saw such a pile of money in my life,' said Joe Valachi.

Maranzano worked out of the offices of a real estate company in the Grand Central Building at 46th Street and Park Avenue. In September 1931, he told his men not to come into the office carrying guns because he was expecting a police raid. But soon afterwards he was warning his sidekicks that they would have to 'go on the mattress again'. That is, another war was about to break out, so they would have to move from apartment to apartment, sleeping on mattresses. Maranzano had decided that he had to get rid of Luciano and Genovese. Costello, Adonis, Capone and Willie Moretti from Fort Lee, New Jersey would also have to go, along with Dutch Schultz, who was not part of the Cosa Nostra. Maranzano hired Irish gunman Vincent Coll to kill Luciano, paying him \$25,000 in advance. There would be another \$25,000 when the job was done. Coll was known as the 'Mad Dog' after killing a child and wounding several others during a failed attempt to kidnap one of Dutch Schultz's lieutenants.

On 10 September 1931, Maranzano invited Luciano to his main office on the ninth floor of the Helmsley Building. The plan was that Coll would turn up shortly afterwards and kill him. But Luciano had received a tip-off. He sent two assassins dressed as policemen along to the office – probably Lansky's hitman Red Levine and Schultz's lieutenant Abraham 'Bo' Weinberg – along with Tommy Lucchese. They shot and stabbed Maranzano to death. As they were making their escape they bumped into Coll who fled, thinking they were real police officers.

It was not the only killing that day – as many as 60 mafiosi were gunned down. Luciano claimed to have organized it all, but it seems that the younger Americanized gangsters, the 'Young Turks', simply seized the opportunity to rid themselves of the



The body of Salvatore Maranzano after he was murdered in his office on the ninth floor of the Helmsley Building

'Moustache Petes' – the older Sicilian immigrants, who were more interested in continuing the traditions and vendettas they had brought from the old country than making money.

The Five Families

MARANZANO (Bonanno)
Founder: Salvatore Maranzano
Active: 1890s–present
Territory: New York City, New Jersey, South Florida, Arizona, Las Vegas, Northern California and Montreal, Quebec



PROFACI (Colombo)
Founder: Giuseppe Profaci
Active: 1928–present
Territory: New York City, Long Island, New Jersey, Massachusetts, South Florida, Las Vegas, Los Angeles



MANGANO (Gambino)
Founder: Vincent 'The Executioner' Mangano
Active: 1900s–present
Territory: New York City, Long Island, New Jersey, Connecticut, Baltimore, South Florida, Atlanta, Los Angeles, Las Vegas, and Palermo, Sicily



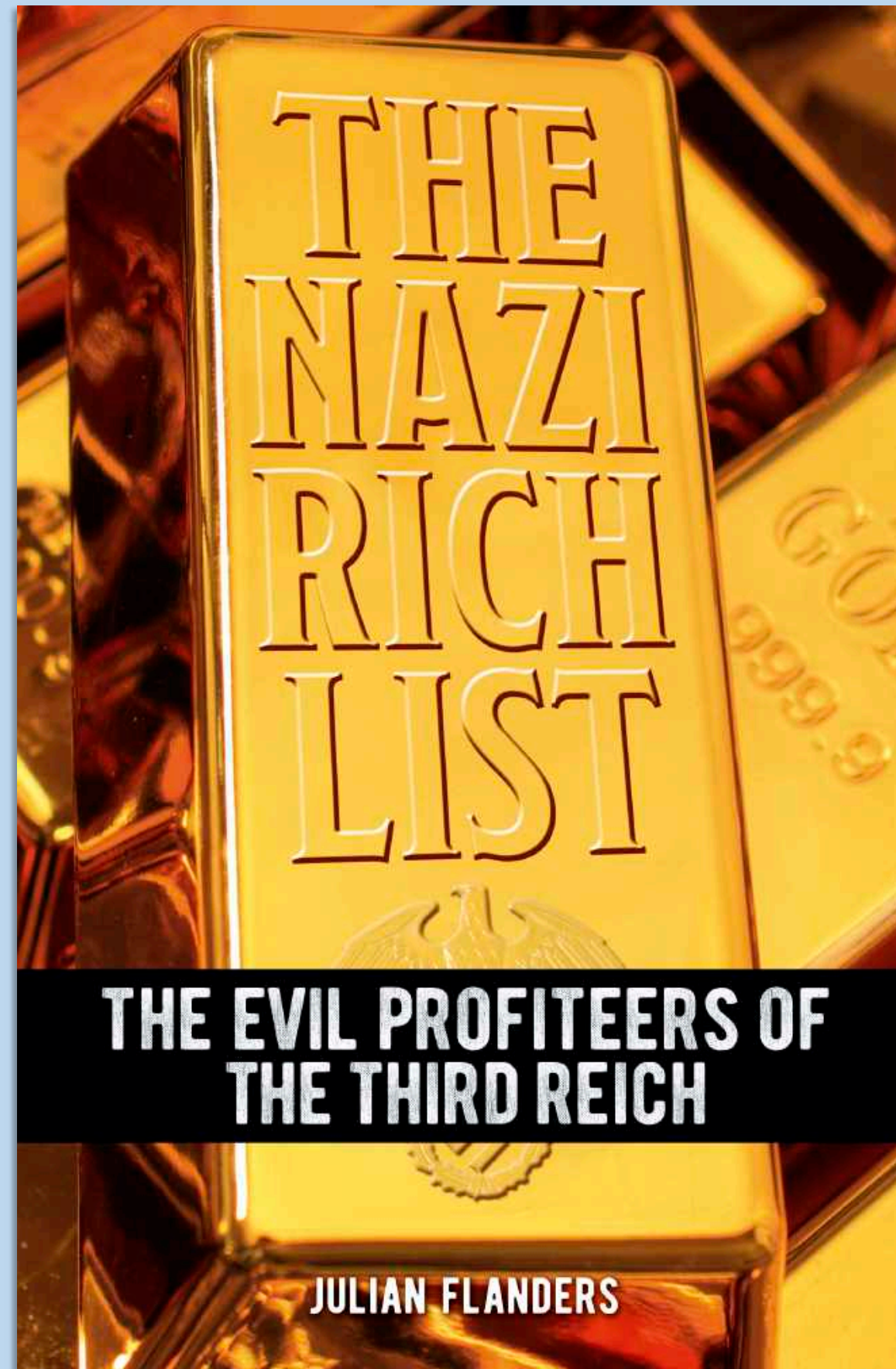
LUCIANO (Genovese)
Founder: Giuseppe Morello
Active: 1890s–present
Territory: New York City, upstate New York, New Jersey, Massachusetts, Connecticut, South Florida, Las Vegas



GAGLIANO (Lucchese)
Founder: Tommy Gagliano
Active: 1920s–present
Territory: New York City, New Jersey, South Florida, Las Vegas

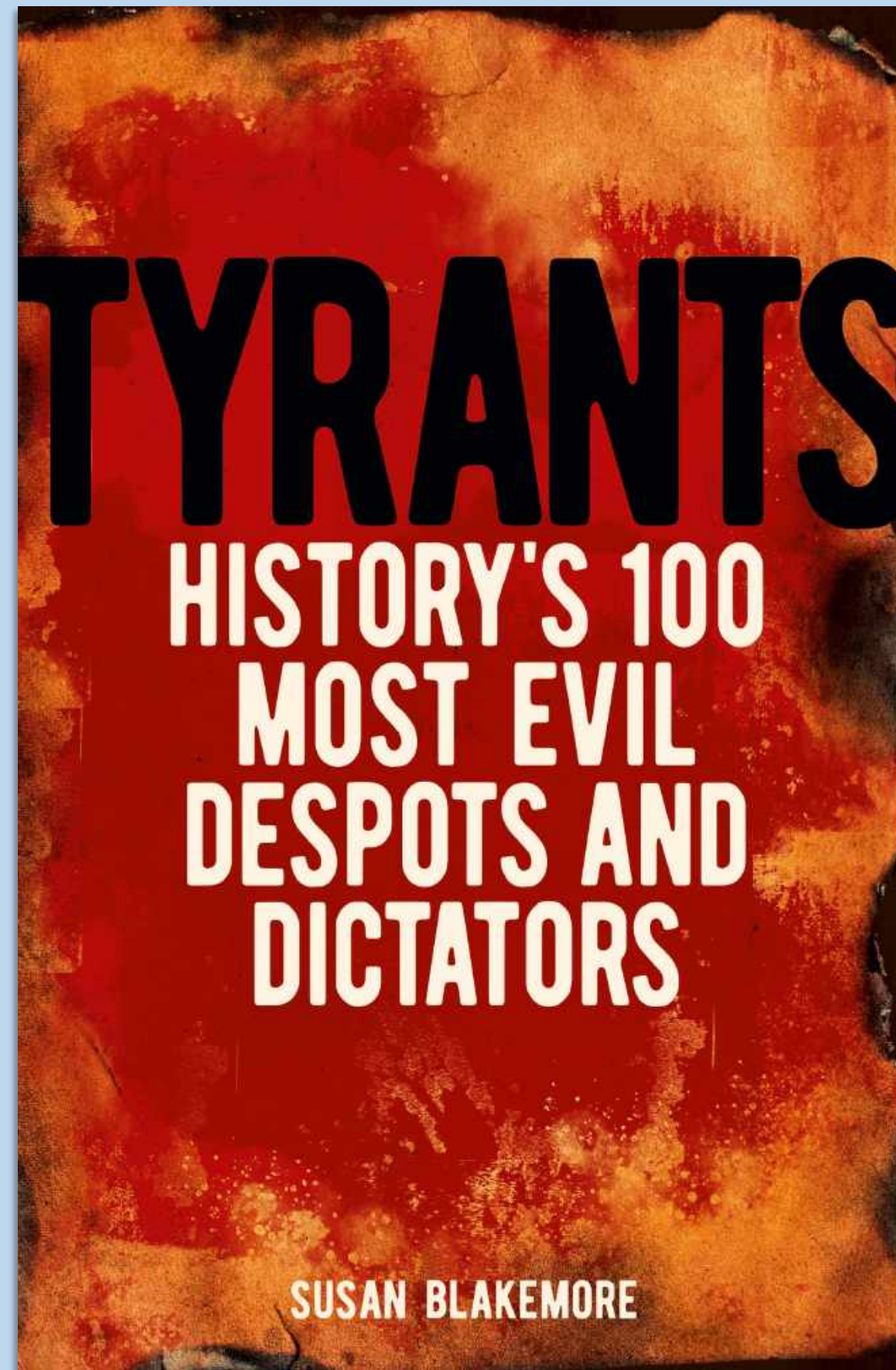
The Nazi Rich List

234x153mm, 256pp, 1/1, Paperback



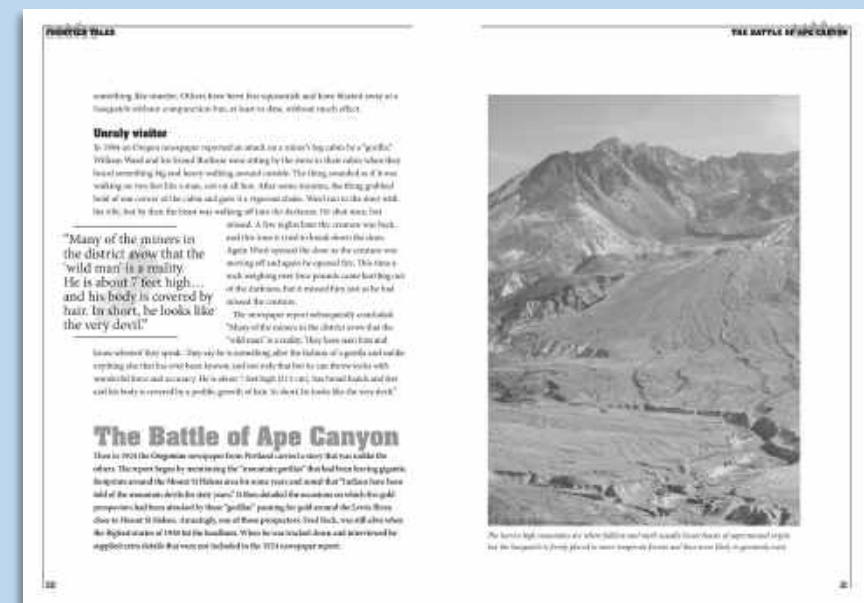
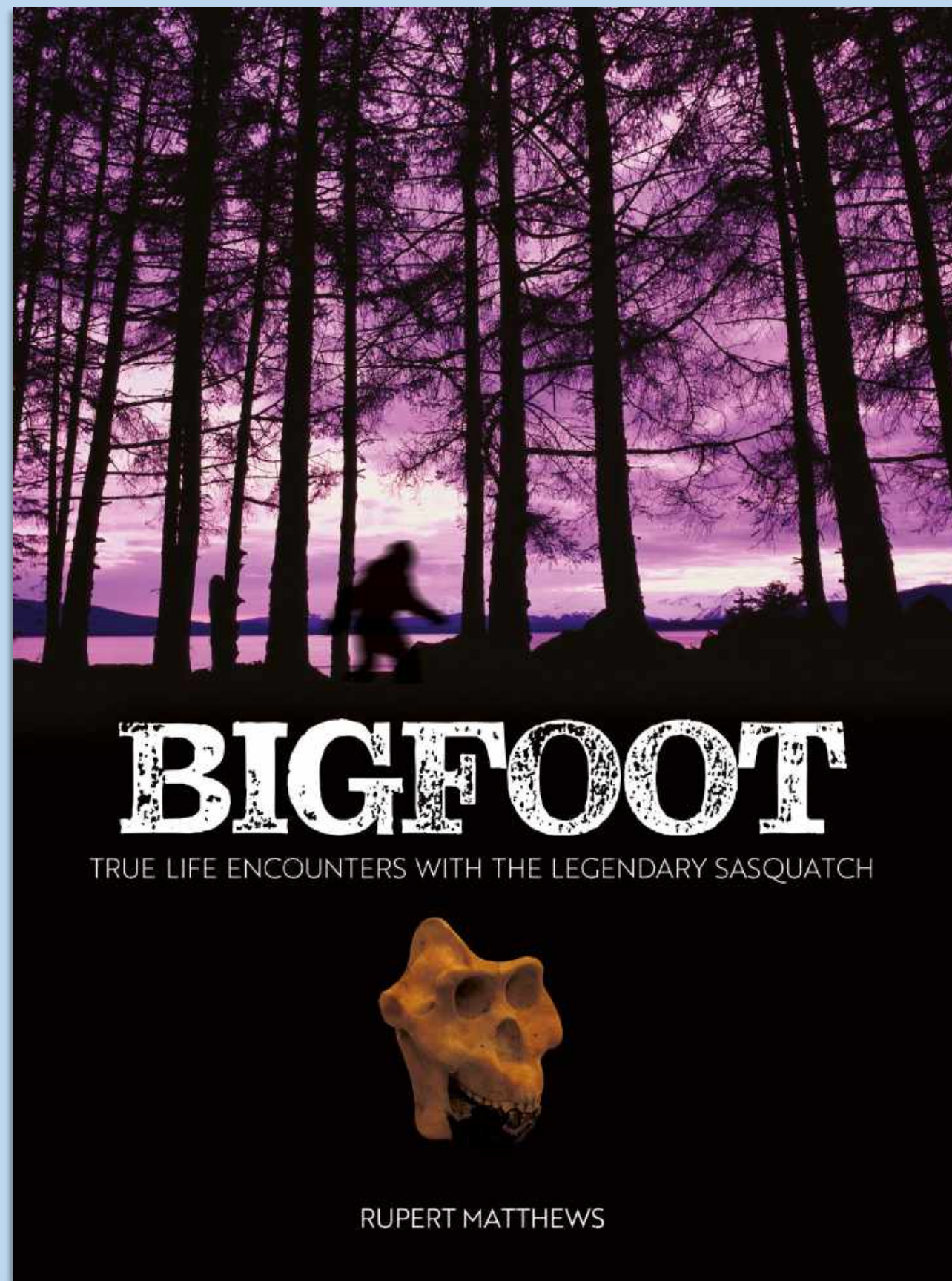
Tyrants

234x153mm, 256pp, 1/1, Paperback



Bigfoot

228x163mm, 208pp, 1/1, Paperback



The Abominable Snowman

The Yeti, or Abominable Snowman as the press preferred to call it, hit the news headlines in the year 1951. Mountaineer Eric Shipton came back from an expedition to the Himalayas with some photographs that had been taken in the high Himalayan snows. They were of a series of footprints that ran for hundreds of yards across a snowfield. Although the footprints were roughly human in outline they were enormous. The photographs dominated the British newspapers for days and rapidly spread to other countries.



The photo that sparked international interest in the Yeti was taken by mountaineer Eric Shipton in 1951.

Even if the general public was taken by surprise by these dramatic pictures, mountaineers and old India hands were less shocked. For decades they had been hearing stories about the strange half-man, half-ape beasts that lurked in the mountains. The only surprise was that somebody had finally managed to photograph a series of tracks.

The first outsider to hear tales of the strange beasts was the noted hill walker B.H. Hodgson. He was in northern Nepal in 1825 when his porters saw a tall creature covered with long, dark hair, which bounded off in apparent fear. Hodgson did not see the creature himself, but from the descriptions given by his excited porters he thought that it must have been some sort of orang-utan.

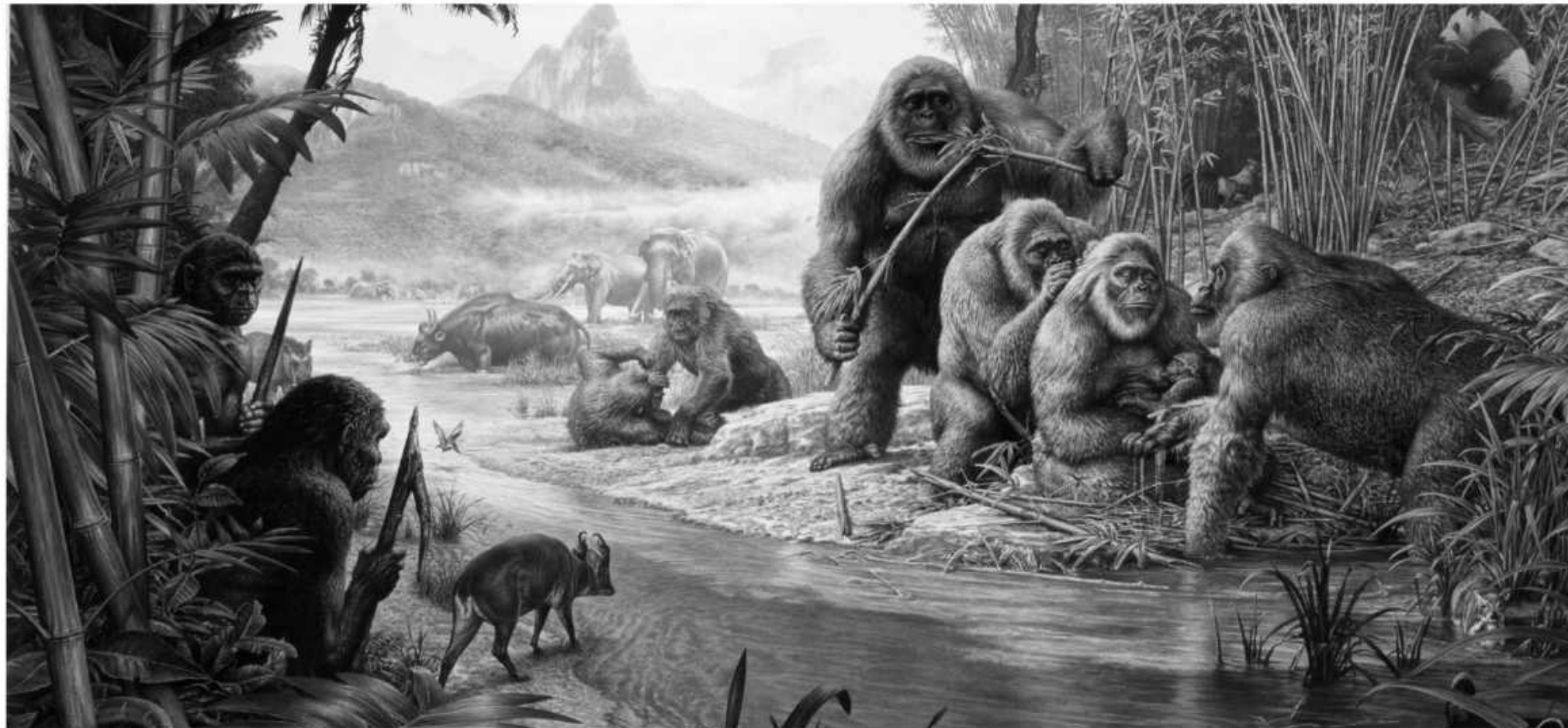
In 1889, Major L.A. Waddell was on a mapping expedition in the mountains of Sikkim when he found a trackway of footprints that seemed to be those of a barefooted man with enormous feet. His local guide declared that they belonged to "the hairy

wild man" and insisted that they should leave the area at once.

Another event took place at around this time but it did not become public knowledge until the 1920s, when William Knight wrote to *The Times* about it. Although what he saw was not the Yeti of common imagination it does give a hint of the wide range of experiences that were attributed to the Abominable Snowman. Knight was riding from Tantok to Sedonchen in Sikkim when he stopped to give his horse a rest and sat down beside a track that ran through the heavily forested mountains.



Eric Shipton was an intrepid climber and explorer; he took part in the reconnaissance of Everest in 1951.



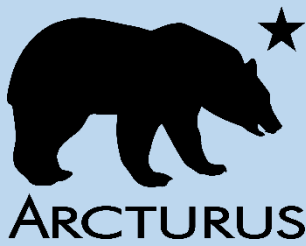
Within this context the Asian ape mentioned most often is the massive *Gigantopithecus*, which seems to have become extinct sometime around 150,000 years ago—or perhaps rather more recently. This ape lived across India, Southeast Asia and southern China. Fossils of the ape are rare and consist only of a handful of teeth and a couple of jaws. So far as the creature can be reconstructed from these sparse remains, it was massive. It was about 9 feet (273 cm) tall if it chose to stand on its hind legs, though it is usually considered to have spent most of its time on four legs like a modern gorilla. Its teeth indicate that it was primarily a vegetarian.

It must be admitted that the fossil record for *Gigantopithecus*, and for Asian apes in general, is so poor that it cannot really be used to prove anything. *Gigantopithecus*

Depiction of the huge ape Gigantopithecus stalked by Homo erectus hunters in China 400,000 years ago.

might have become extinct 150,000 years ago, the date of the most recent finds, or it might not have done. It might have been the only big ape with a wide distribution across southern Asia, or there might have been a dozen species wandering about. The Yeti might be descended from any one of these apes, or from none of them. We simply don't know.

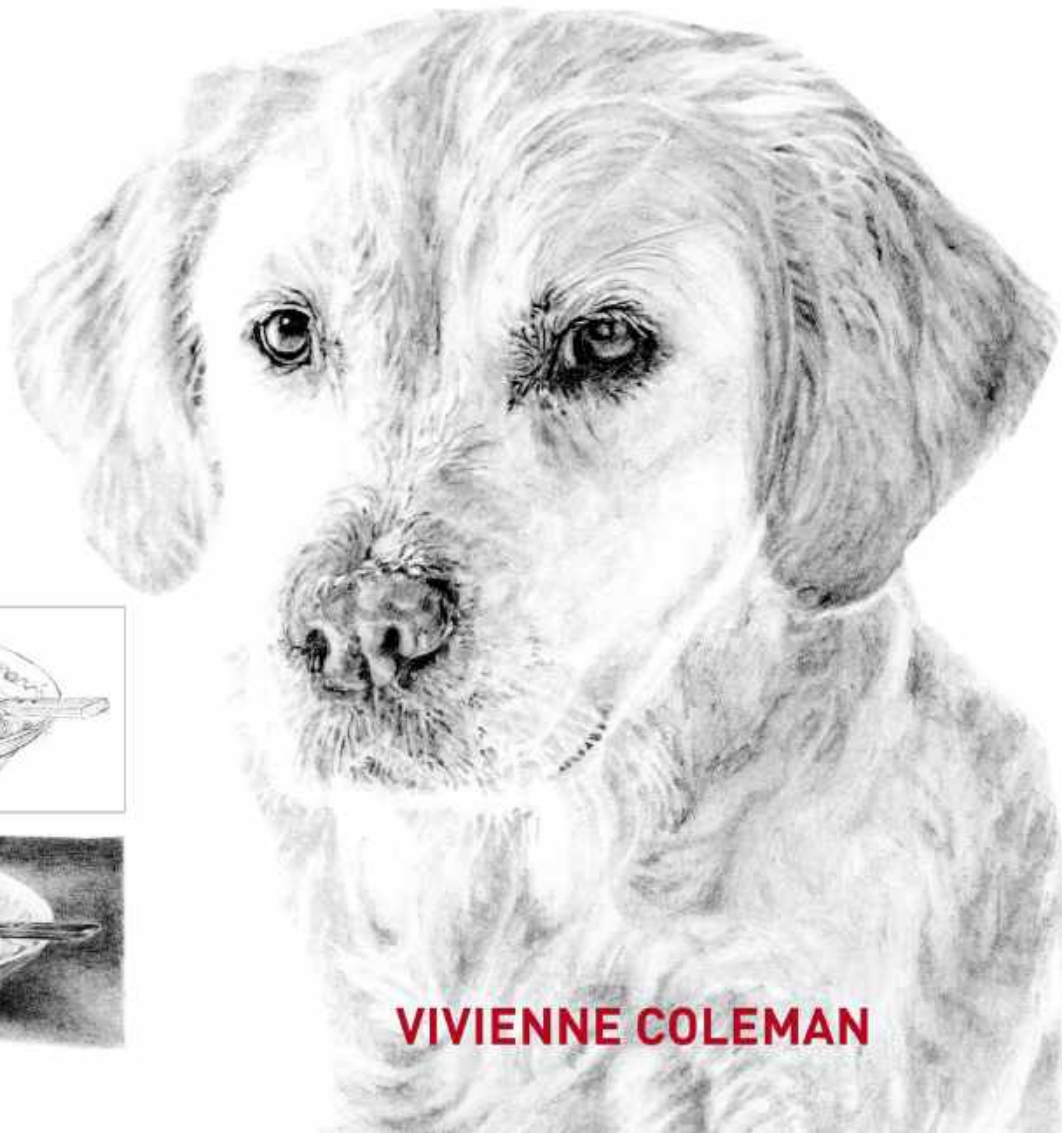
Whatever the truth behind the Yeti might turn out to be, it is still a popular subject among cryptozoologists. On 26 September 2007 the original print of the Eric Shipton photograph that launched the Yeti into the world's media sold at auction for £3,600.



Step By Step Drawing

280x225mm, 96pp, 1/1, Paperback

The Artist's STEP-BY-STEP GUIDE TO DRAWING HOW TO CREATE BEAUTIFUL IMAGES



VIVIENNE COLEMAN

Still Life

Apple in a Bowl

This example of an apple, knife and napkin in a bowl uses several of the techniques we've practised so far and combines different shapes and textures.



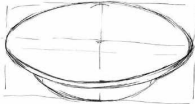
- Circular, oval, elliptical and irregular shapes
- Wood (bowl handle)
- Metal (knife blade)
- Ceramic (bowl)
- Nail (napkin)
- Fabric (bowl napkin)

The arrangement was illuminated by an overhead electric lamp and placed on a raised platform so it could be viewed at almost eye level, with part of the bowl underside visible.

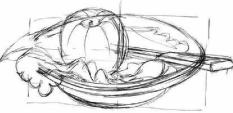
In this step-by-step exercise, you will first lay out the complete drawing before filling in the tones with varied and blended shading. I drew my version freehand, using an HB pencil.



Step 1 Find a comfortable place to settle in and draw. If it's been a while since your last drawing, don't worry, simply get up to stretch and then sit back down. Don't worry too much about the perspective of the bowl at the moment as this can be adjusted.



Step 2 Start by sketching a rectangle around the edge of the bowl. Use an arrangement. Then divide this rectangle into quarters. The rectangle defines the approximate limits of your drawing and will also help you to gauge the size and relative proportions of the various objects.



Step 3 Here, the aim is to quickly sketch the positions and proportions of the objects. Don't refine them later. Still, using an HB pencil or harder grade such as 2B if you prefer, keep straightening and roughly outline the shapes of the apple, knife and napkin in the bowl, ensuring a section of the bowl where the napkin folds over the bowl rim. Use the rectangle quarters and rule of thumb (see page 16) to help correctly place your outlines.

For the apple, add a stalk and two curved strokes to describe its rounded shape. Don't worry too much about the perspective of the knife at the moment as this can be adjusted.



Step 4 When you are satisfied with your layout, use an eraser to remove unwanted lines and lighten any others so that just the essential details remain. Use light strokes to refine your drawing and draw two lines fairly close together to create a narrow border along the napkin edge.

Next, decide the final position of your vanishing point for the knife and mark this on the left side of the page. I took two attempts before I was happy with the position of the vanishing point and ended up lowering it and adjusting the knife at a different angle. Use the vanishing point to draw the knife handle and blade in perspective, and a ruler for the straight lines if needed. (See page 20 on drawing perspective.)

STILL LIFE

Step 5 Continue to work on your outline drawing until you are happy with the result. For example, adjust the napkin shape a little more by refining the double lines along the scalloped edge, and add further details such as the two studs on the knife handle. Erase any unwanted lines.



Step 6 Use the HB pencil to outline the main areas of dark, medium and light tones on the various objects. You can leave the far side of the bowl blank because there is little tone variation here. You could also use a harder pencil lead, such as a 2H, to create the light strokes if you wish, but take care not to press too hard and indent the paper surface.

Step 7 Use an eraser to lighten the layout lines so that they don't show through the final drawing, especially in areas of pale tones.



STILL LIFE



Step 8 Add some background details – a few simple lines to denote areas of light and shade on the table surface.



Step 9 Use an HB pencil with a blunt point to draw horizontal strokes to shade in the background table surface.

Background shading technique Use a smooth, blunt pencil point and soft, horizontal strokes to draw the surface tones, fading the strokes in either end so that there is no abrupt edge to the end of each line.

Use a light touch on the pencil point and add lines to fill in the gaps between the lines and use increased pressure on the pencil point to create darker tones.

Add more soft, horizontal strokes to the background surface as before, leaving gaps between some of the strokes.

Use a mixture of long and short, soft zig-zag lines and pencil strokes to extend the shaded area outwards and away from the edge of the rounded object.

Finally, turn the page through 90 degrees to add strokes in a different direction to add more layers of darker soft strokes to gradually complete the coverage of the area in an even tone.

Yellow Labrador

If you would like to create a pet portrait as a gift for yourself or someone else, then here is your chance to produce a beautifully detailed drawing in just 20 steps. This exercise is based on a photograph and builds on techniques you have already practised and materials with which you are familiar.

- Blending
- Measuring to achieve accurate proportions
- HB, 2H, 3H, 5H pencils
- Ruler

Step 1 Working from a Photograph - Starting your Drawing

The black and white photograph shown here is used because it is easier to see the different tones. Most images are colour these days, although many phones and computers have built-in apps to convert colour images easily to black and white, or you could try scanning or copying your photograph into black and white.

First, decide the size of your drawing. Would you like to draw it the same size as the photo or larger? If it is larger, then it will be easier to scale up to a round number such as double the size. Remember, too, that larger drawings will take much longer to complete.

The original drawing used in this exercise is the same size as the photo, roughly 18 cm wide x 20 cm high (7 x 8 inches).

Once you have settled on a size, draw a rectangle the size of your photograph, and then draw very lightly the required size rectangle on your page. Your drawing is the same size as the photograph, the rectangle will be the same size. If your drawing is twice the size of the photograph, you will need to draw a rectangle in your page that is double the length and height of the photograph. These rectangles are key to measuring and laying out your drawing.



Here is the lovely Labrador dog we are going to draw, shown at full size. Notice the striking contrast between the subtle tones of the fur and the deep dark tones of the eyes and nose.

The light shows from the left side of the picture to create soft shadows on the opposite side, which gives the effect of three dimensions and brings real depth and life to the portrait.

31

31

Still Life

Apple in a Bowl

This example of an apple, knife and napkin in a bowl uses several of the techniques we've practised so far and combines different shapes and textures:



- Circular, oval, oblong and irregular shapes
- Wood (knife handle)
- Metal (knife blade)
- Ceramic (bowl)
- Fruit (apple)
- Fabric (linen napkin).

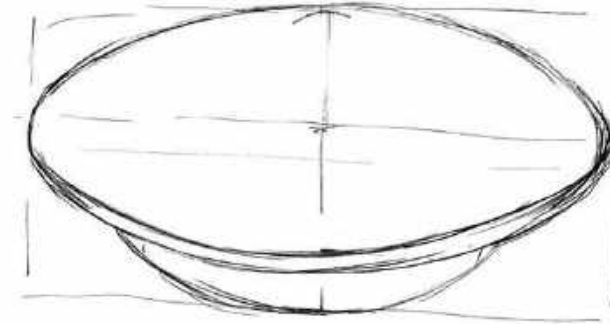
The arrangement was illuminated by an overhead electric lamp and placed on a raised platform so it could be viewed at almost eye level, with part of the bowl underside visible.

In this step-by-step exercise, you will first lay out the complete drawing before filling in the tones with swirled and blended shading. I drew my version freehand, using an HB pencil.



Step 1

Find a comfortable place to settle in and draw. If it's been a while since your last drawing, don't worry, simply get up to speed quickly with a few practice strokes and shades like these, on a scrap piece of paper.



Step 2

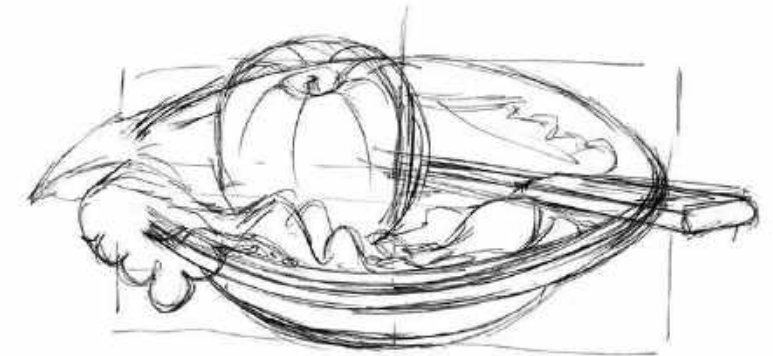
Start by sketching a rectangle around the edge of the still-life arrangement, then divide this rectangle into quarters. The rectangle defines the approximate limits of your drawing and will also help you to gauge the size and relative proportions of the various objects.

Add a horizontal line just above the midline and use this as the mid-point to sketch the symmetrical oval shape of the top of the bowl (see page 15 on drawing oval shapes). Next, add a narrow rim along the bottom edge of the bowl, then the bowl base.

Step 3

Here, the aim is to quickly sketch the positions and proportions of the objects (and refine them later). Still using an HB pencil or harder grade such as 2H if you prefer, jump straight in and roughly outline the shapes of the apple, knife and napkin in the bowl, erasing a section of the bowl where the napkin folds over the bowl rim. Use the rectangle quarters and rule of thumb (see page 16) to help correctly place your outlines.

For the apple, add a stalk and few curved strokes to describe its rounded shape. Don't worry too much about the perspective of the knife at the moment as this can be adjusted.

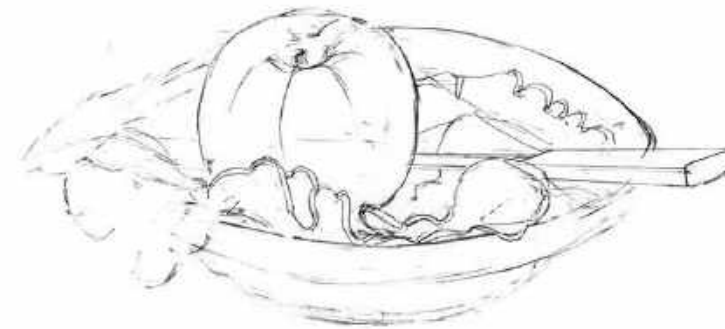


Step 4

When you are satisfied with your layout, use an eraser to remove unwanted lines and lighten any others so that just the essential details remain.

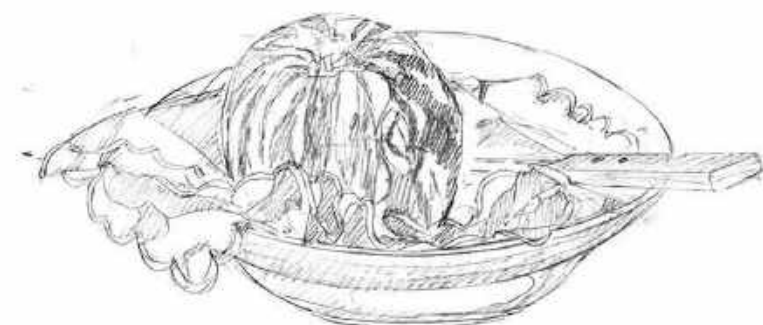
Use light strokes to refine your drawing and draw two lines fairly close together to create a narrow border along the napkin edge.

Next, decide the final position of your vanishing point for the knife and mark this on the left side of the page. I took two attempts before I was happy with the position of the vanishing point and ended up lowering it and redrawing the knife at a different angle. Use the vanishing point to draw the knife handle and blade in perspective, and a ruler for the straight lines if needed. (See page 20 on drawing perspective.)



Step 5

Continue to work on your outline drawing until you are happy with the result. For example, adjust the napkin shape a little more by refining the double lines along the scalloped edge, and add further details such as the two studs on the knife handle. Erase any unwanted lines.

**Step 6**

Use the HB pencil to outline the main areas of dark, medium and light tones on the various objects. You can leave the far side of the bowl blank because there is little tonal variation here. You could also use a harder pencil lead, such as a 2H, to create the light strokes if you wish, but take care not to press too hard and indent the paper surface.

Step 7

Use an eraser to lighten the layout lines so that they don't show through on the final drawing, especially in areas of paler tones.

**Step 8**

Add some background details – a few simple lines to denote areas of light and shade on the table surface.

**Step 9**

Use an HB pencil with a blunt point to draw horizontal strokes to shade in the background table surface.

**Background shading technique**

Use a smooth, blunt pencil point and soft, horizontal strokes to draw the surface tones, fading the strokes at either end so that there is no abrupt 'edge' to the end of each line.



Use a light touch on the pencil point and pale tones to swirl along the edge of the rounded object.



Add more horizontal and swirl strokes to fill in the gaps between the lines and use increased pressure on the pencil point to create darker tones.



Add more soft, horizontal strokes to the background surface as before, leaving gaps between some of the strokes.



Use a mixture of long and short, soft zig-zag lines and swirl strokes to extend the shaded area outwards and away from the edge of the rounded object.

Finally, turn the page through 90 degrees to add strokes in a different direction to add more layers of darker swirl strokes to gradually complete the coverage of the area in an even tone.

Yellow Labrador

If you would like to create a pet portrait as a gift for yourself or someone else, then here is your chance to produce a beautifully detailed drawing in just 20 steps. This exercise is based on a photograph and builds on techniques you have already practised and materials with which you are familiar:

- Blending
- Measuring to achieve accurate proportions
- HB, 2H, 3H, 5H pencils
- Ruler

Detailed drawings do take longer to complete than sketches but, by following each step carefully, your patient efforts will be rewarded with stunning results. This exercise is also more challenging in that the range of pale tones in the patterns of fur require a consistently light and delicate touch of your pencil.

If you would like to produce your best dog drawing, it is so important to get the correct proportions at the start, and this exercise will guide you through the steps to accomplish exactly that.

Step 1

Working from a Photograph – Starting your Drawing

The black and white photograph shown here is used because it is easier to see the different tones. Most images are colour these days, although many phones and computers have built-in apps to convert colour images easily to black and white, or you could try scanning or copying your photograph into black and white.

First, decide the size of your drawing. Would you like to draw it the same size as the photo or larger? If it is larger, then it will be easier to scale up to a round number such as double the size. Remember, too, that larger drawings will take much longer to complete.

The original drawing used in this exercise is the same size as the photo: roughly 18 cm wide x 20 cm tall (7 x 8 inches).

Once you have settled on a size, draw a rectangle the size of your photograph, and then draw very faintly the required size rectangle on your page. If your drawing is the same size as the photograph, the rectangle will be the same size. If your drawing is twice the size of the photograph, you will need to draw a rectangle on your page that is double the length and height of the photograph. These rectangles are key to measuring and laying out your drawing.



Here is the lovely Labrador dog we are going to draw, shown at full size.

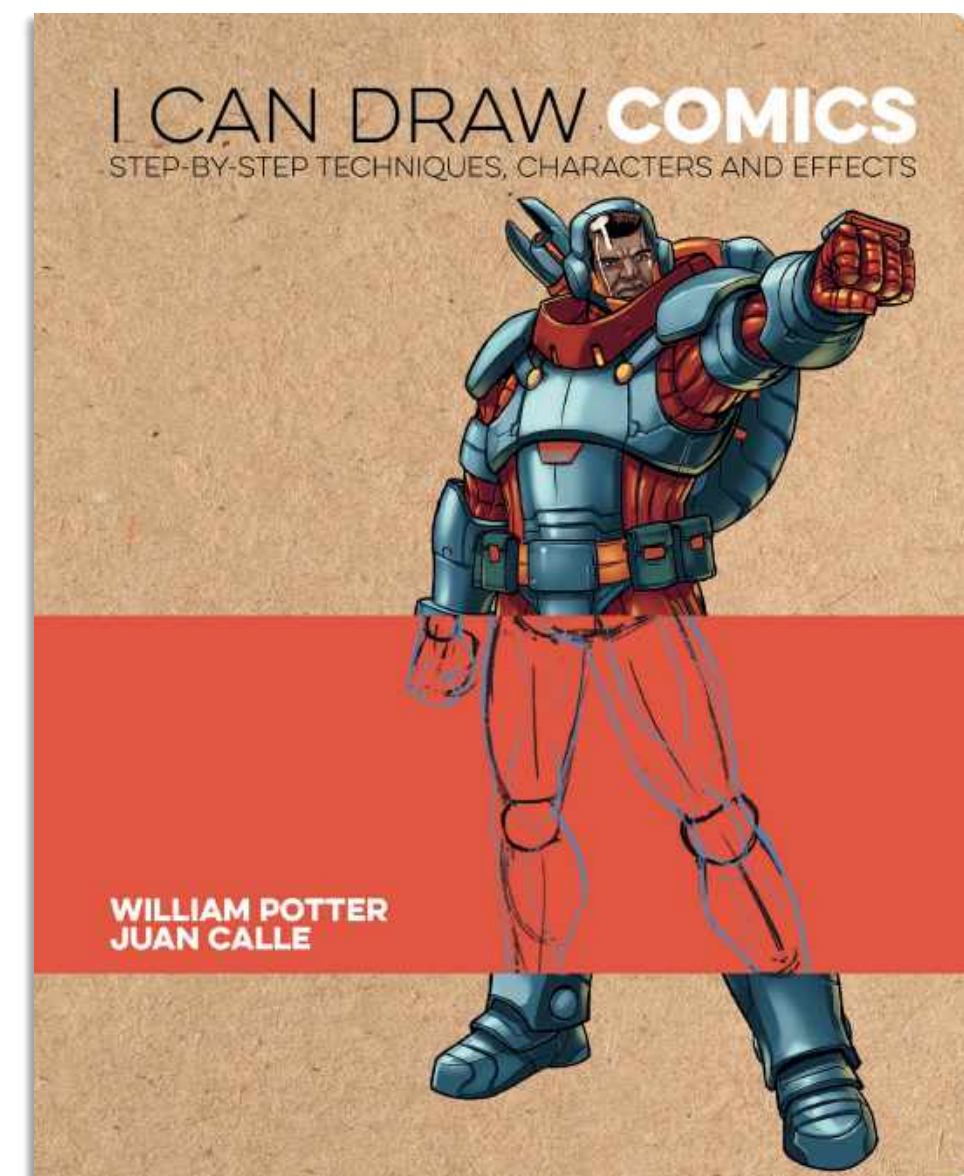
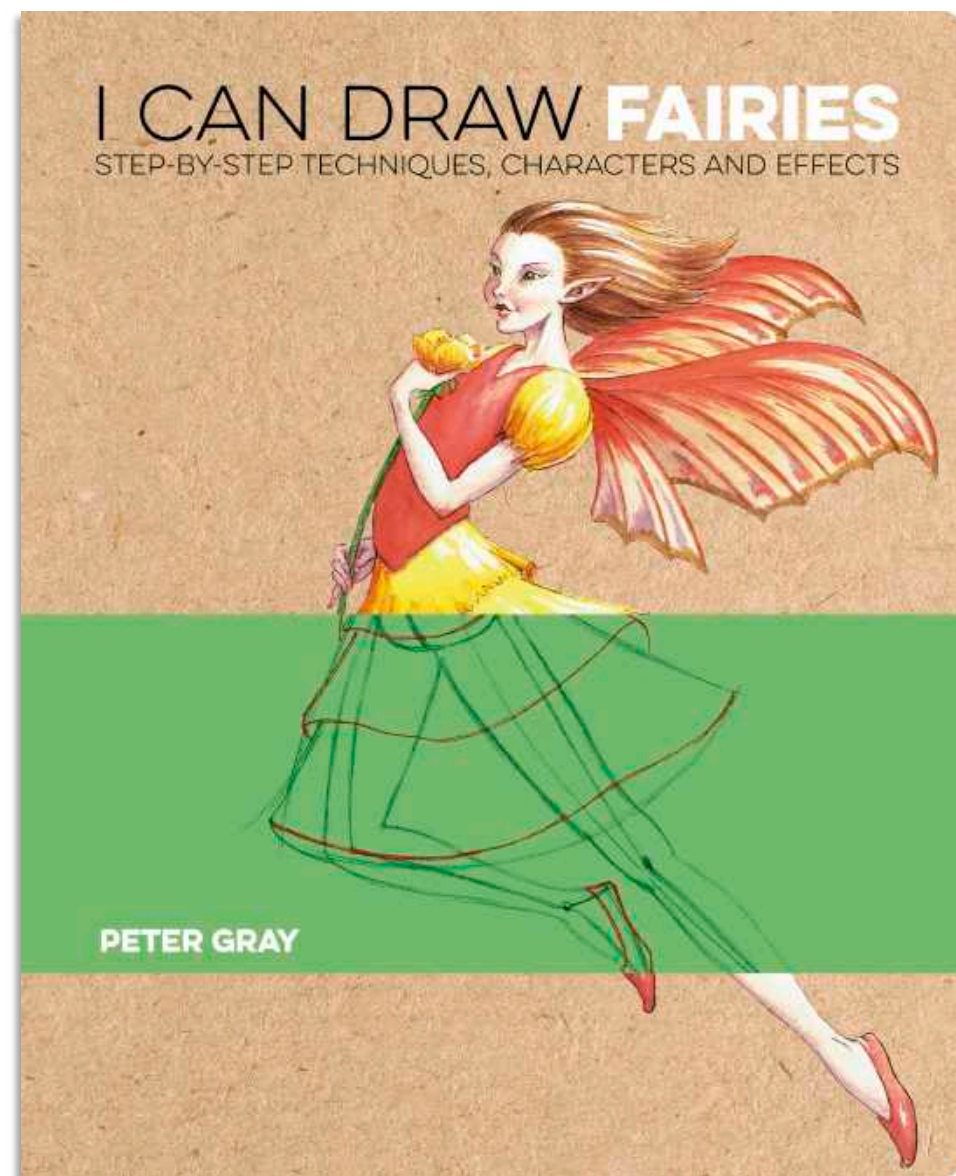
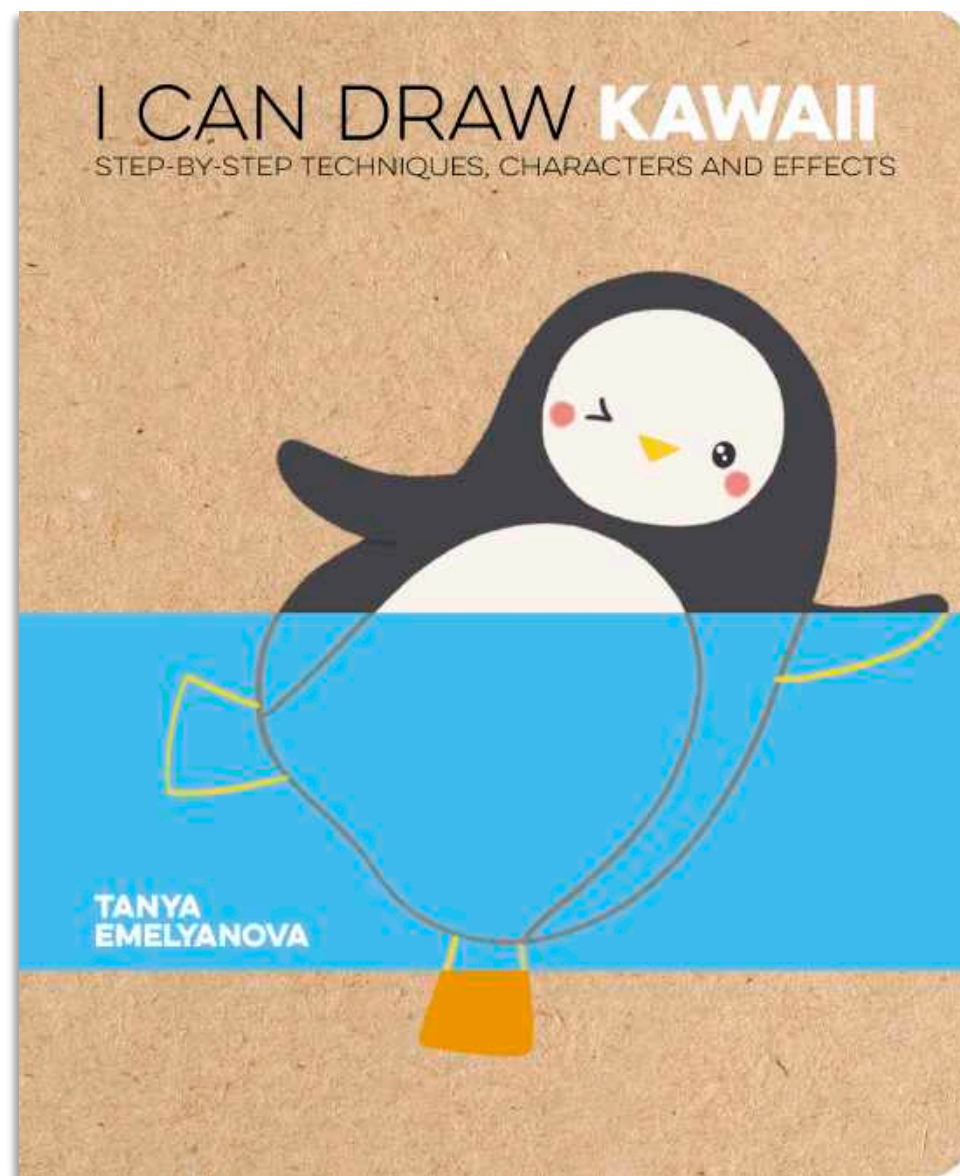
Notice the striking contrast between the subtle tones of the fur and the deep dark tones of the eyes and nose.

The light shines from the left side of the picture to create soft shadows on the opposite side, which gives the effect of three dimensions and brings real depth and life to the portrait.



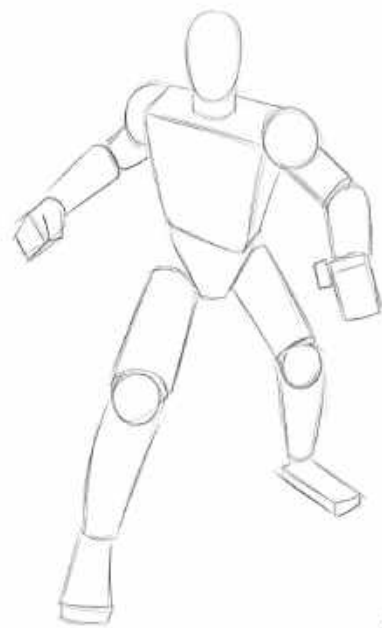
I Can Draw

215x175mm, 128pp, 4/4, Paperback



G-FORCE

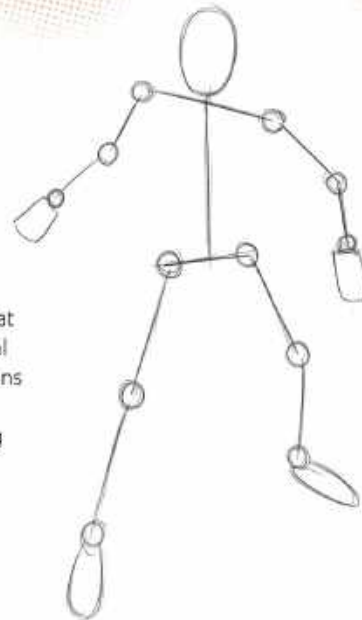
Are you ready to draw your first superhero? Rocket scientist Todd Travis was building the warp drive of an experimental ship when the engine exploded. The cosmic energy gave him the ability to control gravity. Now he fights crime across the galaxy!



2 Use basic shapes to build on top of your wireframe. His hips are triangular, and his chest tapers to the waist. The leg that is closest to us looks slightly longer than the trailing leg.



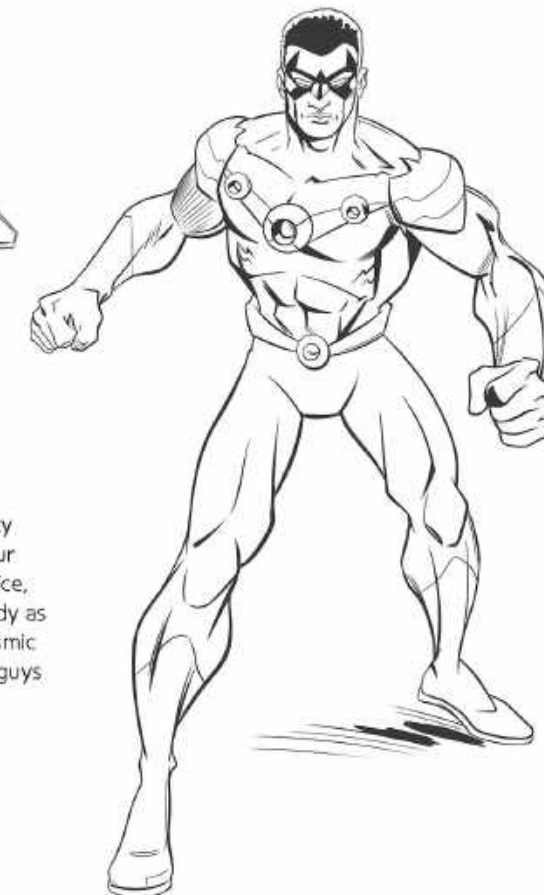
1 It's important that you get the initial pose and proportions right. Sketch a wireframe showing limbs and joints.



3 Now you can bulk up the body and outline where the features will go. Sketch in G-Force's leg and arm muscles, and define those in his stomach area. Round off the joints and add details to the hands and feet, including fingers and knuckles.



5 The inking stage is your opportunity to choose the strongest lines in your illustration and bring them out with nice, sharp line work. Keep your hand steady as you outline all those muscles. This cosmic hero is bulked-up and brainy, so bad guys had better beware!



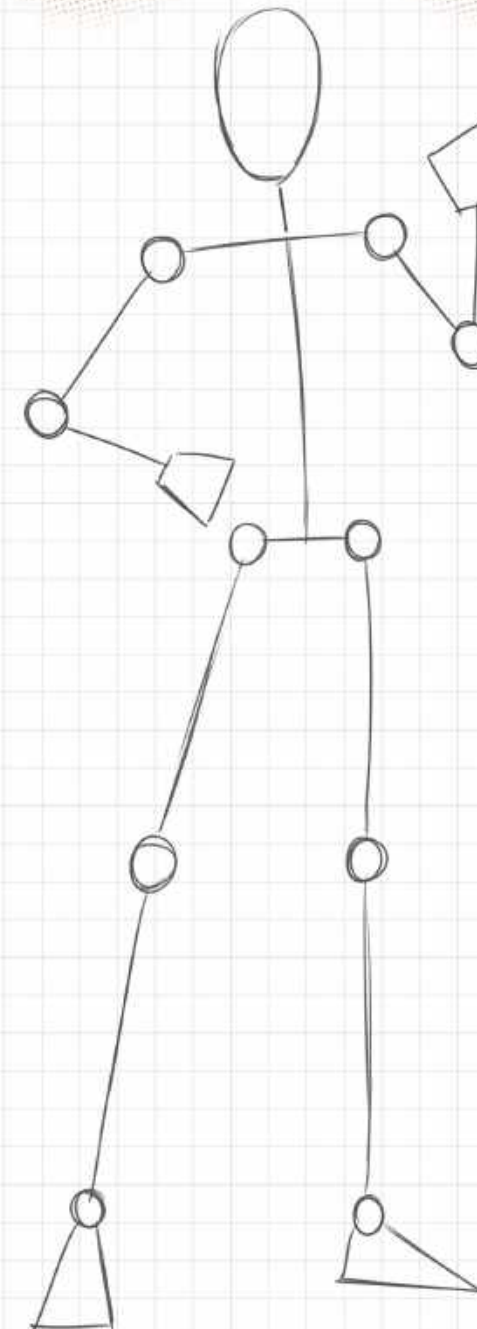
4 It's costume time! What is your newly invented character going to look like? G-Force has some high-tech nodes across his chest and on his belt, which help him keep control of his gravity powers. His identity is hidden by a domino mask.

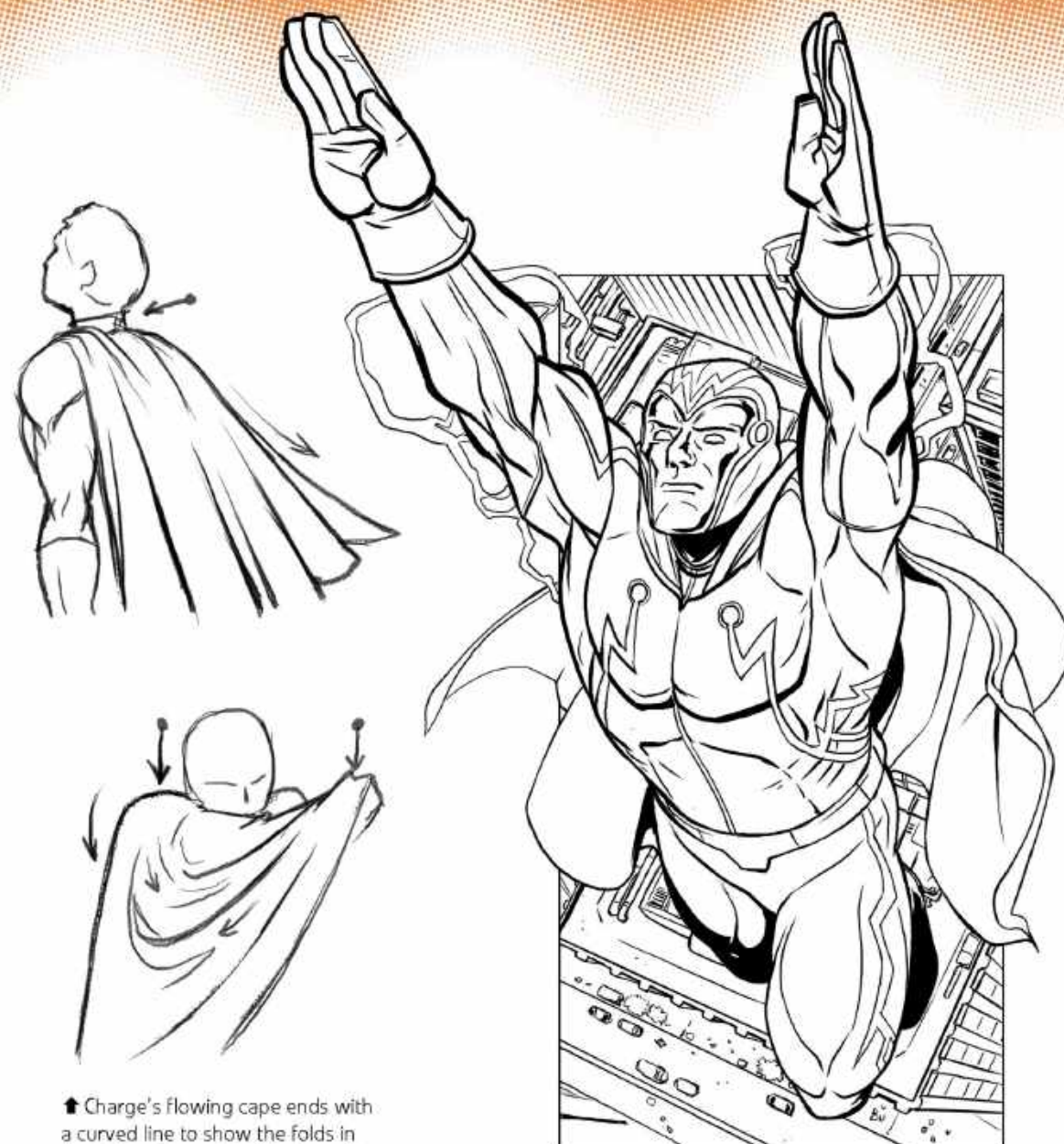


6 The bold tones of Victory's outfit contrast well with the energy glow around her hand, making the image more dramatic. She looks relaxed but confident, and her functional, no-frills jacket shows her down-to-earth side. Move over ... there's a new hero in town!

PRACTICE

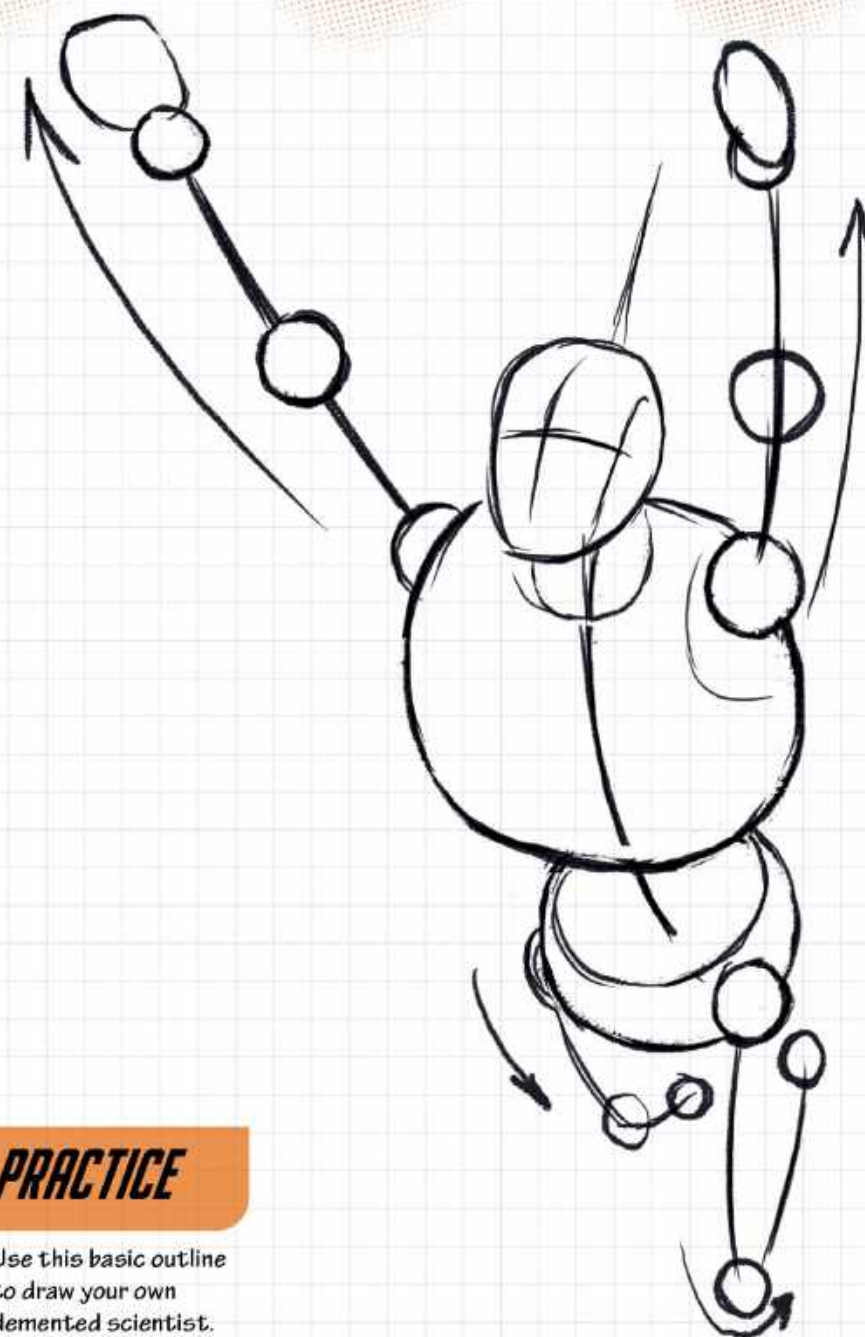
Use this basic outline to draw your own demented scientist.





↑ Charge's flowing cape ends with a curved line to show the folds in the fabric. For each fold, draw a line flowing up the cape towards where it is pinned on the hero. The line gets thinner as the fold disappears.

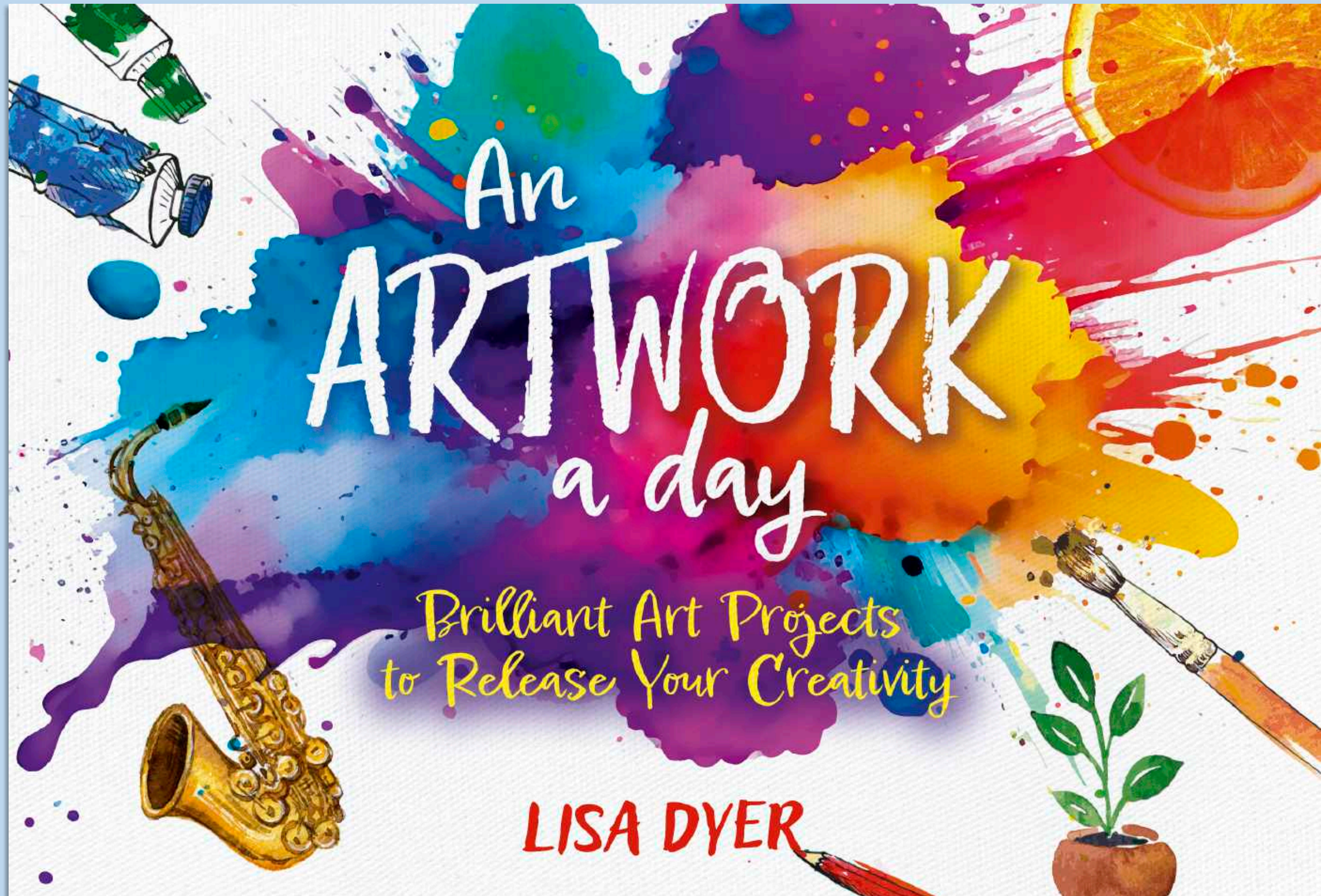
4 The inked lines are much thicker around the parts of the body closest to the reader – the hands and arms. The lines get thinner towards the knees. A crackle of electrical light traces his upper body



PRACTICE

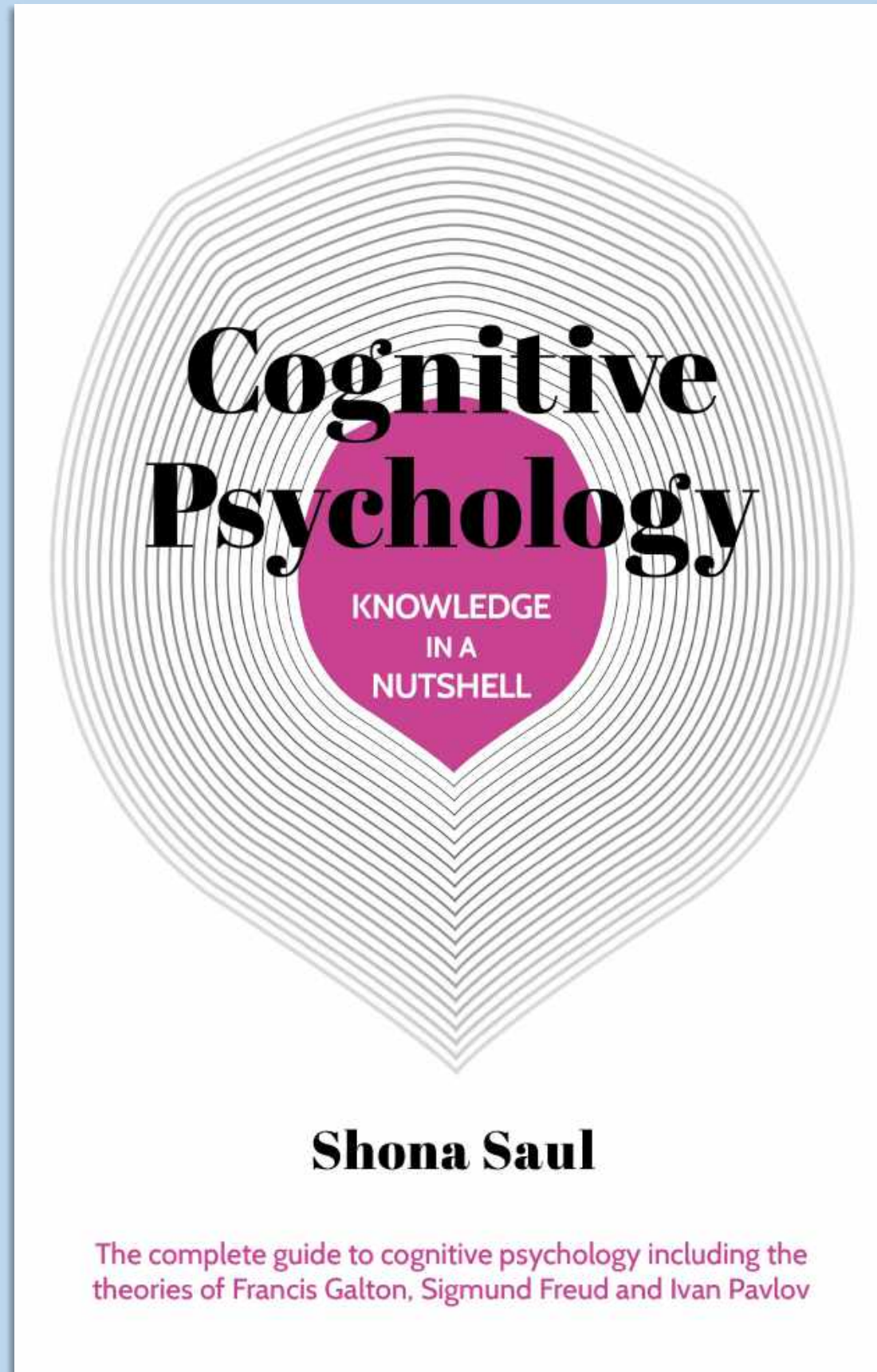
Use this basic outline to draw your own demented scientist.

An Artwork a Day
220x250mm, 256pp, 4/4, Paperback





Knowledge in a Nutshell
216x135mm, 240pp, 1/1, Paperback



**Knowledge in a Nutshell:
Behavioural Psychology**

The Book of Numbers

228x163mm, 192pp, 1/1, Hardback

THE BOOK OF NUMBERS

FROM ZERO TO INFINITY, AN ENTERTAINING
LIST OF EVERY NUMBER THAT COUNTS

13 is regarded as
unlucky in many cultures
because of the superstition
that 13 is an unlucky
human figure since it
is one more than the
dozen that can be
counted on the fingers of
both hands.

13

007

James Bond, also known as
007 (pronounced 'double-
oh-seven'), is a fictional
British agent created by Ian
Fleming.

555 is the prefix for
fake telephone numbers
used in film and TV.

555

π is the ratio of a circle's
circumference to its diameter.
An English mathematician,
William Shanks, a man of
independent means,
spent 20 years
calculating pi
to 707 decimal
places.

π

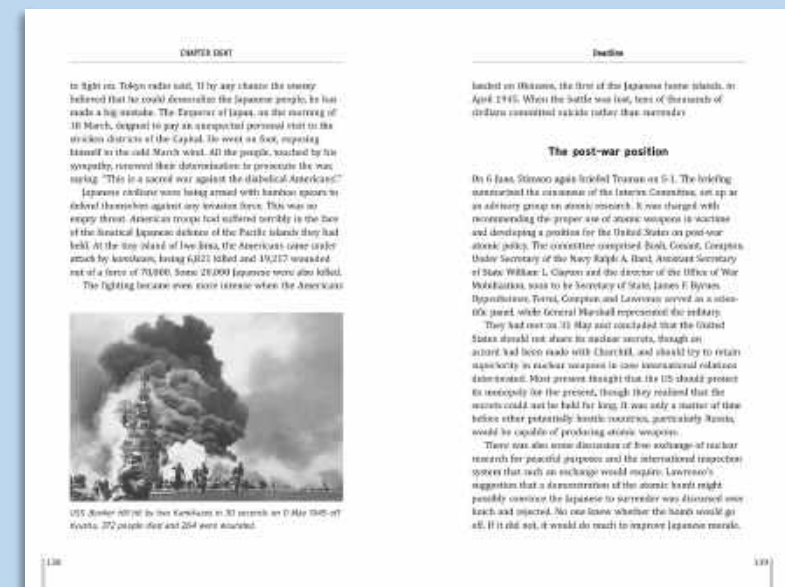
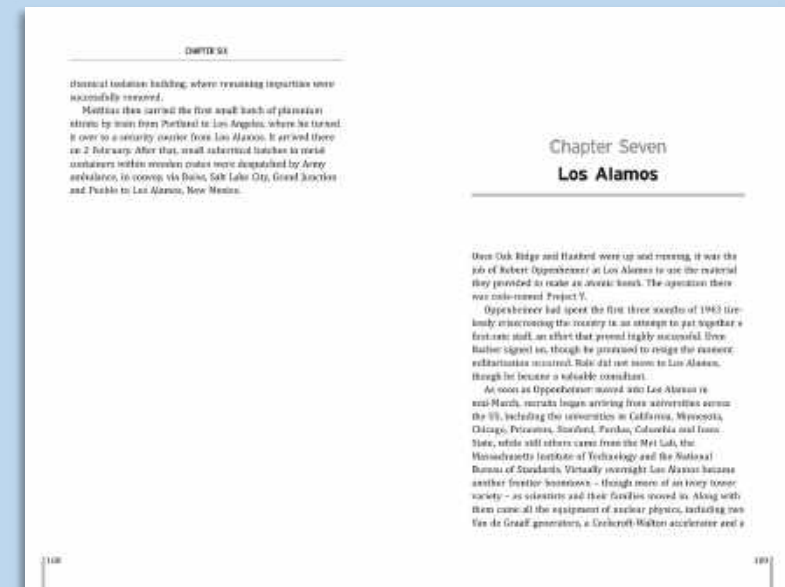
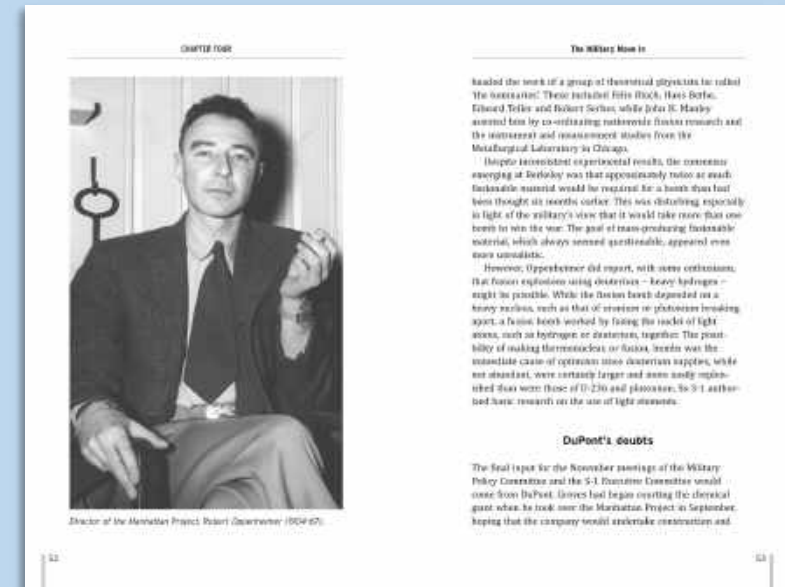
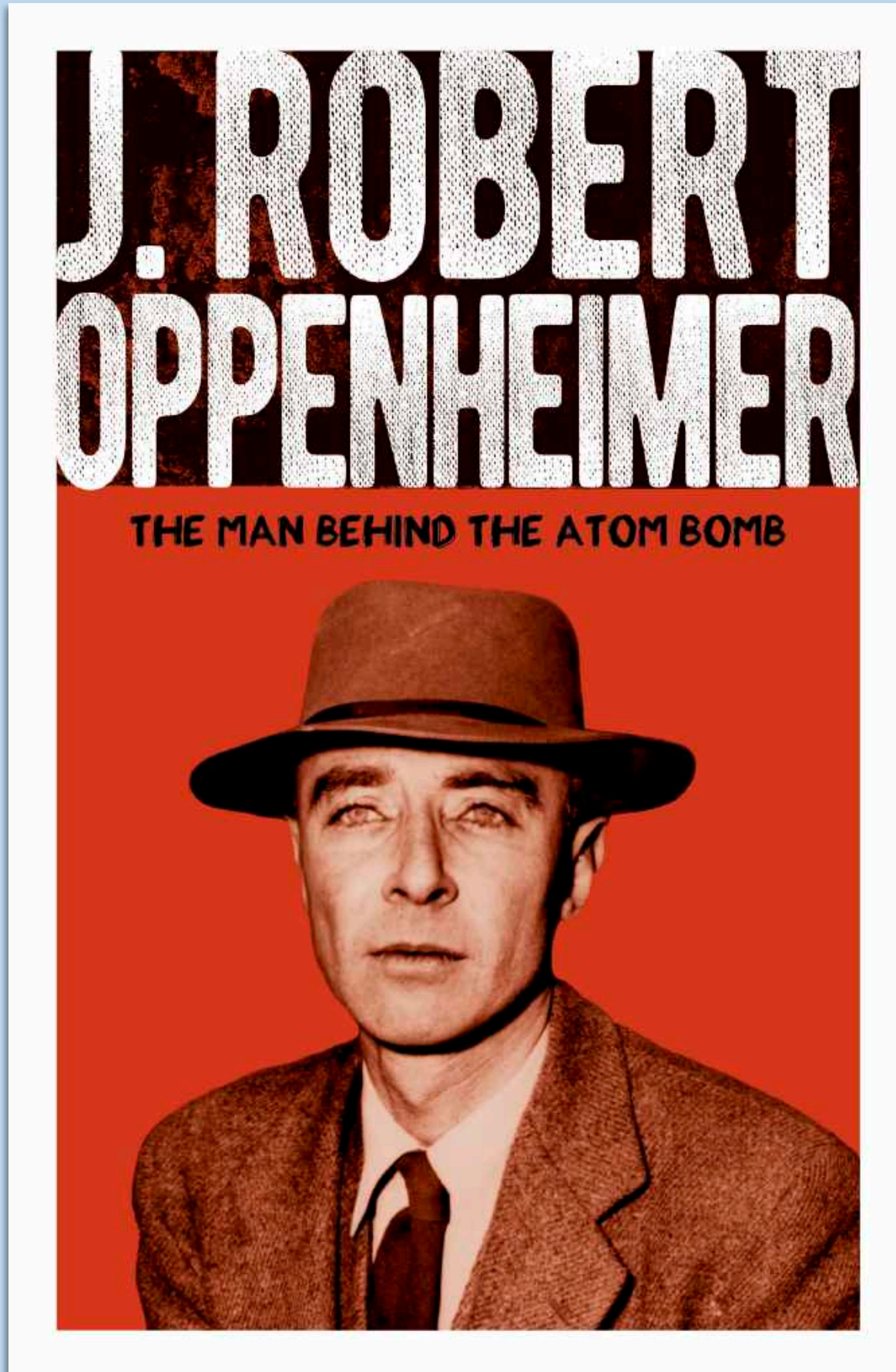
18

18 is the only
number that
is twice the
sum of its digits

TIM GLYNNE-JONES

J. Robert Oppenheimer

234x153mm, 208pp, 1/1, Paperback





Director of the Manhattan Project, Robert Oppenheimer (1904-67).

headed the work of a group of theoretical physicists he called 'the luminaries'. These included Felix Bloch, Hans Bethe, Edward Teller and Robert Serber, while John H. Manley assisted him by co-ordinating nationwide fission research and the instrument and measurement studies from the Metallurgical Laboratory in Chicago.

Despite inconsistent experimental results, the consensus emerging at Berkeley was that approximately twice as much fissionable material would be required for a bomb than had been thought six months earlier. This was disturbing, especially in light of the military's view that it would take more than one bomb to win the war. The goal of mass-producing fissionable material, which always seemed questionable, appeared even more unrealistic.

However, Oppenheimer did report, with some enthusiasm, that fusion explosions using deuterium – heavy hydrogen – might be possible. While the fission bomb depended on a heavy nucleus, such as that of uranium or plutonium breaking apart, a fusion bomb worked by fusing the nuclei of light atoms, such as hydrogen or deuterium, together. The possibility of making thermonuclear, or fusion, bombs was the immediate cause of optimism since deuterium supplies, while not abundant, were certainly larger and more easily replenished than were those of U-236 and plutonium. So S-1 authorized basic research on the use of light elements.

DuPont's doubts

The final input for the November meetings of the Military Policy Committee and the S-1 Executive Committee would come from DuPont. Groves had begun courting the chemical giant when he took over the Manhattan Project in September, hoping that the company would undertake construction and

chemical isolation building, where remaining impurities were successfully removed.

Matthias then carried the first small batch of plutonium nitrate by train from Portland to Los Angeles, where he turned it over to a security courier from Los Alamos. It arrived there on 2 February. After that, small subcritical batches in metal containers within wooden crates were despatched by Army ambulance, in convoy, via Boise, Salt Lake City, Grand Junction and Pueblo to Los Alamos, New Mexico.

Chapter Seven

Los Alamos

Once Oak Ridge and Hanford were up and running, it was the job of Robert Oppenheimer at Los Alamos to use the material they provided to make an atomic bomb. The operation there was code-named Project Y.

Oppenheimer had spent the first three months of 1943 tirelessly crisscrossing the country in an attempt to put together a first-rate staff, an effort that proved highly successful. Even Bacher signed on, though he promised to resign the moment militarization occurred. Rabi did not move to Los Alamos, though he became a valuable consultant.

As soon as Oppenheimer moved into Los Alamos in mid-March, recruits began arriving from universities across the US, including the universities in California, Minnesota, Chicago, Princeton, Stanford, Purdue, Columbia and Iowa State, while still others came from the Met Lab, the Massachusetts Institute of Technology and the National Bureau of Standards. Virtually overnight Los Alamos became another frontier boomtown – though more of an ivory tower variety – as scientists and their families moved in. Along with them came all the equipment of nuclear physics, including two Van de Graaff generators, a Cockcroft-Walton accelerator and a

to fight on. Tokyo radio said, 'If by any chance the enemy believed that he could demoralize the Japanese people, he has made a big mistake. The Emperor of Japan, on the morning of 18 March, deigned to pay an unexpected personal visit to the stricken districts of the Capital. He went on foot, exposing himself to the cold March wind. All the people, touched by his sympathy, renewed their determination to prosecute the war, saying: "This is a sacred war against the diabolical Americans!"'

Japanese civilians were being armed with bamboo spears to defend themselves against any invasion force. This was no empty threat. American troops had suffered terribly in the face of the fanatical Japanese defence of the Pacific islands they had held. At the tiny island of Iwo Jima, the Americans came under attack by *kamikazes*, losing 6,821 killed and 19,217 wounded out of a force of 70,000. Some 20,000 Japanese were also killed.

The fighting became even more intense when the Americans



USS Bunker Hill hit by two Kamikazes in 30 seconds on 11 May 1945 off Kyushu. 372 people died and 264 were wounded.

landed on Okinawa, the first of the Japanese home islands, in April 1945. When the battle was lost, tens of thousands of civilians committed suicide rather than surrender.

The post-war position

On 6 June, Stimson again briefed Truman on S-1. The briefing summarized the consensus of the Interim Committee, set up as an advisory group on atomic research. It was charged with recommending the proper use of atomic weapons in wartime and developing a position for the United States on post-war atomic policy. The committee comprised Bush, Conant, Compton, Under Secretary of the Navy Ralph A. Bard, Assistant Secretary of State William L. Clayton and the director of the Office of War Mobilization, soon to be Secretary of State, James F. Byrnes. Oppenheimer, Fermi, Compton and Lawrence served as a scientific panel, while General Marshall represented the military.

They had met on 31 May and concluded that the United States should not share its nuclear secrets, though an accord had been made with Churchill, and should try to retain superiority in nuclear weapons in case international relations deteriorated. Most present thought that the US should protect its monopoly for the present, though they realized that the secrets could not be held for long. It was only a matter of time before other potentially hostile countries, particularly Russia, would be capable of producing atomic weapons.

There was also some discussion of free exchange of nuclear research for peaceful purposes and the international inspection system that such an exchange would require. Lawrence's suggestion that a demonstration of the atomic bomb might possibly convince the Japanese to surrender was discussed over lunch and rejected. No one knew whether the bomb would go off. If it did not, it would do much to improve Japanese morale.

Turing Tests

234x153mm, 160pp, 1/1, Paperback

THE TURING TESTS

EXPERT MATHS AND SCIENCE PUZZLES



Foreword by Sir Dermot Turing



THE TURING TESTS

EXPERT MEMORY PUZZLES



Foreword by Sir Dermot Turing





CALCULATOR CONUNDRUM

NUMBER CRUNCHING

You have accidentally spilled glue over your trusty pocket calculator, and now only five keys work: the 9 plus the +, -, ×, and ÷ buttons.

For a very specific experiment, it's essential to display a figure 8 on your calculator display.

What is the simplest way to do this?



COMMON PROPERTY

LATERAL HYPOTHESIS

Over the course of several experiments, you notice that some of your results contain numbers with a particular property.

The numbers are as follows:

- 1,210
- 2,020
- 42,101,000
- 6,210,001,000

What is the common property these numbers share?



DEER IN HEADLIGHTS

REAL SCIENCE

You're driving fast down a country lane when you see a deer in the road up ahead.

You realize that it's not going to move before you reach it, so you will need to stop abruptly if you want to avoid hitting it.

Is your best bet to slam on the brakes or to brake gradually?



During World War II, while at Bletchley Park, home of the Government Code and Cypher School, Turing played a vital role in breaking the Enigma cipher that was used by Germany.





DIAGONAL LINKS VISUAL PROCESSING

Join each pair of numbers by drawing a set of paths. The paths must be made up of horizontal, vertical, and diagonal segments, and only one path can enter any square. Paths cannot cross, except on the corners between squares where two diagonal paths may cross.

1	2			3	4
			5		
4					2
	1				5
6	3				6



SHAPED CONSTRUCTION DEDUCTIVE LOGIC

A particular construction requires a very specific arrangement of components, identified by the letters A through G in the diagram below. Write a letter in each of the empty squares so that every row, column, and bold-lined region contains all seven letters exactly once each.

			F			A
				C		
				G		
B						F
		G				
		F				
E			D			



20. WEIGHT AND SEE

A quarter of a pound. This becomes obvious if you imagine removing one bottle from each side, so you're left with two bottles weighing half a pound.

21. KIDDING AROUND

The probability that Alice's children are both boys is $1/3$. The probability that Ben's children are both boys is $1/2$.

22. UP THE WRONG TREE

Tie the rope around the tree on the shore of the lake. Then, holding one end of the rope, walk all the way around the lake, so that the rope is now around the tree on the island. Finally, tie the other end of the rope to the tree on the shore. The rope is now secure between the two trees, and can be used to get across to the island.

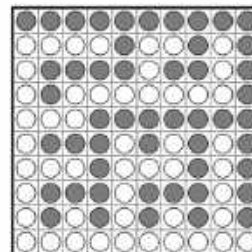
23. TOP SCIENTISTS

Yes, if the other 20% are all significantly below average. For example, let us say that 80% of scientists carried out twelve experiments this year, and the other 20% carried out two. In this case, the average is ten experiments, so 80% of scientists are above average.

24. SHAPED CONSTRUCTION

B	C	D	F	G	A	E
F	G	A	B	E	C	D
E	D	G	C	A	B	F
A	F	E	D	C	G	B
G	A	B	E	F	D	C
D	E	C	A	B	F	G
C	B	F	G	D	E	A

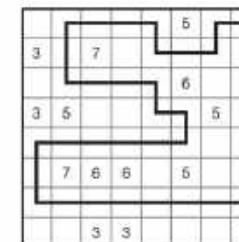
25. SAMPLE SELECTION



26. CELL REJECTION

B	F	E	D	A	C
C	A	B	F	E	D
D	E	C	A	B	F
F	B	D	E	C	A
A	C	F	B	D	E
E	D	A	C	F	B

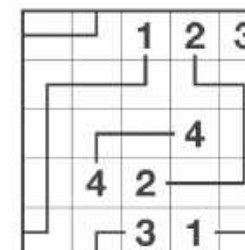
27. STRANGE ATTRACTORS



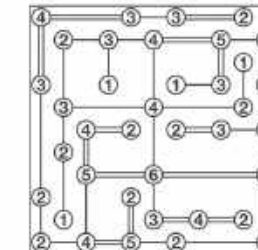
29. GOOD EGG

To make the egg float, you can stir salt into the water. This increases the mass of the water without having much effect on its volume, until the water is denser than the egg. To suspend the egg halfway, start with the glass half full and stir salt into it. Then put in the egg, and pour more water on top.

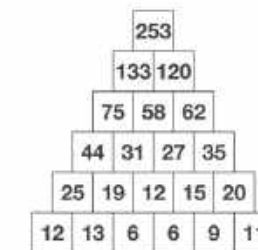
30. WRAPAROUND WIRING



31. CONNECTED CIRCUIT



32. EXPERIMENTAL EXTENSION



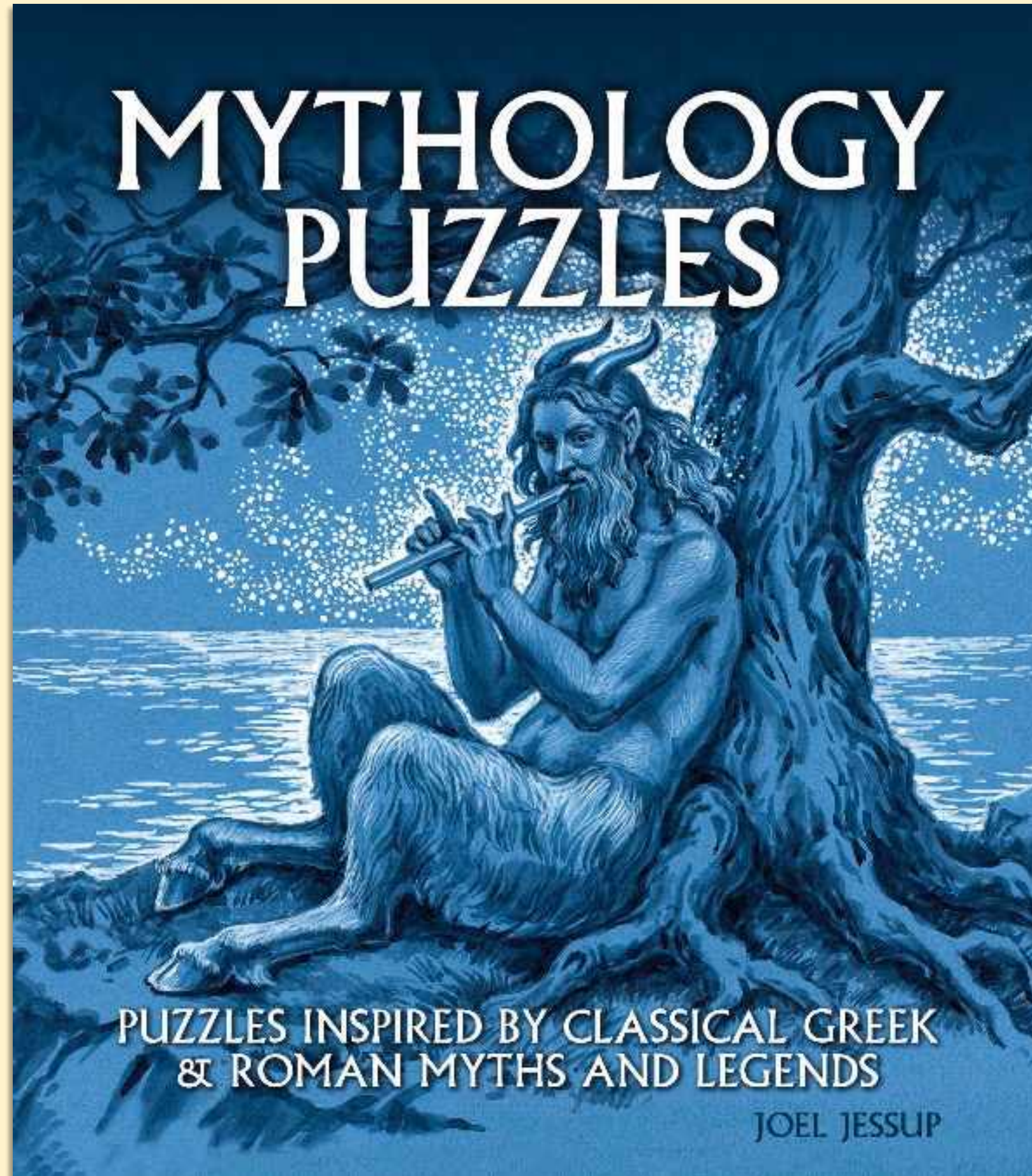
33. FUEL PODS

43 cubes. Counting the top layer as level 1, this is made up of: Level 1 cubes = 4. Level 2 cubes = 7. Level 3 cubes = 13. Level 4 cubes = 19.



Mythology Puzzles

192x168mm, 256pp, 1/1, Paperback



TROJAN HORSE



After a 10-year siege of the city of Troy, the Greek army, led by Odysseus, devised a clever plan: they would build a wooden horse and pretend to leave, suggesting it had been left as a gift for their “victorious” foes (the horse being the symbol of the city). However, inside the horse would be hidden 50 of Greece’s greatest warriors, including Odysseus himself. Once the horse was brought into the city, the warriors would emerge and attack the city from within, conquering Troy! The horse would be 12 podes wide, 31 podes tall, and 18 podes long.

[NB Podes is the plural of Pous, a Greek unit of measurement as long as the average Greek sandal (size 10).]

However, there was a major problem with the construction of the horse: its chief builder, Epeius, did not have enough materials to make one that would allow 50 soldiers to be inside, and instead could only build one that had room for 40 soldiers. This smaller horse was however still effective, and the Greeks’ plan worked, and became legend...



Question: What are the dimensions of the 40-man horse they built (width, length, and height) in feet?





PERSEUS AND THE HESPERIDES



Perseus had foolishly promised Polydectes any gift he desired, and it was the head of Medusa that Polydectes demanded! But even if he managed to take her head, he could not carry it safely.

Luckily, he tricked the Graeae into telling him the location of the Hesperides, beautiful maidens who tended to Hera's orchard. They had a magical knapsack called the kibisis which could bear any object, even Medusa's head.

When he arrived at the garden he found seven women, rather than the three he expected. They said their names were Aiopis, Antheia, Donakis, Calypso, Mermesa, Nelisa, and Tara, but not who was who!

"If you want the kibisis you must discover our names!" They laughed, standing in a line, 1-7". The girl at number 6 has it, but which is she?



We will give you the following clues:

- Mermesa is number 2.
- The person to the left of Nelisa has a name beginning with A
- The person to the right of Nelisa has 4 letters in their name
- Donakis is 4 to the left of Tara
- The woman at number 3 has a name ending with S.
- Antheia is at an odd number!"



Question: In what order are they standing and who has the knapsack?



ESCAPING THE LABYRINTH



In the legend that we all know, every year 14 young nobles would be sent into the Labyrinth at Knossos to be consumed by the Minotaur, the monstrous half-man half-bull created by Minos and Poseidon's actions. Theseus joined the group with the intention of slaying the Minotaur and ending the sacrifices. The King's daughter Ariadne had fallen in love with Theseus and so gave him a ball of thread with which to retrace his path and leave the maze.

*"Take care of this," she said, placing it in his left hand,
"without it you may find what you think is the right way is wrong."*

As they entered the Labyrinth Theseus fixed the thread to the entrance.

But what is unknown is that after Theseus slew the Minotaur in a great battle, he found that the string had become waterlogged and rotten, destroyed by Poseidon himself in a rage at Theseus' arrogance.

The weary Theseus leaned on the wall of the labyrinth, peering forward at the impossible path that lay ahead.

*"So many walls to pass," one of the youths muttered, feeling defeated.
"There is but one wall, really," said another, "winding around itself."*

Theseus looked at his hand on the wall, then at the Labyrinth, and now he knew how to get them out. It would take a long time, but it was guaranteed to work...

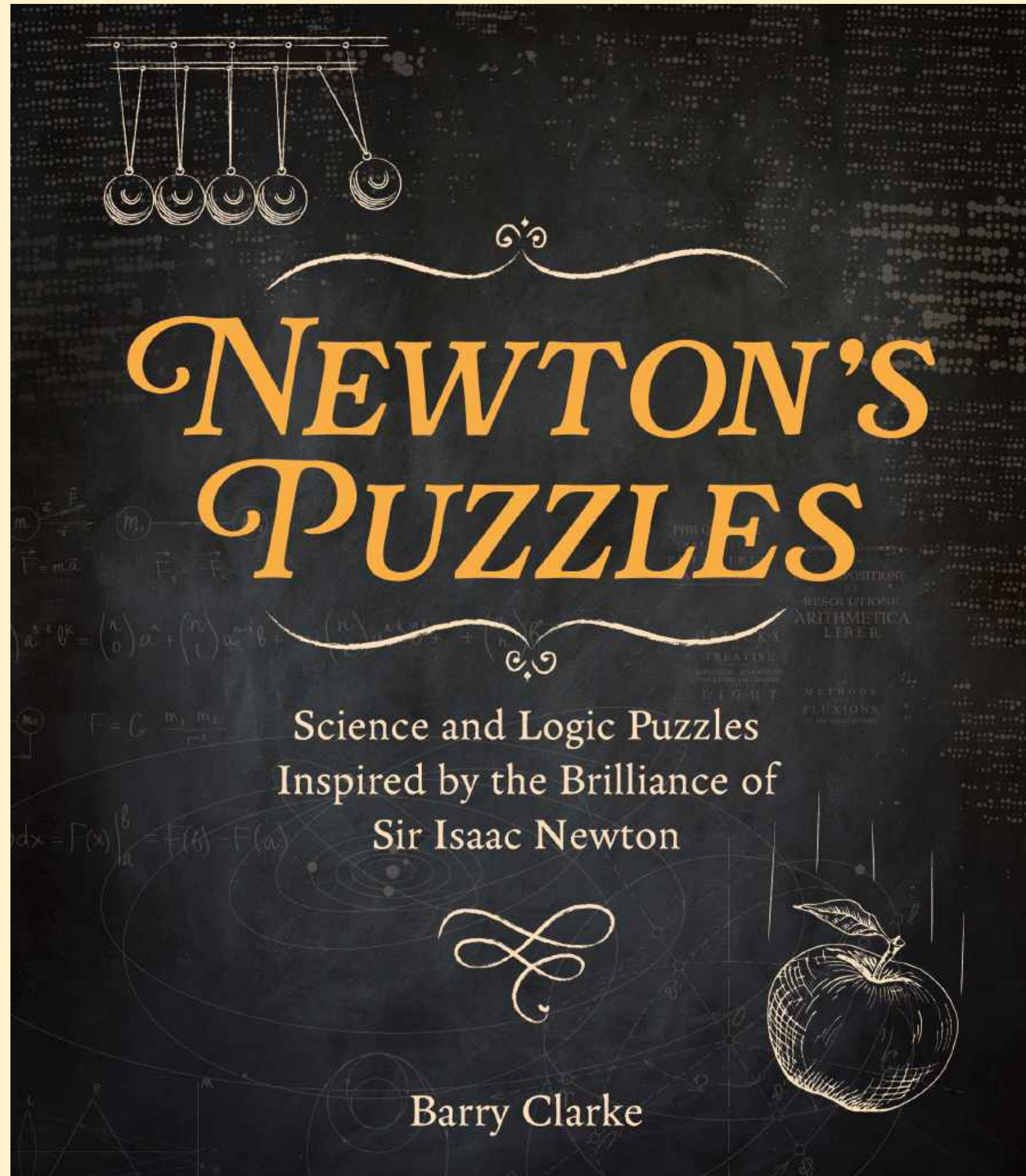


Question: What is the guaranteed way for Theseus to lead them out of the Labyrinth?



Newton Puzzles

192x168mm, 256pp, 1/1, Paperback



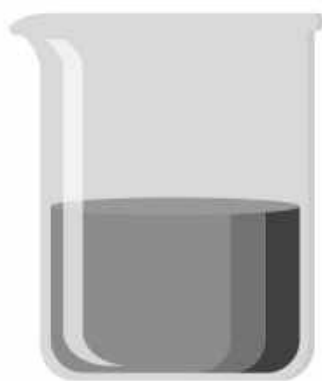
MYSTERIOUS MIXTURE

In his later years, Newton experimented with alchemy, and tried without success to turn base metals into gold. He also spent time searching for the elixir of life. In one experiment, two identical glass beakers A and B are half full and contain different liquids. Newton pours half of the liquid in B into A and mixes the contents thoroughly. He then pours some of the liquid in A back into B until they are again both half full.

What fraction of the liquid that finishes in B has come from A?

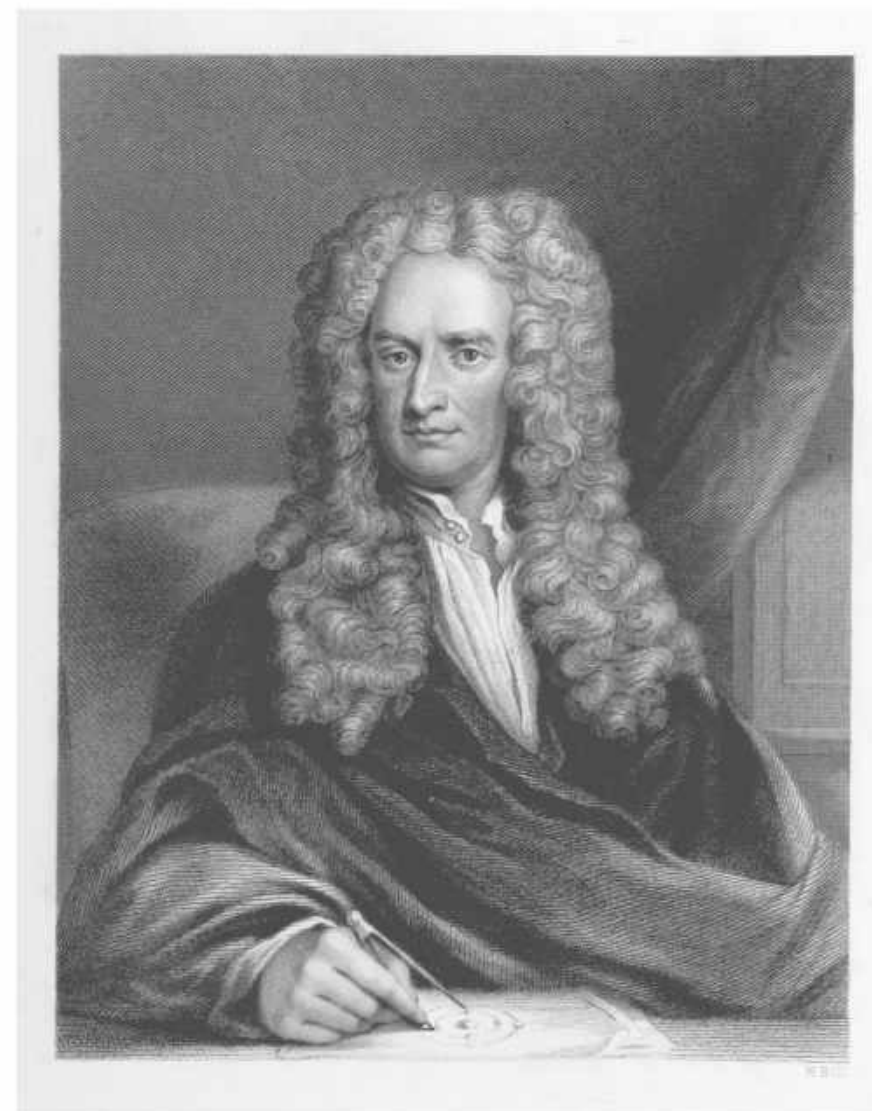


A



B

6

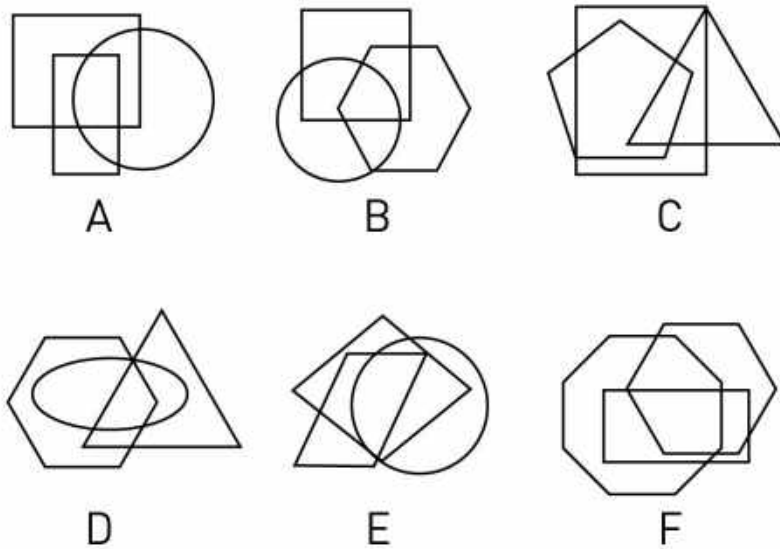


7

GEOMETRICAL ERROR

As a student, Newton attended Isaac Barrow's lectures on mathematics. In one session, Barrow chalked the above six diagrams on the slate blackboard and stated that the six diagrams had something in common. However, Newton was quick to find an error in one of the drawings.

Which diagram is the odd one out?



8

CUPS AND COINS

Stourbridge Fair is back in town and Newton has decided to take a look. Although not a man to participate in idle pastimes, he has already won a prize by correctly guessing the age of a donkey. Apparently, its front teeth provided the vital information. However, Newton has now been drawn to the Cups and Coins stall which is intended to test one's powers of logic.

Three gold coins have been distributed amongst three upturned cups. There is a statement in front of each cup as shown. Exactly two of the three statements are true. Anyone who can deduce the three numbers of coins under the cups can take the coins home.

How many coins are under each cup?



exactly one of the
other two cups has 2



exactly one cup next
to this has 0 or 1



this cup has either
2 or 3

9

SOLUTIONS

MYSTERIOUS MIXTURE.....P.6

The fraction in beaker B from A is $\frac{1}{3}$. If half of B is poured into A then A is now $\frac{3}{4}$ full and contains $\frac{1}{2}$ a beaker of liquid A and $\frac{1}{4}$ of liquid B. After mixing, in order to restore beaker B to half full, we need to pour a $\frac{1}{4}$ of a beaker from A into B. This is $\frac{1}{3}$ of the mixed contents of A and consists of $\frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$ of liquid A and $\frac{1}{3} \times \frac{1}{4} = \frac{1}{12}$ of liquid B. Since this is added to $\frac{1}{4}$ of a beaker of liquid B, the restored $\frac{1}{2}$ of a beaker of liquid in B consists of $\frac{1}{6}$ of liquid A and $\frac{1}{12} + \frac{1}{4} = \frac{1}{3}$ of liquid B. Since $\frac{1}{3}$ is twice $\frac{1}{6}$, then $\frac{1}{3}$ of the liquid that finishes in B has arisen from A.

GEOMETRIC ERROR.....P.8

Diagram D has six separate areas whereas the other diagrams have seven.

CUPS AND COINS.....P.9

$A = 0$, $B = 0$, $C = 3$. Let us suppose that A is true. Then either B or C has 2 but not both. The possible distributions of coins are then: (i) 1, 2, 0; (ii) 0, 2, 1; (iii) 0, 1, 2; (iv) 1, 0, 2. For (i) and (ii), C is false so B must be true but the numbers contradict it. For (iii) and (iv), C is true but also B is true, contradicting the requirement that one of the statements is false. The conclusion must be that A is false. The possibilities are then: (v) 2, 0, 1; (vi) 2, 1, 0; (vii) 3, 0, 0; (viii) 0, 3, 0; (ix) 0, 0, 3. Both statements B and C must now be true and so only (ix) applies.

KRANK'S ATOMIC THEORY.....P.10

There were 1092 disks. Starting with a type 2 particle, we add the series $3 + 9 + 27 + 81 + 243 + 729$.

BALANCING BARRELS.....P.12

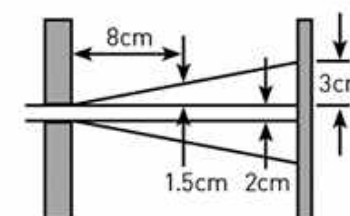
The smallest weight that a group of three barrels can be is 8 stone. The total weight of all six barrels is 21 stone. If five of them are to be divided into two equal-weight groups, then their total must be an even number (so that it can be divided equally in two). So an odd number must be left out (because 21 minus an odd number is an even one). The largest odd number is 5 so that the smallest total of the five barrels is 16 ($21 - 5 = 16$). This means that when divided in half, the two-barrel and three-barrel totals are each 8 stone.

SOLUTIONS

CALCULATED CARTS.....P.13

Design A is the odd one out. In three of the four cases, the number of triangles is multiplied by the number of squares and the number of circles to produce 12. Design A has a product of 24.

THE LIGHT BEAM.....P.14



The beam is 5cm wide. This is a problem about similar triangles. The frustrum of the cone can be divided into parts. There is a central horizontal beam that stays 2cm wide. At the top and bottom of it is a triangle that, at a distance of 16cm, has width 3cm on the screen each side of the horizontal beam. So the 8cm on the screen is composed of $3\text{cm} + 2\text{cm} + 3\text{cm}$. When the distance between the shutter and screen is halved to 8cm, the 3cm width is halved in the top and bottom triangle but not the horizontal part of the beam which stays at 2cm. So we have $1.5\text{cm} + 2\text{cm} + 1.5\text{cm} = 5\text{cm}$.

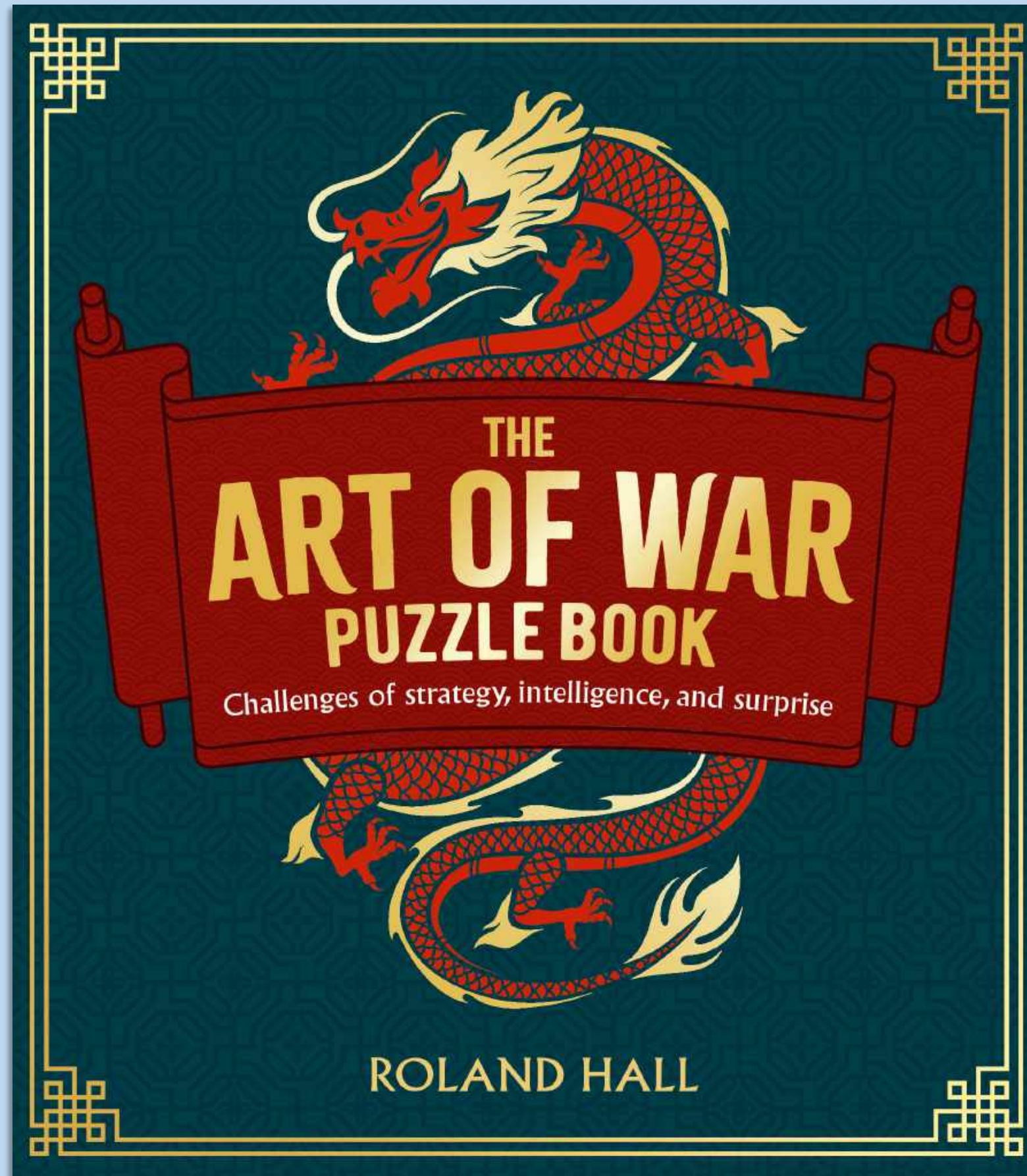
BALANCING BARRELS.....P.15

The smallest weight that a group of three barrels can be is 8 stone. The total weight of all six barrels is 21 stone. If five of them are to be divided into two equal-weight groups, then their total must be an even number (so that it can be divided equally in two). So an odd number must be left out (because 21 minus an odd number is an even one). The largest odd number is 5 so that the smallest total of the five barrels is 16 ($21 - 5 = 16$). This means that when divided in half, the two-barrel and three-barrel totals are each 8 stone.



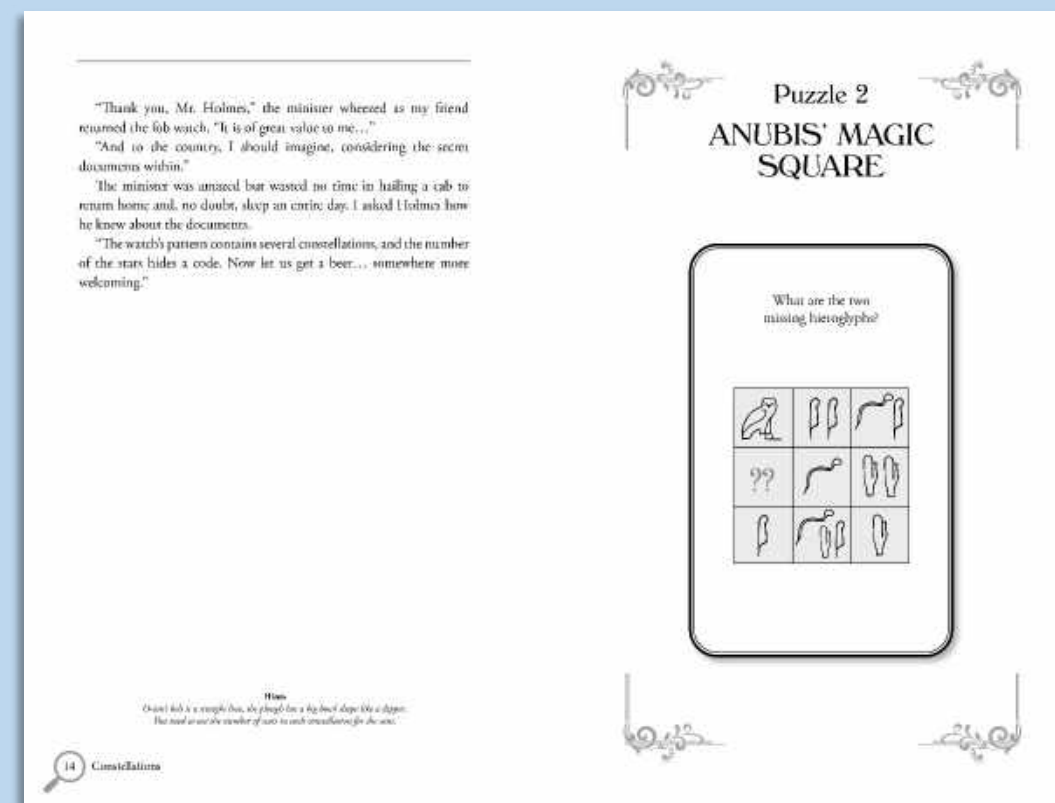
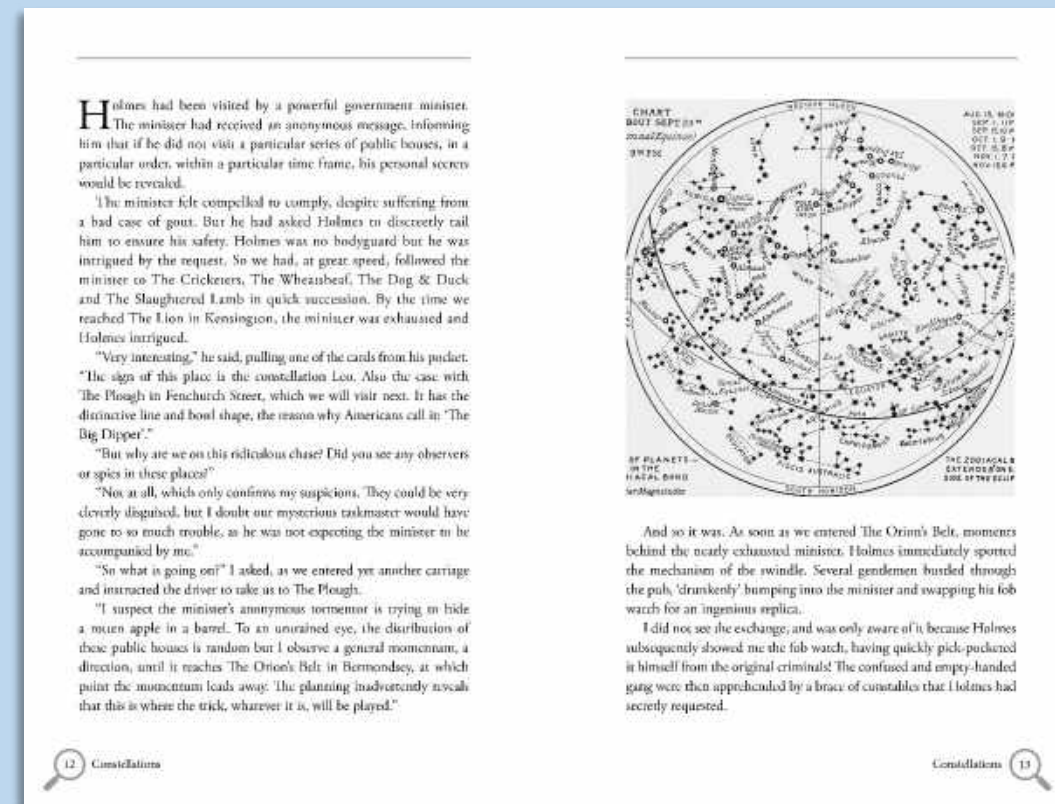
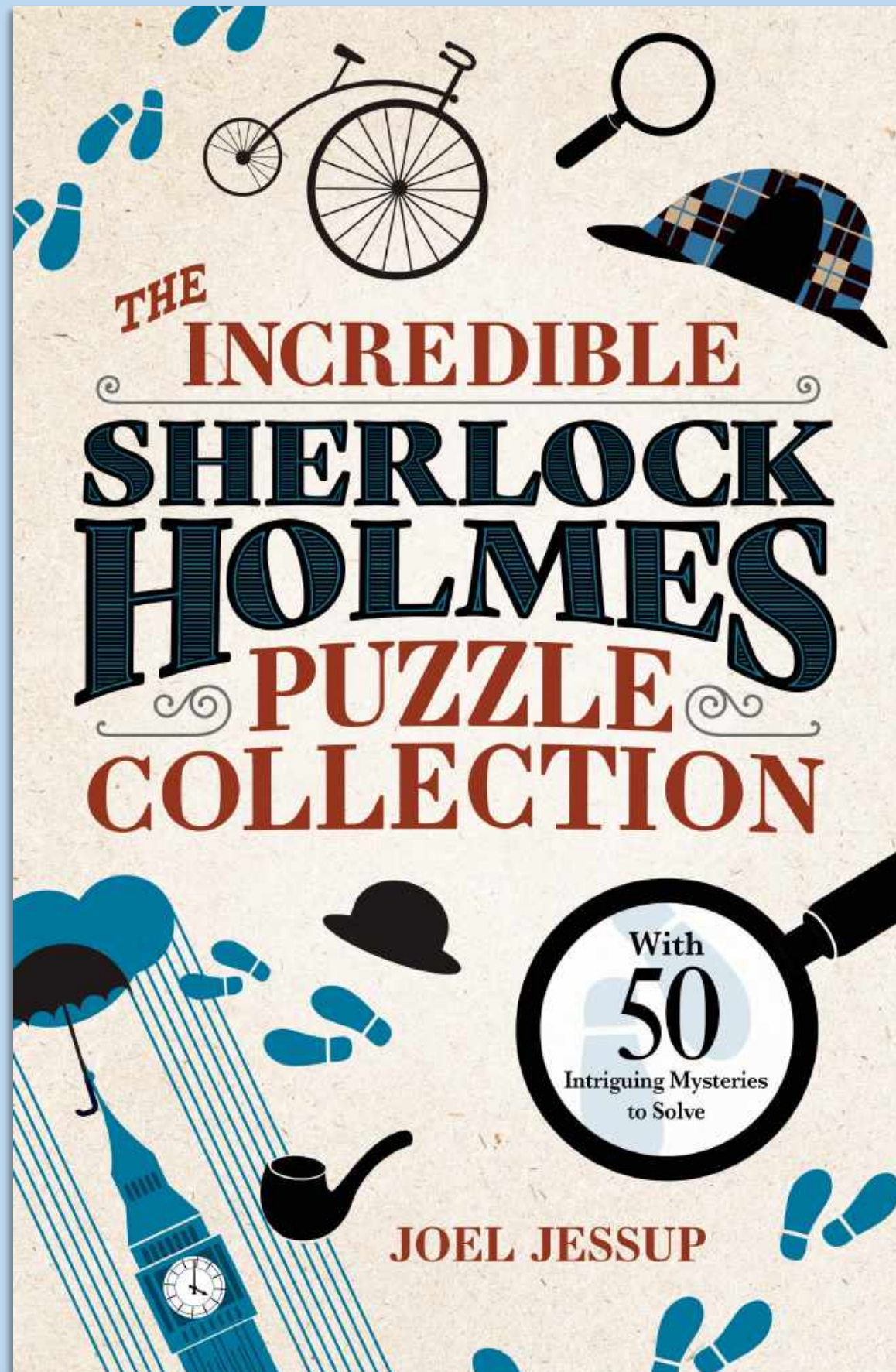
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The Incredible Sherlock Holmes Puzzle Collection

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Holmes had been visited by a powerful government minister. The minister had received an anonymous message, informing him that if he did not visit a particular series of public houses, in a particular order, within a particular time frame, his personal secrets would be revealed.

The minister felt compelled to comply, despite suffering from a bad case of gout. But he had asked Holmes to discreetly tail him to ensure his safety. Holmes was no bodyguard but he was intrigued by the request. So we had, at great speed, followed the minister to The Cricketers, The Wheatsheaf, The Dog & Duck and The Slaughtered Lamb in quick succession. By the time we reached The Lion in Kensington, the minister was exhausted and Holmes intrigued.

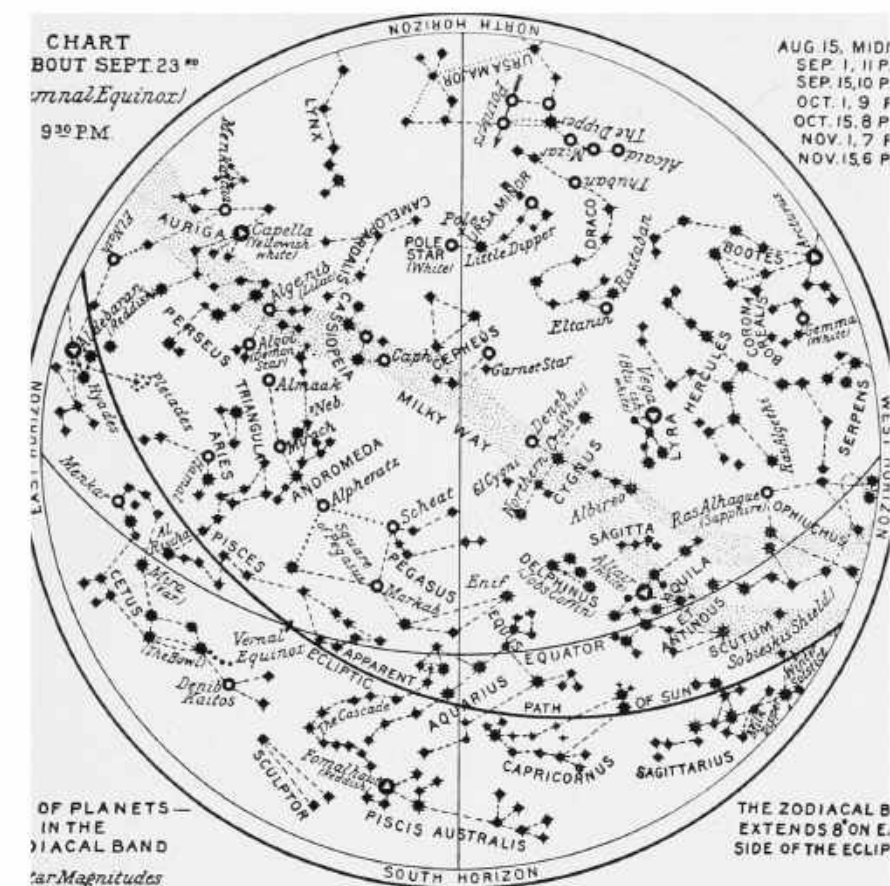
"Very interesting," he said, pulling one of the cards from his pocket. "The sign of this place is the constellation Leo. Also the case with The Plough in Fenchurch Street, which we will visit next. It has the distinctive line and bowl shape, the reason why Americans call it: 'The Big Dipper'."

"But why are we on this ridiculous chase? Did you see any observers or spies in these places?"

"Not at all, which only confirms my suspicions. They could be very cleverly disguised, but I doubt our mysterious taskmaster would have gone to so much trouble, as he was not expecting the minister to be accompanied by me."

"So what is going on?" I asked, as we entered yet another carriage and instructed the driver to take us to The Plough.

"I suspect the minister's anonymous tormentor is trying to hide a rotten apple in a barrel. To an untrained eye, the distribution of these public houses is random but I observe a general momentum, a direction, until it reaches The Orion's Belt in Bermondsey, at which point the momentum leads away. The planning inadvertently reveals that this is where the trick, whatever it is, will be played."



And so it was. As soon as we entered The Orion's Belt, moments behind the nearly exhausted minister, Holmes immediately spotted the mechanism of the swindle. Several gentlemen bustled through the pub, 'drunkenly' bumping into the minister and swapping his fob watch for an ingenious replica.

I did not see the exchange, and was only aware of it because Holmes subsequently showed me the fob watch, having quickly pick-pocketed it himself from the original criminals! The confused and empty-handed gang were then apprehended by a brace of constables that Holmes had secretly requested.

"Thank you, Mr. Holmes," the minister wheezed as my friend returned the fob watch. "It is of great value to me..."

"And to the country, I should imagine, considering the secret documents within."

The minister was amazed but wasted no time in hailing a cab to return home and, no doubt, sleep an entire day. I asked Holmes how he knew about the documents.

"The watch's pattern contains several constellations, and the number of the stars hides a code. Now let us get a beer... somewhere more welcoming."









Hints

*Orion's belt is a straight line, the plough has a big bowl shape like a dipper.
You need to use the number of stars in each constellation for the sum.*

Puzzle 2

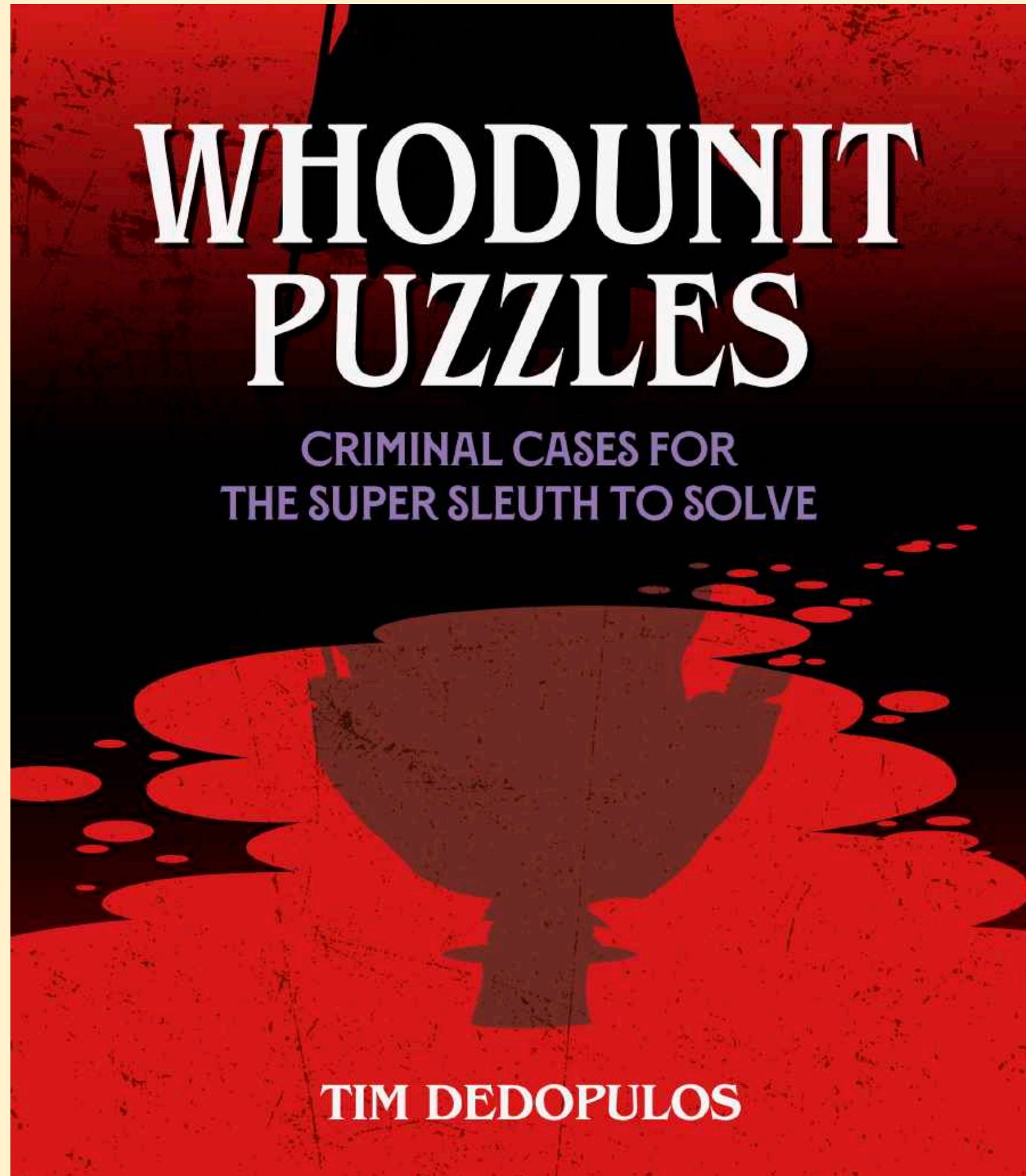
ANUBIS' MAGIC SQUARE

What are the two missing hieroglyphs?

		
??		
		

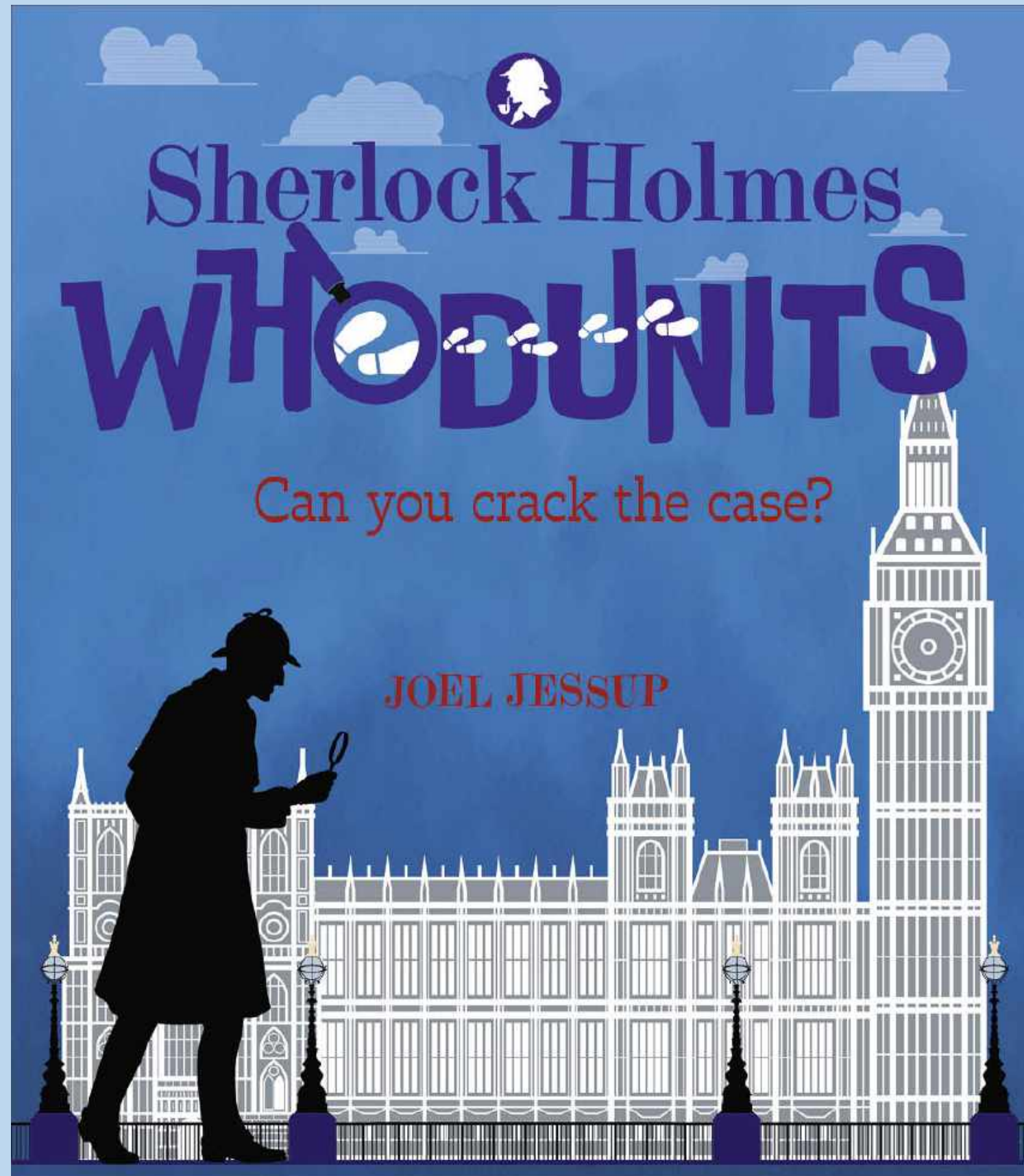


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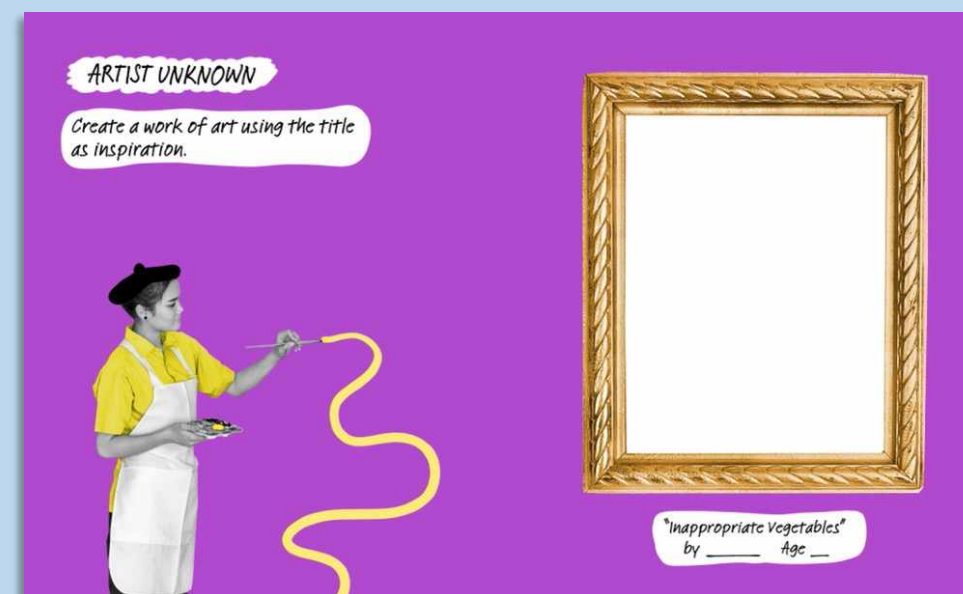
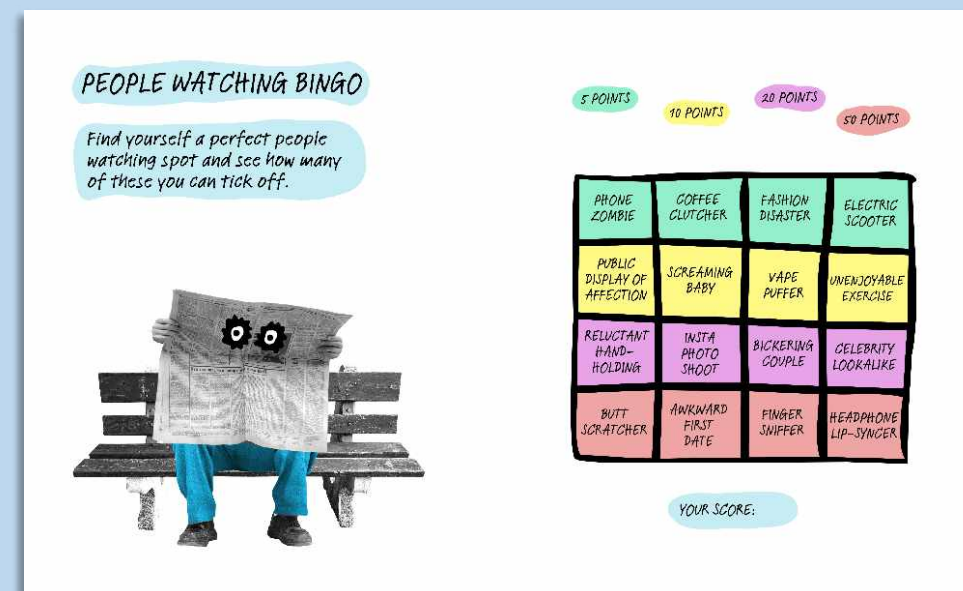
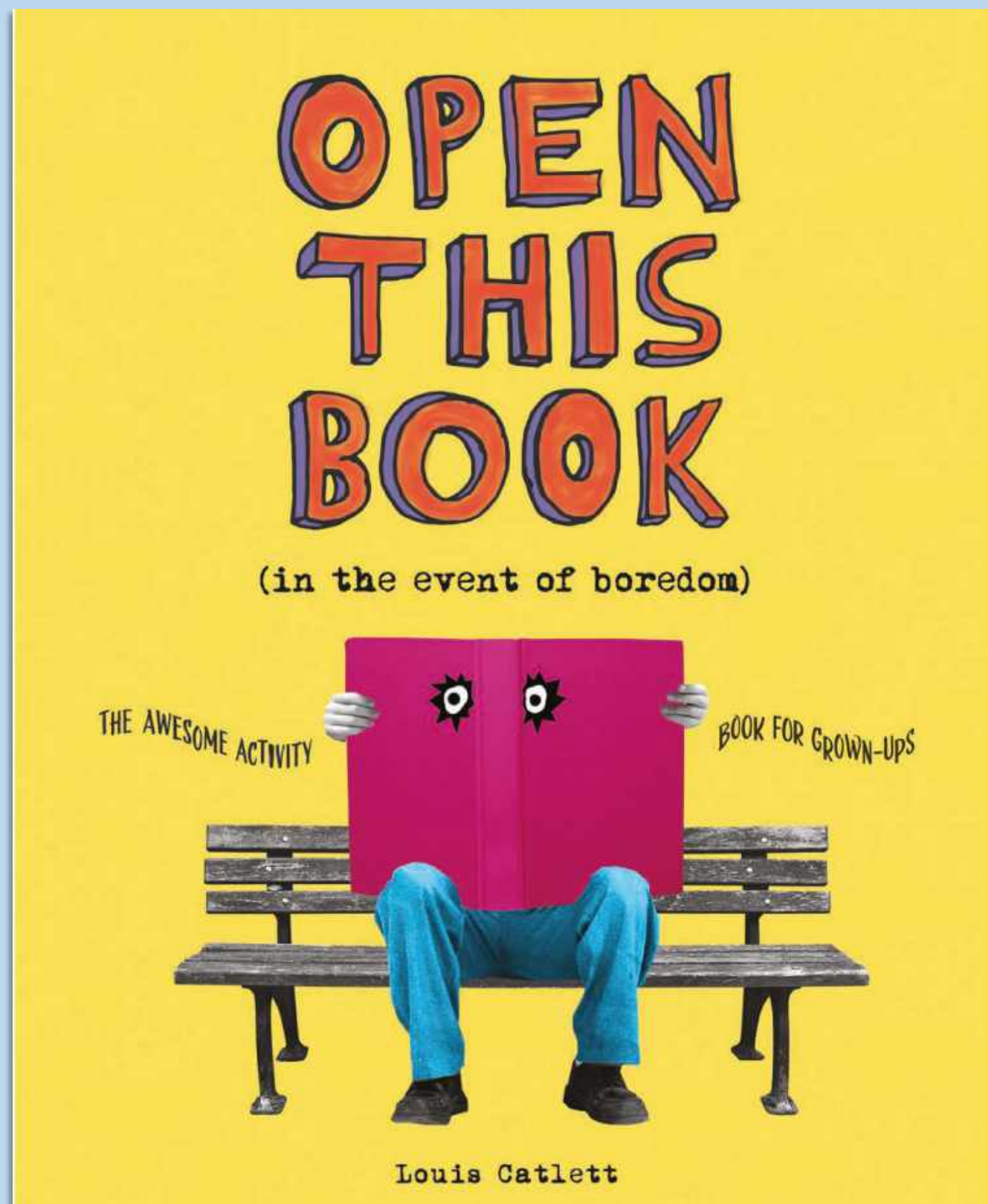
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5 POINTS

10 POINTS

20 POINTS

50 POINTS

PHONE ZOMBIE	COFFEE CLUTCHER	FASHION DISASTER	ELECTRIC SCOOTER
PUBLIC DISPLAY OF AFFECTION	SCREAMING BABY	VAPE PUFFER	UNENJOYABLE EXERCISE
RELUCTANT HAND-HOLDING	INSTA PHOTO SHOOT	BICKERING COUPLE	CELEBRITY LOOKALIKE
BUTT SCRATCHER	AWKWARD FIRST DATE	FINGER SNIFFER	HEADPHONE LIP-SYNGER

YOUR SCORE:

F FOR PHONETIC

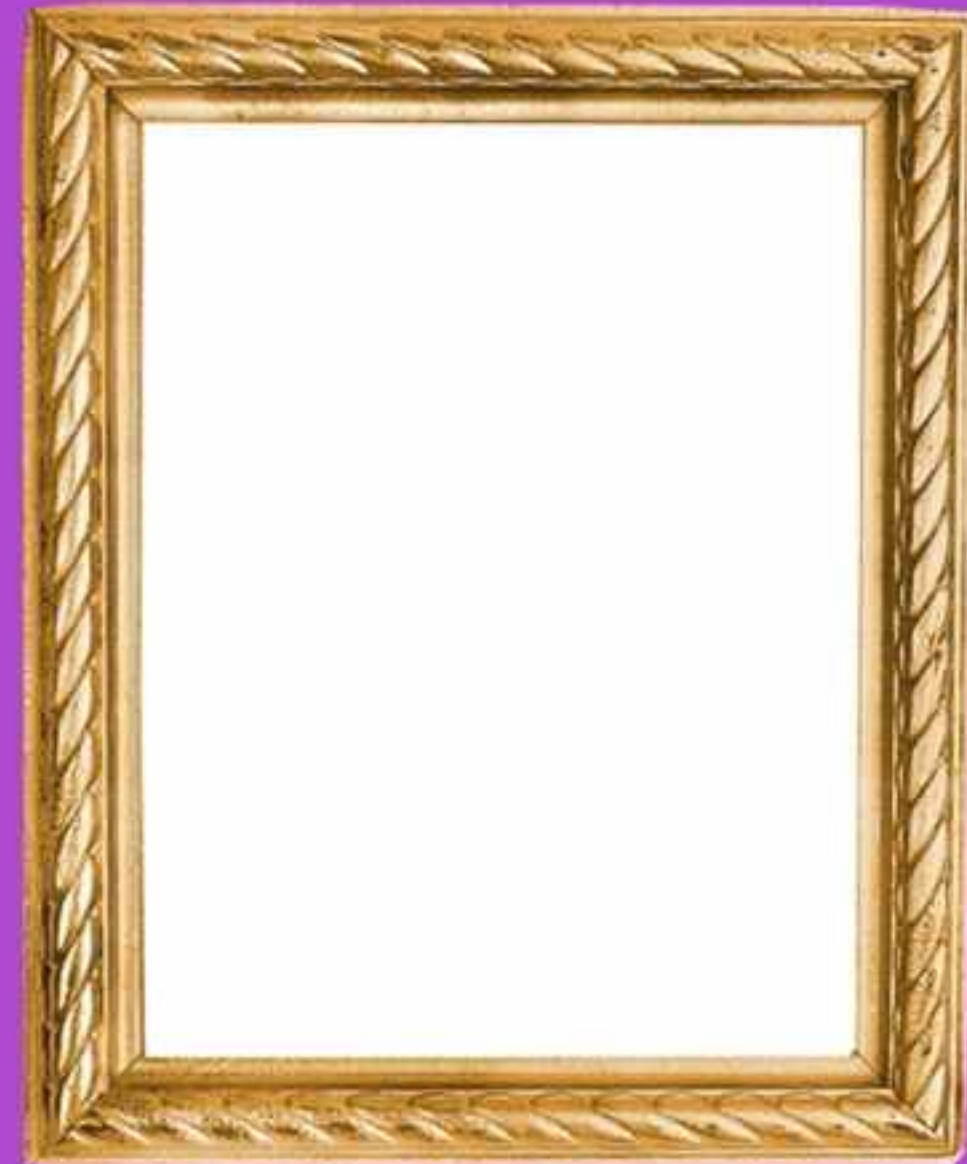
The current phonetic alphabet is outdated and hard to remember. Come up with your own version then try it out on an unsuspecting phone operator.



A =	N =
B =	O =
C =	P =
D =	Q =
E =	R =
F =	S =
G =	T =
H =	U =
I =	V =
J =	W =
K =	X =
L =	Y =
M =	Z =

ARTIST UNKNOWN

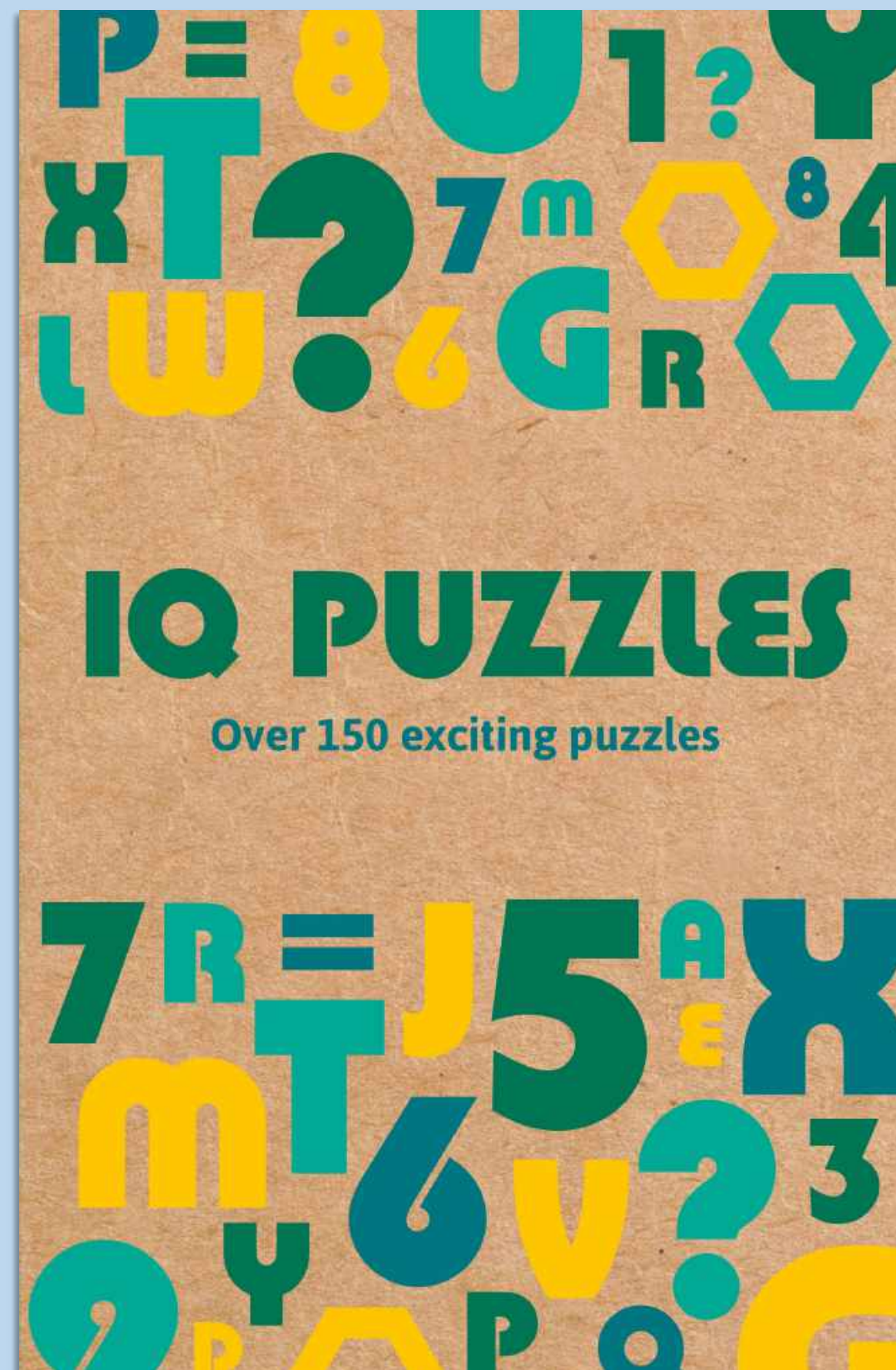
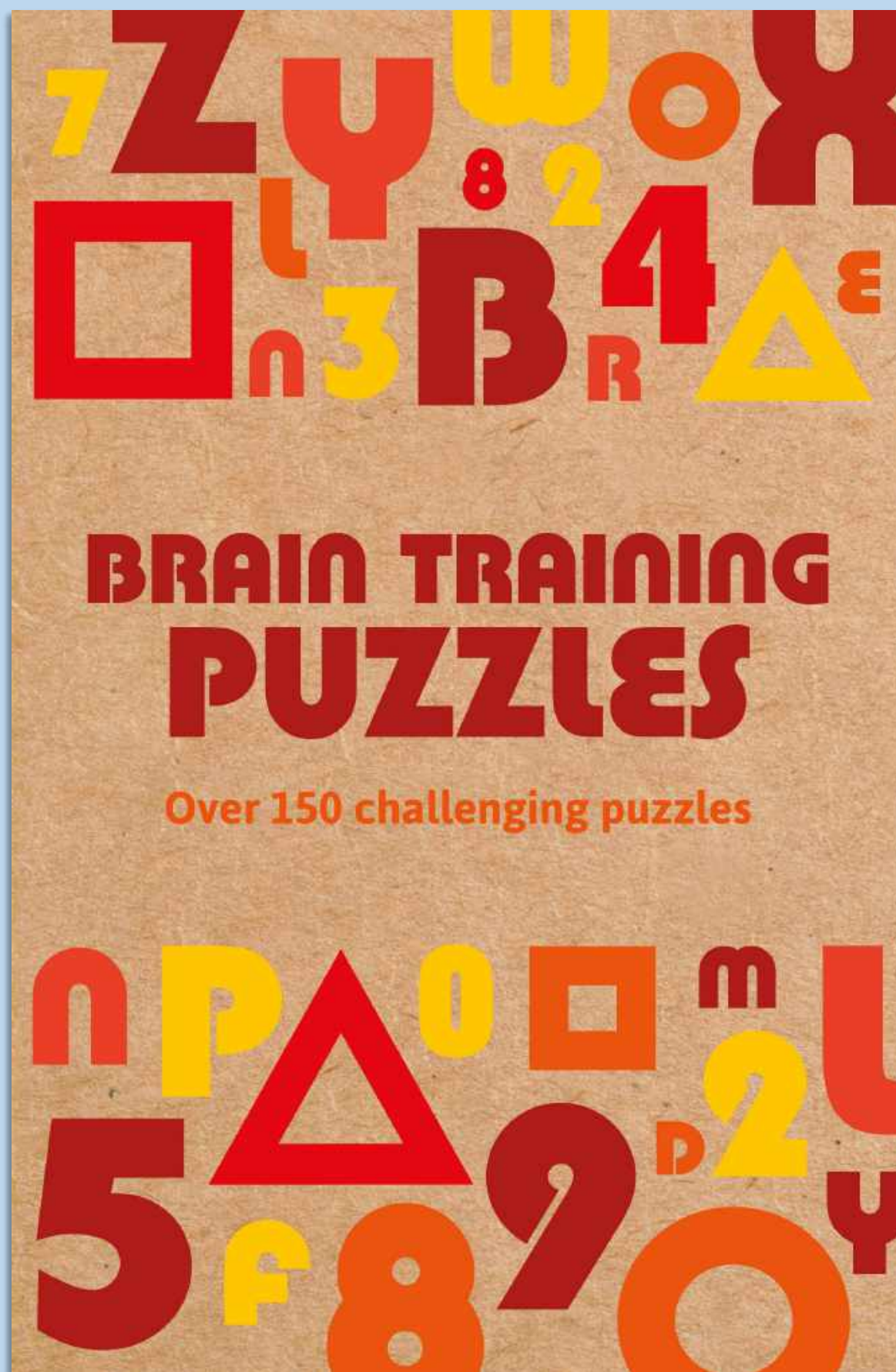
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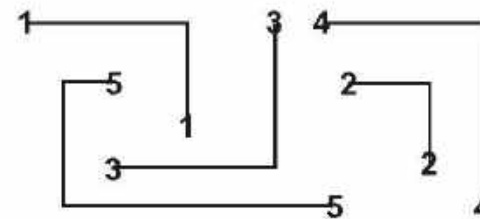




Number Link

Working from one square to another, horizontally or vertically (never diagonally), draw single continuous paths to pair up each set of two matching numbers.

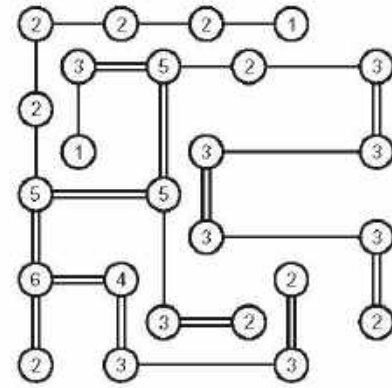
No line may cross another, none may travel through any square containing a number, and every square must be visited just once.



1					2	4	9
7		5				4	9
		7		1			
	3		3				
			5		8		
			6			10	
6	10					8	2



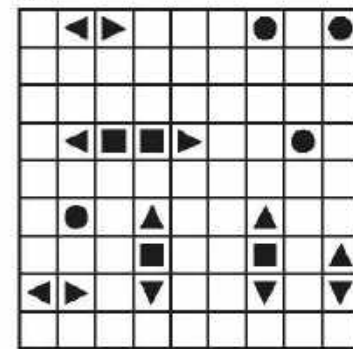
97



98

0	X	X	0	0	X	0	X	0	0
X	0	X	X	0	0	X	X	X	0
X	X	0	0	X	X	0	0	X	0
X	0	X	X	0	0	X	X	0	X
0	X	X	0	X	0	0	X	X	0
0	0	0	X	X	0	X	0	0	0
X	X	X	0	X	X	0	X	X	0
0	0	X	0	0	0	X	X	0	X
X	0	0	X	X	X	0	0	X	0
X	0	X	X	0	X	X	X	0	X
X	X	X	0	0	X	0	X	0	0

99



100

3	5	4	1	2	6	7
5	6	3	4	1	7	2
4	3	6	5	7	2	1
7	4	2	3	5	1	6
1	2	5	7	6	3	4
2	7	1	6	3	4	5
6	1	7	2	4	5	3

101

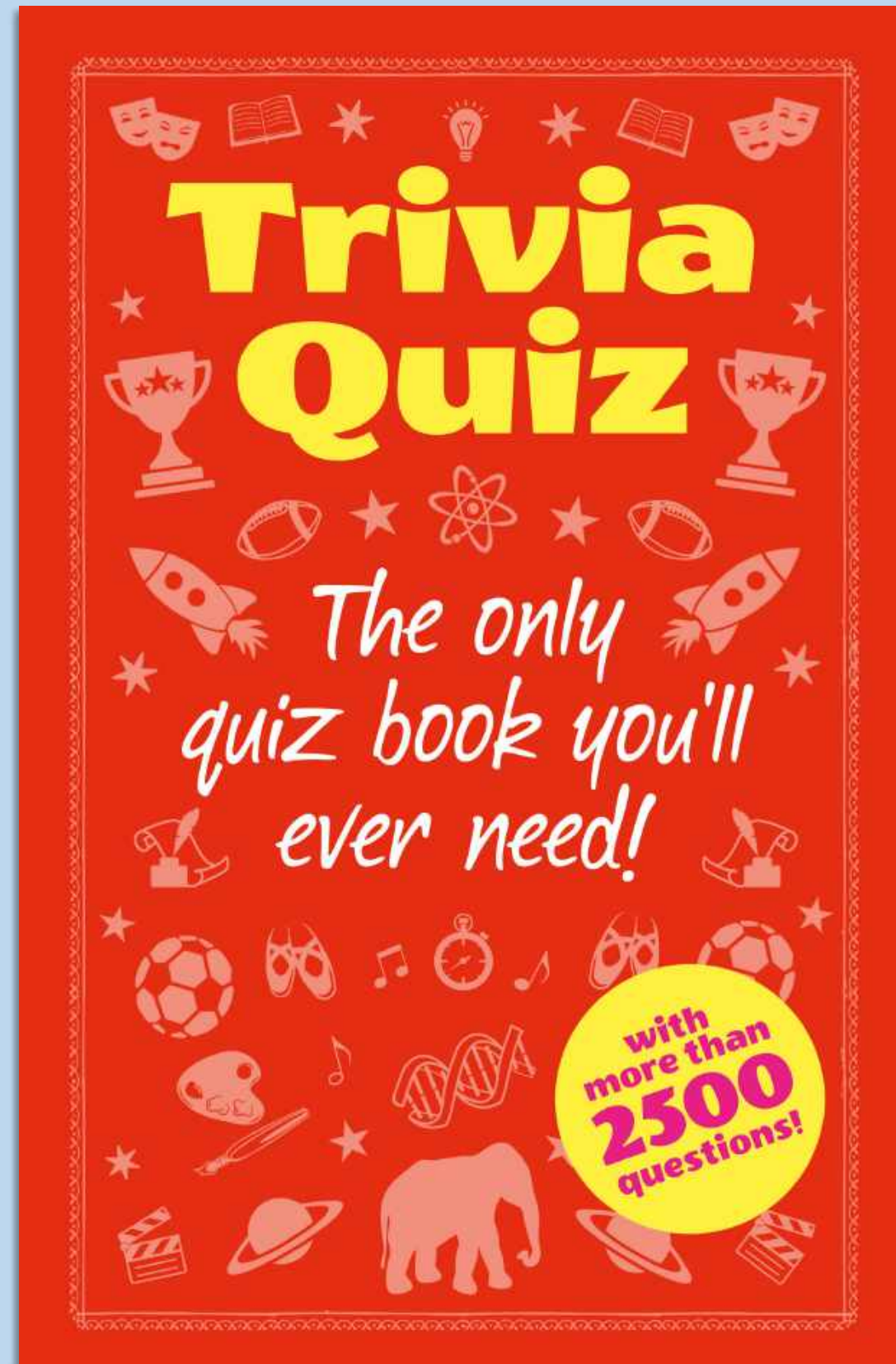
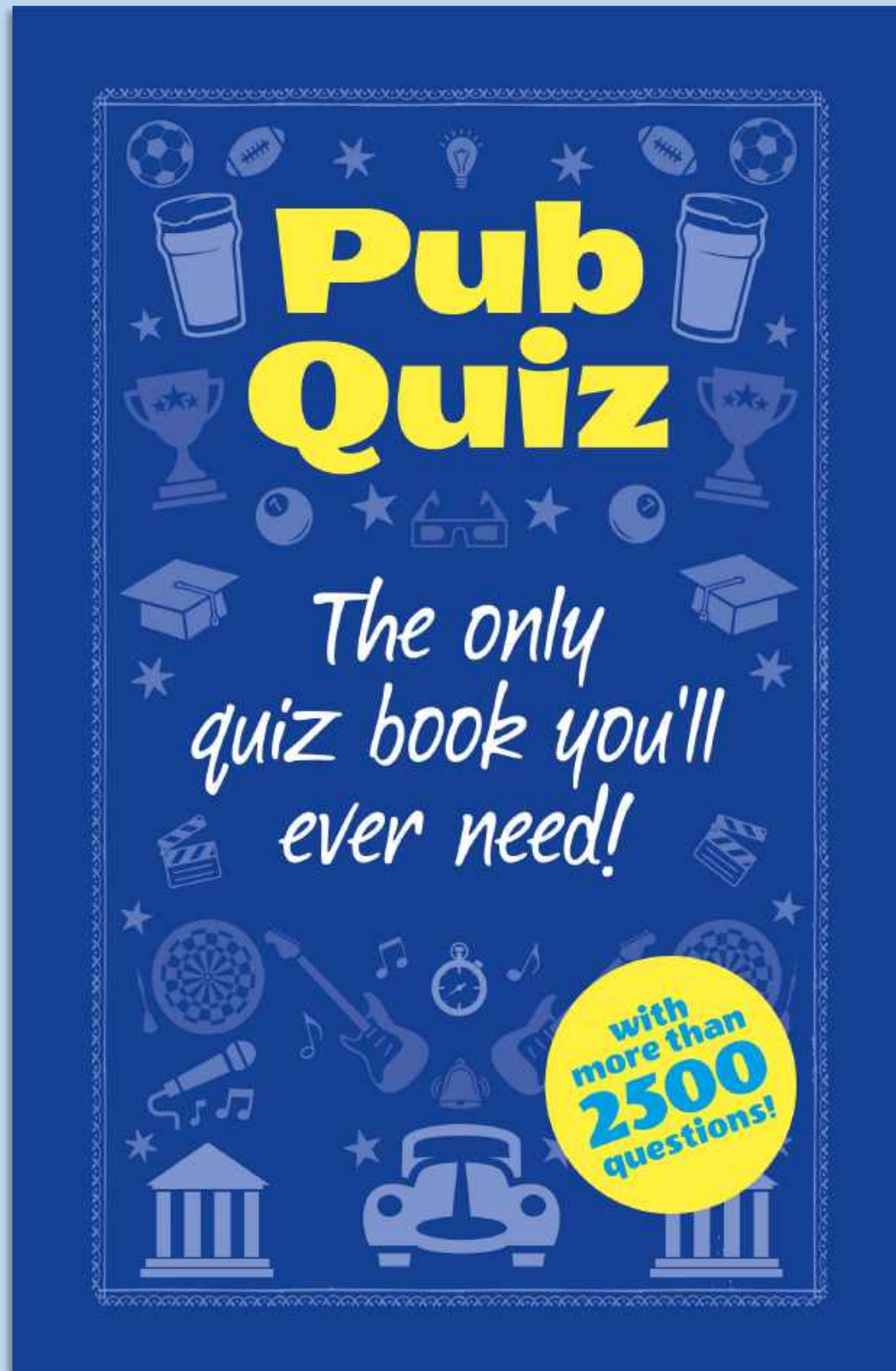
6	3	6	6	0	0	4
5	5	6	0	1	6	1
4	4	0	3	3	2	5
1	5	2	1	0	5	5
5	5	4	1	2	4	2
2	6	0	3	4	2	3
1	3	6	2	6	0	0
3	4	1	2	1	3	4

102

16	17	19	24	25	26	29
15	18	20	23	27	28	30
13	14	22	21	33	32	31
12	2	1	34	35	41	49
11	3	9	36	40	42	48
4	10	8	39	37	47	43
5	6	7	38	46	45	44

Pub and Trivia Quiz

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ROUND 1

General Knowledge

- 1 The Yucatan Channel lies between Cuba and which country on the American continent?

- 2 What name was given to outlaws such as Ned Kelly in the Australian outback?

- 3 On what, in America, would you find the inscription: 'Proclaim Liberty throughout all the land unto all their inhabitants thereof'?

- 4 What name is given to the fossilized resin of coniferous trees which is used for jewellery?

- 5 In architecture, what are trefoil, ogee, lancet and parabolic types of?

- 6 Standing on the Arabian Sea, what is the principal seaport of Pakistan?

- 7 Which cave is celebrated in Mendelssohn's 'Hebrides Overture'?

- 8 Which palace is the official residence of the French president?

- 9 Which is the only movie in which John Wayne's character died of natural causes?

- 10 Who famously sang 'Happy Birthday' to President Kennedy in 1962?

ROUND 2

Food and Drink

- 1 The eggs of which fish are used to produce caviar?

- 2 What name is given to a sweet plum that has been dried?

- 3 Which fruit is the main ingredient of the Mexican dish guacamole?

- 4 Cider is the fermented juice of which fruit?

- 5 Which French city in the Côte d'Or department is famous for its mustard?

- 6 What is the main ingredient of the dish angels-on-horseback?

- 7 Which family of tree noted for its hard dark wood produces edible fruit called persimmons?

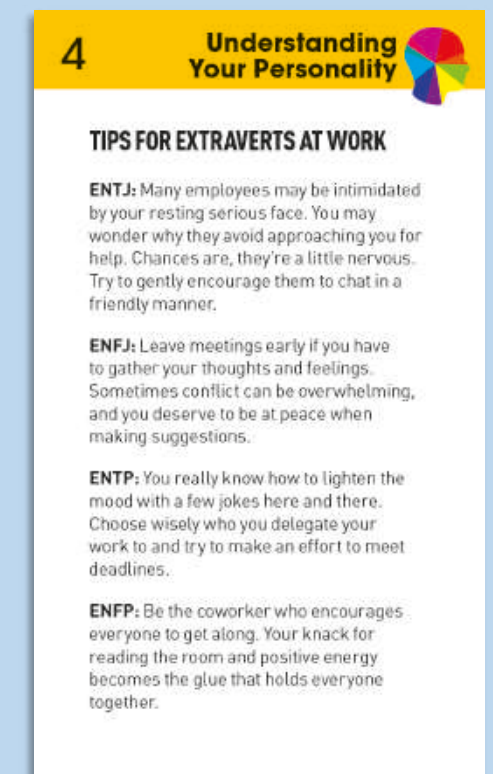
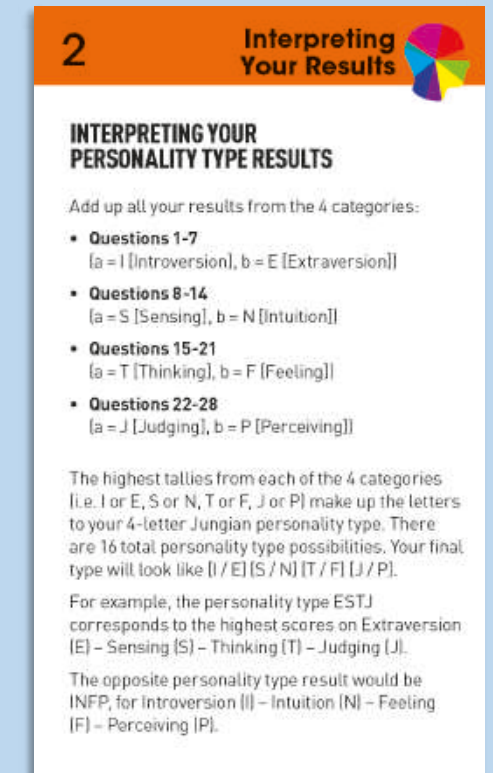
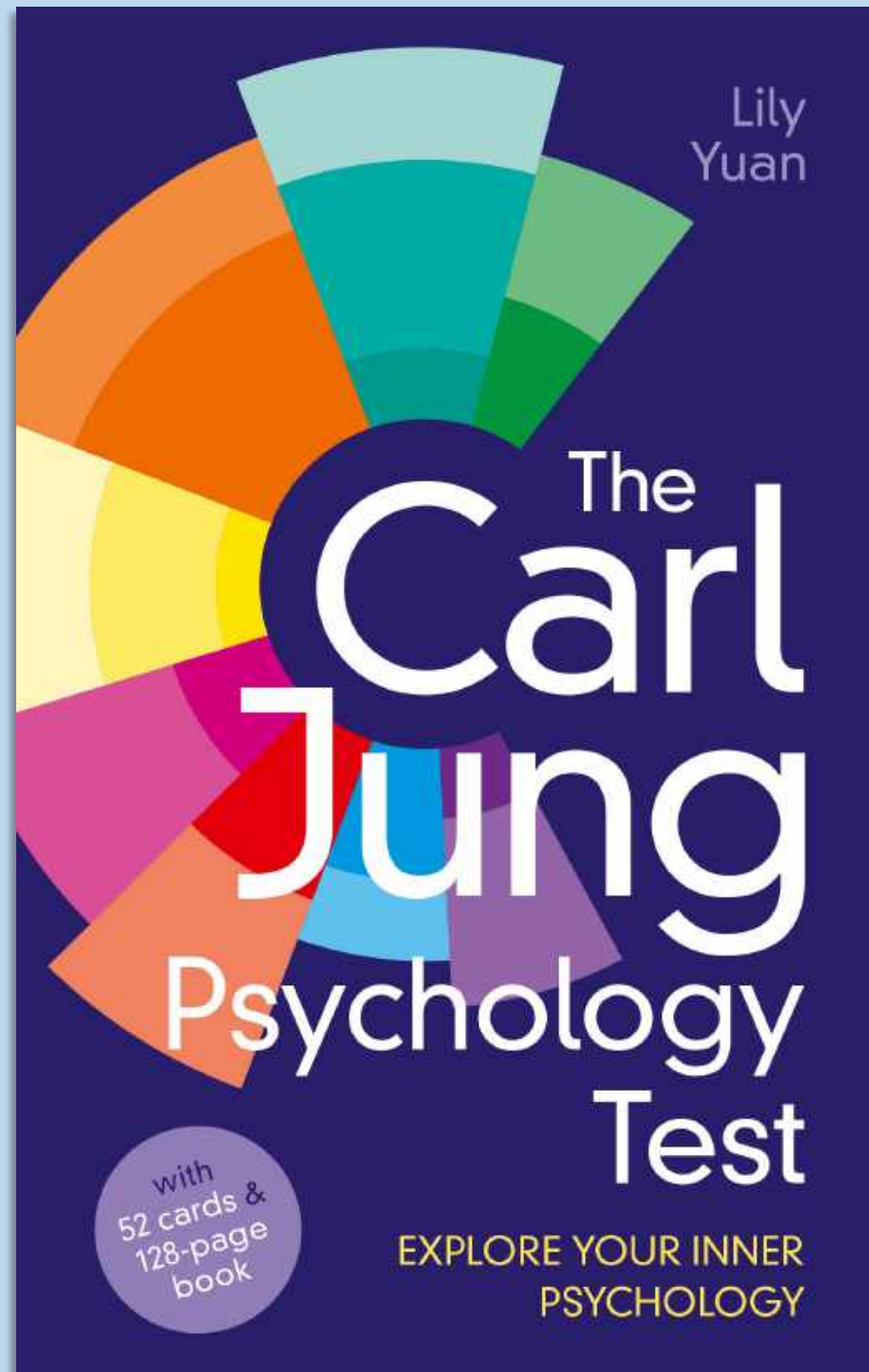
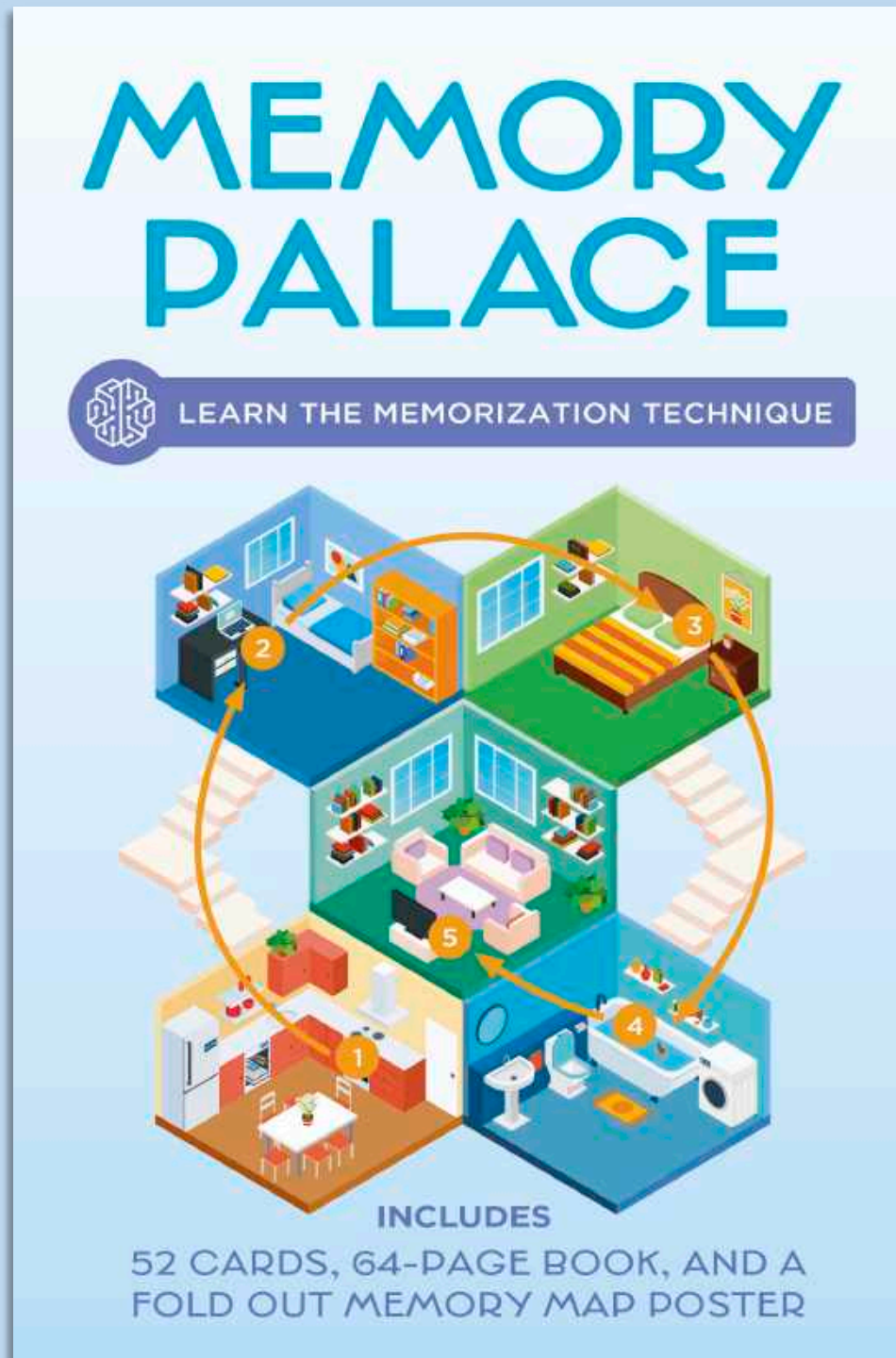
- 8 Which city associated with the Champagne industry was the scene of the coronations of most French kings?

- 9 In which European country did the dish goulash originate?

- 10 What are anise, burnet and hyssop types of?

Boxsets

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