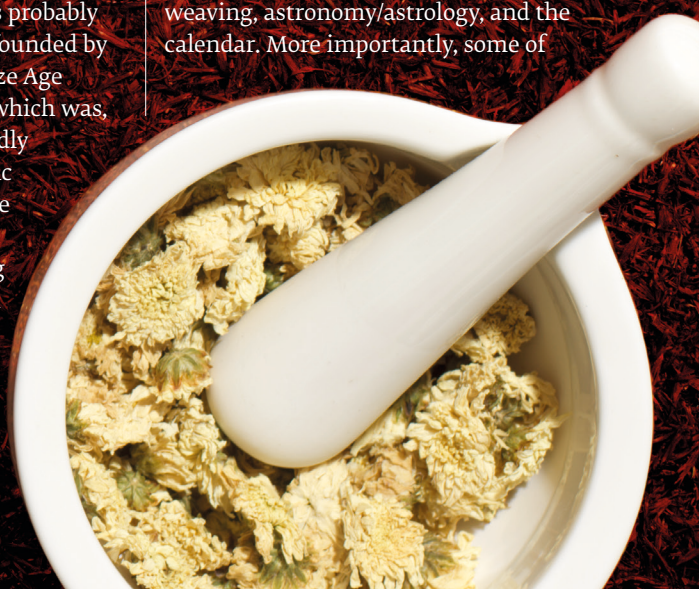
Stephen Mortlock looks back over the medical history of one of the most ancient civilisations on earth.

CHINESE MEDICINE

FROM THE SHANG DYNASTY TO THE CURRENT PANDEMIC

The discovery of the *Shu Ape* – a mouse-sized primate (weighing only 100 to 150 grams) from the Middle Eocene Epoch (4.5 to 4 million years ago) appeared to support the Chinese "regional evolution" theory of an independent basis for the origin of man, in contrast to the theory that all human beings originated in Africa. Certainly, excavations have shown evidence of cultivated rice being grown at Neolithic sites along both the Yellow and Yangtze rivers around 10,000 BC. At Damaidi (a small village in the Weining Mountains on the Yellow River), cliff carvings dating from 6000–5000 BC have been discovered showing scenes of the sun and moon, celestial bodies and people hunting, herding and grazing animals. Neolithic culture was characterised by a settled lifestyle, based on farming and the rearing of domesticated animals, while the use of more sophisticated tools led directly to a growth in crafts, such as pottery and weaving. Archaeologists have shown that ancient Chinese potters produced delicate, polished and coloured vessels used for both functional and ceremonial purposes.

The Chinese Imperial reigns probably started with the Xia dynasty, founded by Yu the Great in the early Bronze Age (between 2070 and 1600 BC), which was, until the late 1950s, a supposedly mythical dynasty, but scientific excavations found early Bronze Age sites including palace buildings and bronze smelting workshops at Erlitou on the Yi River. Evidence also suggests that there were several other clans living alongside the Yellow River at this time. Dynasties rise and fall and the Xia dynasty was eventually overthrown by the Shang dynasty (from 1600 to 1046 BC), another clan found along the Yellow River valley. It was then that the earliest pieces of writing (on pieces of tortoise shells and bone) start to appear and these show the development of agriculture, the brewing of alcohol, silk weaving, astronomy/astrology, and the calendar. More importantly, some of



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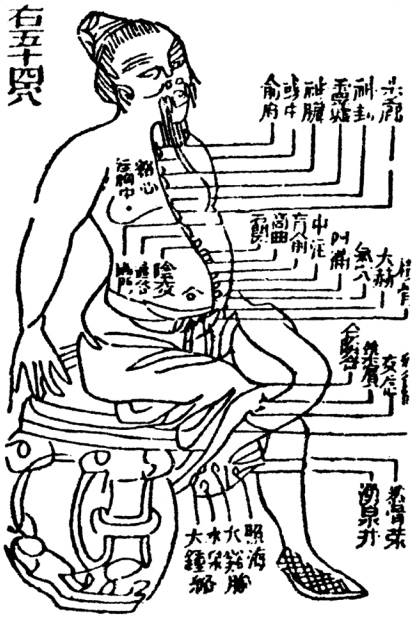
these writings also have references to headaches, eye ailments, abdominal ailments, parasites and other illnesses.

From the year 1046 BC, Chinese culture flourished under the reign of the Zhou Dynasty and their influence spread across China. The greatest and best known Chinese philosophers and poets – Confucius, Mencius, Mo Ti (Mot Zu), Lao-Tzu, Tao Chien, and the military strategist Sun-Tzu – all came from this time and many philosophical schools were founded, which are referred to collectively as the "Hundred Schools of Thought" interestingly, around the same time as Greek philosophy was emerging and the four most influential schools (Confucianism, Taoism, Mohism and Legalism) were established.

Chinese medicine

As with many other cultures, Chinese medical activities probably began long before there were written languages or records. Archeological material proves that the roots of China's written language may extend back some seven thousand years, but the first evidence comes from the Shang dynasty. The Shang people were religious and it was believed illness resulted from upsetting an ancestor, being cursed or an evil demon entering the body and being cursed. So often cures involved placating ancestors with suitable rituals or asking their help to expel the demon. People turned to "Shamans", mediators skilled in talking to the ancestors, who in turn talked to Shang Ti (their deity) for advice. Questions written on "oracle bones", usually scapula bones or tortoise shells, which were heated and the cracks were "divined", in other words, read by the shaman to find an answer. Much was actually recorded during this period, incorporating the different philosophical ideas. The major medical classic, the *Huang Ti Nei Ching (Yellow Emperor's Classic of Internal Medicine)* was written down to consolidate ancient medical experience and theory into one compendium. It detailed the body's anatomy and functions, the blood and circulation, physiology, pathology, diagnosis and treatment, acupuncture and moxibustion (a form of heat therapy in which dried plant materials called "moxa" are burned on or very near the skin) and the use of ethnopharmacology (herbal medicine). These ancient writings describe a medical theory that focused on the circular movement of qi (氣, qì, pronounced "chee", air or vapour) and xuè (血, "shui", blood). Ill health was understood as a stagnation, or deficiency preventing the proper movement of qì or xuè, which would result in an imbalance of yīn (陰) and yáng (陽). Physicians demonstrated that the human body was an organic whole, and that its health and illness was intimately connected to the natural environment, including the five elements (wood, fire, earth, metal, and water). This text made a vast and profound impact on successive generations of medical practitioners and scholars, and has continually guided Chinese medicine's clinical application. There are also texts showing that these early doctors were evaluated and tested by more experienced doctors to ensure they attained certain levels of competency.



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The Zhou dynasty

During the Western Zhou dynasty, imperial doctors were divided into four departments: dietetic, diseases, sores and veterinary. They had a wide range of proven remedies and the number of commonly used medicinal materials exceeded a hundred, consisting of herbs, animal material, and minerals. These historical facts are recorded in the Zhou dynasty's system of standards, *Zhou Dynasty Rites*, the first ancient compilation of verse, *The Classic of Poems*, and *The Mountain Sea Classic*. In the Zhou dynasty, the dietetic physician was elevated to a very high position and dietetic therapy had a huge impact on following generations. Historically, all Chinese medical experts expounded on this aspect of therapeutic treatment, and Chinese *Materia Medica* contain many kinds of fruits, vegetables, grains, and meats. Today, specialised dietetic texts dating from the Tang dynasty, entitled Medicine Amidst Food and Culinary Therapies, are still published in China.

Medical scientists, such as Zhang

Zhongjing (150 to 219 AD) wrote numerous volumes detailing work on epidemics, external heat disorders, jaundice, and gynaecology, eventually producing a complete set of treatment principals. Hua Tuo (110 to 208 AD), invented an anesthetic called *"Mafei San"*, which was basically powdered cannabis, taken orally, which caused the patient to lose consciousness, making it possible to perform elaborate surgery. During the third century AD, the medical specialist Wang Shuhe organised the theories of pulse reading into China's first comprehensive work on pulse reading. It summarises the pulses into 24 types, and expounds on the relationship between the pulse, physiology, and pathology. This systematised the theory and method of pulse reading – one of the outstanding achievements of Chinese medicine.

The Tang dynasty

Sun Simiao (540 to 682 AD), the Tang dynasty medical scientist, researched and understood each aspect of Chinese medicine, including physiology, pathology, diagnosis, treatment, herbs, prescriptions, and other essential theory, as well as internal medicine, external medicine, gynaecology, paediatrics, acupuncture, massage, Qigong, alchemy, and dietetics. His body of work is extensive with a supplement on herbal medicine that gives instructions for the correct time to harvest and process over two hundred types of herbs. This text elaborates on the fact that differing quality of soil, water composition, and climates can affect the same herbs from different areas, causing a variation in quality. He wrote "If you do not know the proper seasons when they should be placed in the shade or in the sun to dry, the result will be that you know their names but do not obtain their intended effects. If you gather them at an improper time, they will be good for nothing." He also believed that women have a special physiology, and that during menstruation, pregnancy and childbirth they are more susceptible to illness. Sun said "the reason there are separate prescriptions for women is that they get pregnant, give birth, and suffer from uterine damage. This is why women's disorders are ten times more difficult to cure than those of males." He wrote a text with prescriptions and treatments specifically for women and children.

The Song dynasty

The invention of the printing press and further advances in paper-making allowed large quantities of Chinese medical texts to be printed. This caused Chinese medicine to spread, giving rise to widespread, deep research. Specialisation in Chinese medicine continued to develop and experts emerged. Many different schools of thought, with different academic arguments, came into existence and brought about many new viewpoints. In 1247, during the Song dynasty, Song Ci (1186 to 1249) published his book *Collected Cases of Injustice Rectified*, which recorded human anatomy, coronary methods, emergency treatment, detoxification, and other information. What is interesting is a section titled "Difficult Cases". This text is a fairly early work on forensic medicine and explains how to use evidence to determine cause of death in unusual cases, especially if the death is suspicious or possibly an intentional death made to look accidental. And he was able to determine the time of death by the rate of decomposition or show whether the corpse had been moved. Song Ci also compiled a pharmacopoeia of useful herbs that could be used to make obscure injuries appear.

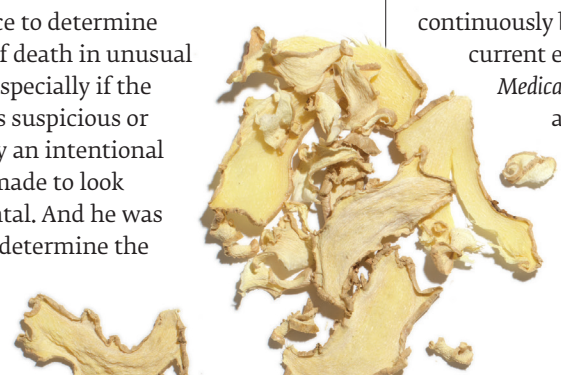
Herbal Medicine

Around 6000 years ago, a Chinese farmer called Shennong taught people how to cultivate grains as food and it is said he tasted hundreds of herbs to carefully test and record their therapeutic properties. *The Divine Farmer's Materia Medica* (or *Shennong Ben Cao*), first compiled around 206 BC, is considered to be the earliest Chinese pharmacopoeia, with over 360 herbs that he had classified into three groups. The first group are food herbs that are eaten for health maintenance, longevity and illness prevention. The other two groups are called medicinal herbs that are dispensed to each patient as an individual formula based on one's unique constitution, environment, and medical condition.

The Chinese Materia Medica

From 206 BC to the late 16th century, many more herbs were added to what became known as the *Chinese Materia Medica*, the book of Chinese herbal medicines. This increased the total to 1892 distinct herbs and more than 10,000 formulas. Over several millennia, many Chinese physicians made new discoveries, theories, and classifications, often writing or compiling books that have become classics of Chinese medical literature and are still referenced today. New entries are continuously being added and the current edition of *Chinese Materia Medica* contains over 10,000 herbs and natural substances.

Liquorice, often called the "grandfather of herbs" is used in the majority of prescriptions



to balance out the other herbs and "improve" the flavour. But, people have chewed liquorice roots for oral hygiene for as long as the plant has existed. It is well known for its detoxification powers, reducing the toxicity of nicotine and caffeine. It has anti-inflammatory and anti-allergy properties, helps with digestion and eases respiratory problems. The bright yellow turmeric powder is used in curries from all over the world and has been used as an alternative to saffron in paellas and other saffron-based dishes. Its use in medieval Europe led to it being nicknamed "Indian Saffron". In Chinese herbal medicine turmeric did not appear until the Tang dynasty (7th century), a time of great international trade and was probably imported to China from India. Turmeric comes from the root of the *Curcuma longa* plant, and has a tough brown skin and a deep orange flesh. This herb has a peppery flavour, both warm and bitter, while its fragrance is mild. The active constituent in turmeric is called curcuma. Turmeric plants belong to the category of herbs that invigorate the blood. As the name indicates, these herbs tend to stimulate the blood flow and are used to help the circulation of blood in cardiovascular conditions or menstrual irregularities as well as to treat acute pains caused by blood stagnation. It was also used to relieve congestion and resolve bruising and clots, aid digestion, dissolve gallstones and decongest the liver. Not to forget being used for nosebleeds and heatstroke.

Turmeric has similar effects to steroidal and non-steroidal anti-inflammatory drugs in reducing swelling and pain, but without the side effects or risks of the drugs. Due to these properties, it is used in Chinese medicine for rheumatic conditions, especially for the shoulder. More recently, there has been a lot of research into the cancer-fighting properties of turmeric. Studies have claimed frequent use of turmeric is linked to lower rates of breast, prostate, lung, pancreatic, oral and colon cancer.

Ginkgo biloba

Ginkgo biloba was all the rage a couple of years ago and powders and pills started appearing in health food shops and can even be found in supermarkets these days. *Ginkgo biloba L.* of the Ginkgoaceae family is a deciduous tree (20–40 metres height) native to eastern China and is considered a "living fossil" since it is thought to have originated 200 million years ago. It was first recorded as a medicinal plant in the *Chinese Materia Medica Shen Nong Ben Cao Jing* approximately 2,000 years ago, and only the seeds were reported to be used as medicine. Much later, the leaves of *G. biloba* were cited for the treatment of heart and lung diseases. The nuts were chewed by monks when they had to sit for hours in meditation, as it reduced urination; recent studies have shown that *G. biloba* extract 761 can alter the volume of urine excretion. The nuts are edible, when cooked, and can be used in a variety of Asian dishes, one of the more famous being "Buddha's Delight", which is one of the many dishes eaten during the Chinese New Year celebrations. *G. biloba* has a bitter-sweet, astringent property, is associated with the lungs and can be used for asthma, coughs and chronic inflammation from allergies. It is also used for cardiovascular conditions, stomach upsets and eye conditions. It has long been used to treat erectile dysfunction in China and is an ingredient in modern-day Viagra. It has been claimed that it can be used as a cure for bad memory; its abilities to slow mental decline and as an overall tonic for the mind have been documented. On the downside, some people find they are allergic to the outer fleshy part of the nut and skin reactions – such as blisters or itchy irritation – can occur if gloves are not used when handling the fruit.

The invention of the printing press allowed large quantities of Chinese medical texts to be printed

Flavones

Georgi root (*Scutellaria baicalensis*) or Chinese skullcap is the traditional Chinese herb Huang-qin. It is a member of the mint family (Lamiaceae) found in sandy mountain soils in northeast China and adjacent Russia, Korea, Mongolia, Japan, and the mountains of southwest China, north of the Yangtze River. It is probably the most widely used of the 98 species of *Scutellaria* that occur in China. It was first described in Western terms by a German-born botanist Johann Gottlieb Georgi (1729–1802), a professor of the Russian Academy of Sciences in St Petersburg. Its first mention in Chinese *Materia Medica* (herbals) comes in *Shen Nong Ben Cao Jing* in the middle class of drugs. It has been applied in the treatment of diarrhoea, dysentery,

hypertension, haemorrhaging, insomnia, inflammation and respiratory infections. Flavones, such as baicalin and wogonoside, and their aglycones, baicalein and wogonin, are the major bioactive compounds extracted from the root of *S. baicalensis*. These flavones have been reported to have various pharmacological functions, including anti-cancer, hepatoprotection, antibacterial and antiviral, antioxidant, anticonvulsant and neuroprotective effects. Lung Fufang, a traditional prescription using Huang-Qin, can prolong the survival rate of patients with primary bronchial pulmonary squamous cell carcinoma, and it has a similar effect on NSCLC (non-small-cell lung cancer) patients. Huang-Qin is also a major ingredient of Fuzheng anti-cancer prescription, which when used in combination with chemotherapy is shown to have improved outcomes on NSCLC in middle- and late-stage patients, compared with chemotherapy alone.

Recent developments

Famously, the gold-standard malaria drug, artemisinin, was discovered in China — isolated from sweet wormwood *(Artemisia annua). Artemisia annua*, known as *qinghao,* is celebrated in traditional Chinese medicine as a treatment for malaria. However, early medicinal records also show it to be a remedy for haemorrhoids and used as an anti-inflammatory.

More recently, artemisinin and its derivative artesunate have shown a potential to stop viruses reproducing, including CMV, HSV-1 and HCV. A study conducted in China in 2005 also found that compounds extracted from four herbs, including *Artemesia annua*, showed moderate antiviral activity in laboratory cells against the original SARS virus, which is of course closely related to the current coronavirus.

This involves the four pillars of diagnosis – looking, listening, touching and asking

Conclusions

Over thousands of years traditional Chinese medicine has developed a theoretical and practical approach to the treatment and prevention of disease. The first documented source of Chinese medical theory, the *Huangdi Nei Jing* (*"Inner Classic of the Yellow Emperor"*) was written between 300 BC and 100 BC. It describes the diagnosis and treatment of a huge range of disorders and gives advice about healthy lifestyles, exercise, and dietary advice to avoid micronutrient deficiency diseases such as beri-beri, xerophthalmia, and goitre, which conforms remarkably well with current recommendations for the prevention of chronic disease. Chinese medicine developed and was passed on from a very early time; the result is a legacy of works exceeding 8000 texts dealing with every sort of health problem, including the common cold, venereal disease, paralysis, and epilepsy. This knowledge is contained in books and manuscripts bearing such enigmatic titles as *The Pulse Classic* (compiled by Wang Shuhe in the 3rd century) and *Prescriptions Worth a Thousand Pieces of Gold* (by Sun Simiao in the 7th century).

As we compare the treatments from traditional West and East, both are associated with the imagination of the human body and medicinal materials. Before orthodox medicine revealed the real cause of disease, human beings had a long history of creative imagination about the inner and outer self.

While ancient Chinese perceived the body in an adequate balance characterized by Yin and Yang, medieval European doctors invoked the hot/cold dichotomy but the principles of treatments are surprisingly the same. In one medieval medical book, *Causae et Curae* written by Hildegard of Bingen (1098-1179), there are treatments very similar in both European and Chinese medicine – vinegar or equivalent was used as a warming treatment "to warm the stomach and bladder". As with most forms of traditional medicine, the theoretical and diagnostic basis of traditional Chinese medicine cannot often be explained in terms of Western anatomy and physiology. It is rooted in the philosophy, logic, and beliefs of a different civilization and leads to a perception of health and disease. Whereas a doctor of traditional Western medicine might be interested in body weight, height and symptoms during an examination, the Chinese medicine doctor looks at a patient holistically. This process involves the four pillars of diagnosis – looking, listening, touching and asking, which can provide important indicators as to the balance, harmony, and energy of the patient. They can then provide the necessary treatment, and two patients with the same symptoms might be treated very differently. Which method is better? The answer is "both", or "neither". We should try and integrate both into a universal approach to healing and treatment, then perhaps we will all be a little healthier and wiser. BMS

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