MIND-BOGGLING MEDICAL HISTORY

RULES AND ANSWERS

Arts & Humanities Research Council
CONSTRUCTING SCIENTIFIC COMMUNITIES
Royal College of Nursing
The voice of nursing in the UK
UNIVERSITY OF OXFORD

Project background

Mind-Boggling Medical History originated as a public engagement activity for museum events. Following a positive reception, we decided to develop the game into a learning resource designed to aid critical thinking.

How easy is it for people to tell the difference between what's current practice and what isn't in medicine? And why is it important to think about this? The game shows how historical theories can be used to prompt questions about current understandings of medicine, the need for health and medical practitioners to stay up to date in their field and the impact changes in medical knowledge can have on patient care. The statements are designed to stimulate further questions on the part of the player and to open up wider discussions about medicine, health and history.

Co-created with theatre director and curator Sarah Punshon, funded by the Arts and Humanities Research Council and drawing on the interdisciplinary work of Constructing Scientific Communities, Mind-Boggling Medical History has been created with museum visitors, school students, and University nursing and medical students in mind.

Accompanying lesson plans and learning resources for use with GCSE History and BSc Nursing students are available to download on our website. These can be adapted for healthcare, medical and history students at other levels of study.

We hope you have as much fun playing the game as we have making it!

Sarah Chaney and Sally Frampton

How to Play

To get started pick a theme. There are five themes to choose from:

- **Society**
- **Mind**
- **Body**
- **Treatment**
- **Sex & Reproduction**

Each theme contains a set of cards and each card has a statement describing a medical theory or practice. You must sort the cards into three categories. Is the statement:

- **Past**: The theory or practice is from the history of medicine. At least some doctors or scientists thought it to be true. It is now thought to be factually incorrect or is no longer in use.

- **Present**: The theory or practice is from modern-day medicine. It is in current use today or believed to be true by at least some respected practitioners or researchers.

- **Fictional**: The theory or practice is entirely made up. As far as we know no-one has ever thought it to be true.

- Take a few moments to consider each statement. If you're working in a group discuss your thoughts and decide on your answer.

- Place each statement under the category as above.

- Once you're finished go to the answer card to see how you did and find out more about the statements in the accompanying booklet. If you're playing against another team total up your scores and see who the winner is.

- You can play as many as rounds as you want.

You can contact us, as well as download category boards and additional sets of cards for free via our website: **http://mbmh.web.ox.ac.uk**

Statements and Answers

BODY

1. **The liver is the only organ in the body which can exhibit revenge.**
   FICTIONAL Even though it might feel like it when you have a hangover, your liver can't take revenge upon you for your bad behaviour. It's the metabolic and hormonal effects of alcohol that make you feel so awful, leading to dehydration, nausea, headache and fatigue. However, the bodily organs have long been associated with the emotions. Classical Greek medicine was based on the theory of four humours. This was the idea that the human body is made up of four basic substances - blood, yellow bile, black bile, and phlegm - which are balanced in health, and unbalanced in disease. Each was linked to different qualities and temperaments. The liver was thought to be central in the production of the humours and governed emotions like anger and passion. If the organ was unhealthy it could therefore have a direct influence on one's personality.

2. **Kidneys can sometimes detach from surrounding tissue and sink down into the pelvis. This condition is known as 'floating kidney'.**
   PRESENT ‘Floating kidney’ is the term used to describe a condition called nephroptosis, where the kidney drops down into the pelvis when the patient stands up. In the late nineteenth and early twentieth centuries patients with floating kidney often underwent a surgical procedure called nephropexy to fix the kidney into its proper place. However, the operation was dangerous and controversial, and consequently fell out of favour amongst the medical profession. Despite this, support for the procedure has revived in the last two decades as surgical techniques have improved, meaning that the operation can be performed in a minimally invasive way. This shows how past practices can become accepted once again, as attitudes and technology change over time.

3. **Human skin is adaptive and can grow an extra, protective layer after a long stay in cold climates.**
   FICTIONAL Thinking of moving somewhere snowy? You’ll have to make sure you buy a warm coat! Although our skin helps to regulate

body temperature, it cannot grow an extra coating. The skin is the largest organ in the human body, and is made up of three primary layers: the epidermis, the outermost layer of the skin which serves as a barrier to infection; the dermis, the layer below the epidermis which protects the body from strain and contains many nerve endings; and the hypodermis, or subcutaneous tissue, which attaches the skin to the bone and muscle beneath it.

4. **Most illnesses can be diagnosed from looking at someone's urine.**
   PAST This method of diagnosis is called uroscopy, and has a long history. In Byzantine medicine, urine was the primary way through which doctors diagnosed a person's illness, assessing it by colour, smell and sometimes even taste. It was so popular by the late Middle Ages that countless books and pamphlets were written about it, making it a science accessible for those who weren't medically trained. Even Shakespeare mentions uroscopy, in his play Henry IV! Although a urine test can still be an important diagnostic tool, it is not treated with as much enthusiasm as in the past; doctors today believe visual analysis of urine tells us very little.

5. **Scientists can make brain cells from urine.** PRESENT In 2012, Chinese scientists announced that they had been able to reprogram cells taken from urine into neural progenitor cells, which are the precursors of brain cells. When transplanted into newborn rat brains, and examined four weeks later, the urine cells had begun to exhibit the genetic markers of brain cells. The discovery is exciting, as it means that there is potential for researchers to produce cells tailored to individuals, which can be helpful in combating neurological conditions. Urine is also much more easily collected than other sources of cells, such as blood.

6. **Babies do not feel pain.**
   PAST From the nineteenth to mid-twentieth century, doctors tended to assume that babies and young children were not capable of feeling pain in the same way adults do. This was because they believed that their brains were not developed enough to respond in the same way as a grown person. As a result, doctors often performed surgical procedures on infants without the powerful anaesthetics given to adults for the same operation. By the 1980s, new evidence demonstrated that babies feel pain more extensively than adults, and guidelines for clinical procedures were re-thought. However, if we look back further in time, doctors in the seventeenth century thought that infants were more vulnerable to pain- so ideas can go full circle in medicine!

7. **By gently squeezing the kidneys it is possible to remove excess bile to cure jaundice.**
   FICTIONAL Jaundice can indeed be caused by the build-up of bile, but squeezing your kidneys won't help and is likely to be pretty uncomfortable! When red blood cells break down, the body creates a waste product called bilirubin. This is transported in the blood to the liver, where it's combined with bile. The bile is then stored in the gallbladder, before being

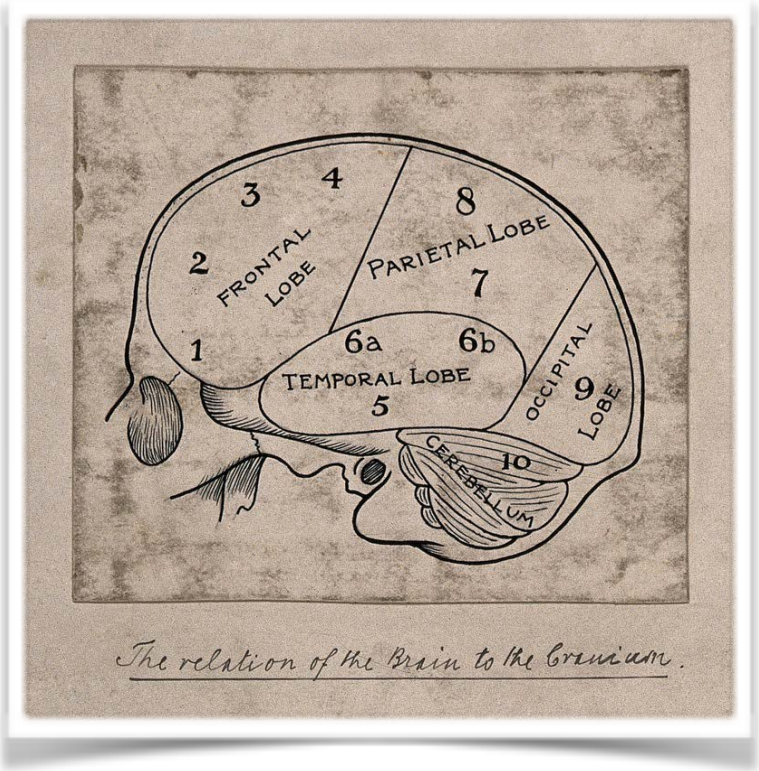
used by the body to aid digestion in the small intestine. If the bile duct system is damaged or inflamed, the gallbladder cannot move bile into the intestines, and jaundice can result.

8. **Pulling out teeth or removing the tonsils or colon can ease severe mental illness by curing infection.**
   PAST In the early twentieth century, bacterial infection was increasingly being used as an explanation for different types of illness, and was referred to as ‘focal sepsis.’ American psychiatrist Henry Cotton attempted to apply this theory to explain and treat insanity. Doctors had long been interested in comparisons between hallucinations and delirium in fever and as symptoms of mental illness. Cotton reasoned that infection was the cause of both, and concluded that the source must be harboured in some bodily organ. He removed teeth and tonsils from many patients and, if this had no effect, tried removing parts of the colon, spleen and stomach. Cotton was certainly not the only psychiatrist who practiced such treatment, which also found popularity in some British asylums.

9. **It is possible to transplant a human head onto someone else's body.**
   FICTIONAL It's currently impossible to perform a head transplant, although in recent years the Italian surgeon Sergio Canavero has expressed a willingness to try it. He believes that the blood vessels and spinal cord could be successfully reattached to their counterparts in a donor body. In theory, this could help a patient who is, for example, paralysed from degenerative muscular disease, to move again. However, head transplants have been tried on animals with disastrous results, and it's highly unlikely that Canavero's methods would be successful. One of the major difficulties with the surgery is reconnecting the millions of nerves in the spinal cord, which may not be possible. Most in the medical community consider the procedure to be unethical.

10. **It is possible to have half your brain removed and live.**
    PRESENT A contemporary medical procedure called hemispherectomy is used to treat very severe epilepsy when all other treatments have failed. The operation involves the complete removal or disconnection of a cerebral hemisphere - in other words, of one half of the brain. Although it might sound scary,

hemispherectomies are now generally successful and involve low risk to the patient. The outcome of the surgery is often greater freedom from seizures, and the patient's cognitive ability generally remains stable. The procedure is most often used in paediatric medicine, as children's brains have a greater ability to adapt to a new structure.



The relation of the Brain to the Cranium.

MIND

11. **A moving uterus, floating up into the body, causes nervous symptoms in women, such as aches, pains, fainting and paralysis.**
PAST The theory of the ‘wandering womb’ dominated medicine from Ancient Greece to the Renaissance. It was believed that the womb (also known as the uterus) could move around the body at will, almost like an animal. Depending on the part of the body in which it ended up, different symptoms were produced; for example, if it got stuck in the throat, the woman might experience choking or coughing. As such, symptoms or illness that had no other apparent cause could be attributed to the wilful womb, and there were strong associations between the wandering uterus and nervous disease. Indeed, the word ‘hysteria’ is actually derived from the Ancient Greek word hystera meaning ‘womb’.

12. **A severe fracture of the spine resulting in injury to the spinal cord can cause memory loss and impaired judgement.**
FICTIONAL Major spinal fractures can cause nerve damage to the spinal cord, and sometimes people who are severely injured, for example in a fall or car accident, can be fully (tetraplegic) or partially paralysed (paraplegic).

This type of fracture is called a high-energy trauma and results when force of impact pushes the vertebrae into the spinal cord. However, this type of injury causes physical rather than mental difficulties for the patient, such as loss of sensation or problems breathing.

13. **Electricity currents passed through the brain can reduce the symptoms of severe depression.**
PRESENT This medical procedure, named Electroconvulsive Therapy (ECT), is used to treat patients with mental health problems, including depression. Passing an electrical current through the brain triggers an epileptic seizure, which can relieve symptoms of severe mental illness. ECT has had a controversial history, as it was often practiced in the early and mid-twentieth century without patients' consent, and without anaesthetic. As a result, use of ECT declined in the 1970s, as many saw the procedure as brutal and dehumanising. However, new laws regarding informed consent mean that the use of ECT is increasing once again, as it can help those who have not responded to other treatment and may be in danger, for example, those who are so depressed that they are unable to eat or drink. It remains controversial due to side effects

including severe memory loss.

14. **Shaving the head is important in the treatment of madness as it allows the patient's brain to cool, thus reducing symptoms of frenzy associated with overheating.**
    PAST Physicians at the Italian medical school in Salerno were writing about frenzy from the eleventh century and hundreds of sufferers had been diagnosed by that time. Frenzy, which we might class as a form of mania or psychosis, was a type of madness. Symptoms included fever, roving and distended eyes, foaming of the mouth, uncontrollable shaking, intense thirst, constant wakefulness and feelings of violence to those in positions of authority. If the condition persisted, restraint was deemed necessary. An early intervention was to shave the patient’s head to cool the humours in that region. This was followed by placing the lung of a pig or sheep on the shaved region to draw out the heat from the brain.

15. **Mice droppings can be used as an ingredient in smelling salts.**
    FICTIONAL Smelling salts were widely used in the eighteenth and nineteenth centuries to revive swooning women, and to help with nervous headaches or sudden frights. However,

smelling salts were not mice droppings, but a chemical compound called ammonium carbonate. This irritated the airways when sniffed, provoking an inhalation reflex that was believed to stimulate breathing. Smelling salts were particularly associated with middle and upper-class femininity, and were actually quite fashionable, often being sold in small, ornately decorated bottles perfect for keeping on show.

16. **Emotional shocks can be fatal.**
    PRESENT It's actually true that it is possible to die of a broken heart. Acute stress-induced cardiomyopathy is the temporary disruption of the heart's pumping action due to sudden emotional stress, such as the death of a loved one. Symptoms can feel like a heart attack, and in rare cases, can lead to death. The idea that you can die of grief may originate with this condition, and the connection between the heart and emotions has been a major theme in art, music and literature throughout history, from Victorian novels to twentieth-century pop music.

17. **Irregular periods can cause insanity in women.**
    PAST Victorian mind doctors believed that women were especially vulnerable to mental illness due to the powerful force their

reproductive organs exerted upon the nervous system. They theorised that the brain, nerves, and reproductive system were connected in a sympathetic loop. Changes to uterine, vaginal, or ovarian health could cause irritation of the nerves, which then produced an adverse effect on the brain. This process could also occur in reverse, with female patients suffering gynaecological symptoms because of their insanity. Doctors therefore thought that irregular menstruation could cause, or be caused by, psychiatric symptoms. Psychiatrists today no longer believe that women's reproductive organs have such a direct connection with the mind, although it is thought that stress can be a cause of irregular periods. Women report higher rates of anxiety and emotional disorders than men and researchers are continuing to investigate both the social and biological reasons for this, including the effect of imbalances in the sex hormones.

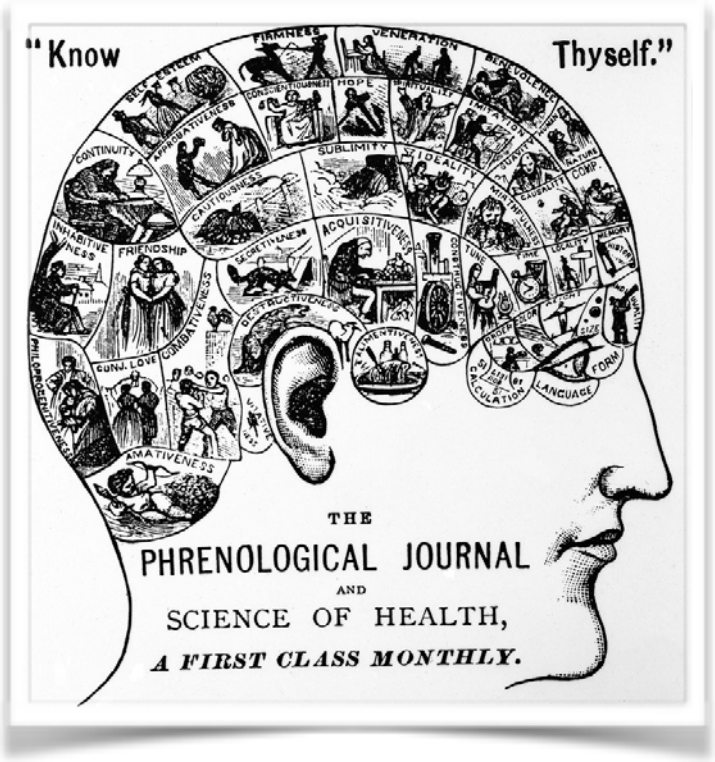
18. **A small proportion of the population can survive without an oxygen supply to the brain.**

FICTIONAL Without an oxygen supply to the brain, a human being will die within 15 minutes. The brain relies on glucose to power neurons that control all the body's functions, and it requires oxygen to metabolise this glucose, i.e.

convert it into energy. Without oxygen, a person will lose consciousness within 180 seconds, and brain cells start to die at the one minute mark. If oxygen deprivation is prolonged, even for a number of minutes, lasting brain damage is likely. Cerebral hypoxia is the medical term for brain injury resulting from lack of oxygen, and causes include cardiac arrest, choking, strangulation, and smoke inhalation.

19. **Different personality traits are located in different parts of the brain. The more a person possesses a particular trait, the bigger the related part of the brain will be.** PAST Phrenology was a doctrine put forward by the Austrian doctor Franz Joseph Gall (1758 – 1828), who viewed the brain as the organ of the mind. He thought that that particular parts of the brain related to certain character traits, such as self-esteem, cautiousness and kindness. These would be larger in size depending on how marked that trait was in the individual, something which could be felt by measuring the skull. Phrenology was at first influential for scientists studying the brain, but it rapidly declined in popularity during the 1840s, and came to be thought of as a pseudoscience. However, during its heyday, the idea that you could 'read' someone's

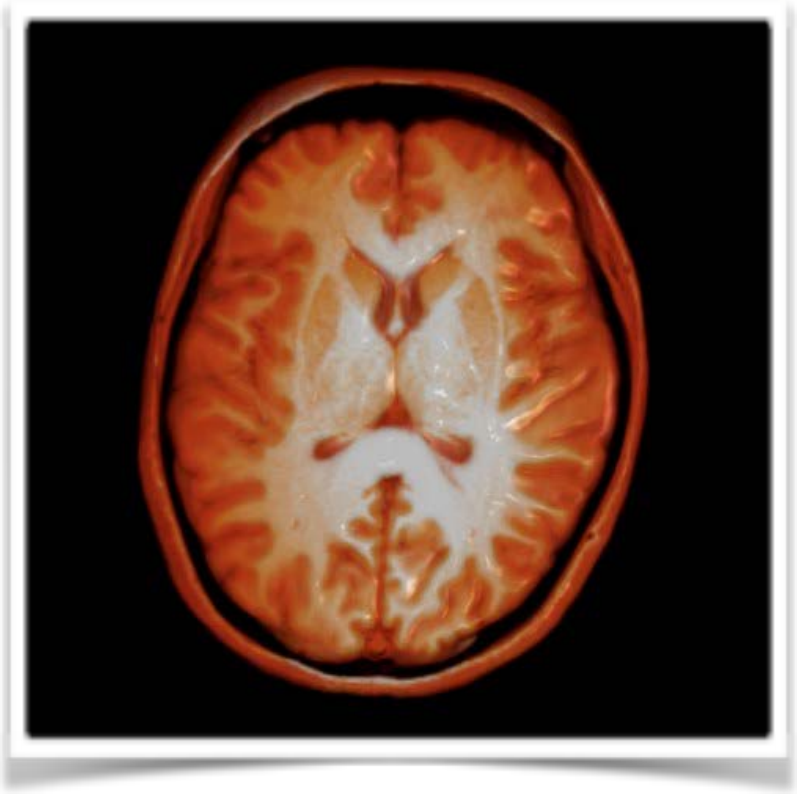
personality by feeling their head generated much enthusiasm, and many famous people had themselves measured, such as the novelist George Eliot.



20. Women have smaller brains than men.

PRESENT On average, women do have smaller brains than men. But they also have smaller hands and feet! While some nineteenth-century scientists deduced that larger brain size meant greater intelligence, this was simply a way of supporting existing ideas about male superiority. Based on this theory, sperm whales would be the most intelligent creatures on the

planet, with a brain size about six times the size of a human's. Today, scientists are still searching for the physiological basis of human intelligence, but are measuring how well the regions of the brain connect with one another, rather than their size or power.



SEX & REPRODUCTION

21. Leprosy is caused by excessive sexual activity.

PAST Leprosy is a disease which can cause disfiguring skin lesions and permanent nerve damage. In the past, people often believed that there was a strong connection between leprosy and morality. In the medieval period, it was understood as both a physical and a spiritual disease. Some believed that lepers were blessed by God and that their suffering on Earth would gain them entrance to heaven. However, others claimed that leprosy was related to sexual desire and activity. In the nineteenth century many doctors, especially in Australia, believed the disease was sexually transmitted. Today we know that leprosy is caused by infection from the M. Lepromatosis bacteria, which is spread through nasal droplets. Although it can be spread through physical contact, the disease is not classed as a sexually transmitted infection.

22. In nursing the first movements of a foetus in a pregnant woman are called 'knockers' as they can feel like a knock on a door.

FICTIONAL Although the kicking of her baby can feel pretty powerful to a pregnant woman, 'knockers' is not a term in medical usage. The

first foetal movements are known as ‘quickening’, a term which has its root in an archaic word for living, ‘quick’. Historically, quickening was viewed as the first sign of life in the womb, marking the certainty of pregnancy. First-time mums can feel their baby move from around 18-20 weeks. Women who have been pregnant before may feel these movements earlier, from around 15-17 weeks.

23. **An illness based on the fear that the genitals are retracting into the body is found almost exclusively in South East Asian countries.**
PRESENT Koro is a mental disorder categorised as a ‘culture-bound syndrome’ in the American Psychiatric Association’s Diagnostic and Statistical Manual (DSM), because of its strong geographical locus. The condition is characterised by fear and anxiety, including a delusion that the genitals are shrinking and retracting into the body, which will eventually cause death. While fears of genital retraction have been reported from across the world, the condition is primarily found in East and Southeast Asia (especially Thailand, South Korea and parts of China), where epidemics were widespread in the 1960s and 1970s. Cultural beliefs are thought to play a role in the genesis and spread of the disease in these communities. However, one could also

argue that everything in the DSM is a culture-bound syndrome, as the understanding of all forms of mental illness is based on cultural expectations.

24. **An unborn baby can recognise and respond to light in the shape of a human face.**
PRESENT Brand new research has shown that foetuses in the final trimester turn and respond to face-shaped lights and patterns. This builds on previous studies which have demonstrated that babies look around for faces soon after birth. Scientists conducted their study by shining three red dots through the skin of women in the last few months of pregnancy, then moving the dots around above the uterus. When they arranged the dots to look like two eyes above a mouth, they found that the foetuses tried to follow them. This research is exciting as it shows that infants may begin to develop key skills even before they're born!

25. **Surgically removing the clitoris can cure epilepsy.**
PAST In the mid-Victorian period a London surgeon named Isaac Baker Brown (1811-1873) pioneered a new form of surgery he called 'clitoridectomy'- and yes, that's as horrible as it sounds! Interested in the link between gynaecology and nervous disease, Baker

Brown believed that irritation of the nerves in the genital area could cause in women all kinds of mental disturbances, from hysteria, to epilepsy and mania. Removing the clitoris was a potential means of cure. He performed the surgery on a number of women, and although he claimed success, many of his patients said they had been operated on without their full consent. By the end of the 1860s the profession had turned against Baker Brown and his theory, fearing that vulnerable patients were being experimented on. He died penniless and ostracised from medical society.

26. **Drinking beer can improve a woman's fertility.**
FICTIONAL It is not recommended that women trying to conceive should drink at all, and drinking too much alcohol may even decrease fertility. Certainly, beer is not very good for you! However, red wine has been hailed as possessing health benefits due to its high levels of the antioxidant resveratrol, which can help to prevent heart disease or cancer. Although a couple of glasses a week might reduce your risk of health problems (or at least your stress levels), it's better to keep yourself well with regular exercise and a balanced diet.

27. **Eye infections in babies can be treated with human breast milk.**

PRESENT Breast milk has historically been used to treat eye infections in babies, with one eighteenth-century medical text describing how it ‘cools and cures red eyes simply of itself.’ In fact, it is still used today across the globe to help cure sticky eyes in infants. Some NHS trusts continue to recommend a few drops of freshly expressed breast milk to help with neonatal conjunctivitis, as with mild infections regular eye baths are usually all that’s needed

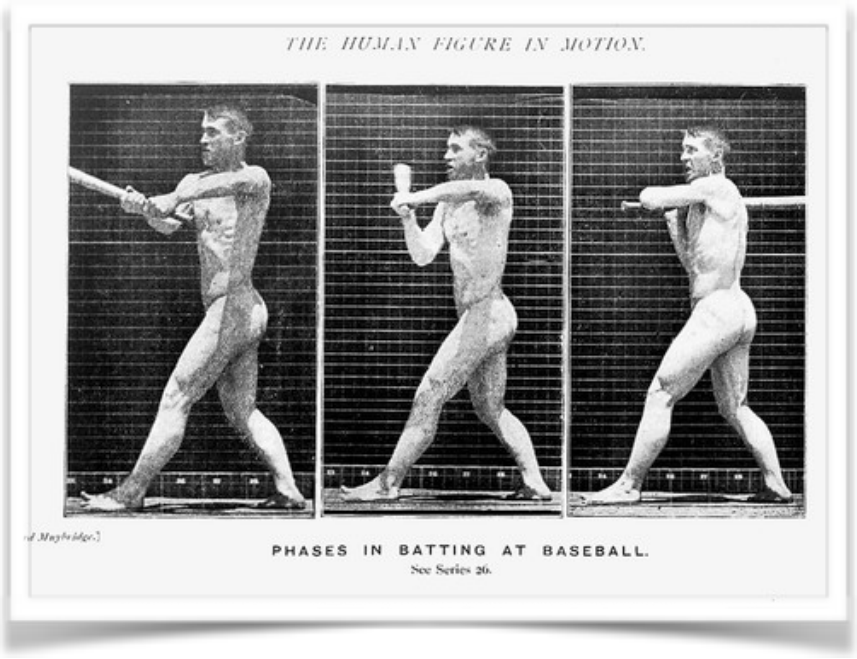
to clear up the problem. Breast milk is full of good bacteria which can help a baby's immune system to develop, so it's helpful for washing infected eyes - although cool, boiled water works just as well.

28. **Sperm that does not enter a female's womb during sex evaporates, becoming tiny particles that float around in the air before planting themselves in the ground.**
PAST This is a theory called panspermism, which was briefly popular in the late seventeenth century. At the time, some scientists advocated a model of reproduction called spermism- that all future humans existed in miniature form within male sperm. However, this theory presented a quandary for philosophers. What happened to sperm that was ejaculated but did not combine with an egg? The possibility that millions of potential humans were simply lost implied a wasteful God. Panspermism was theorised as a solution to this wastefulness. Its supporters believed that sperm that was not used to fertilise an egg was instead diffused into the air and carried by the wind to seed in another host, such as an animal or plant..

29. **Each ovary tends to produce babies of a particular sex. If a woman has her left ovary removed she will only have male babies.**
PAST In Ancient Greek Hippocratic medicine, it was believed that sex was determined through the influence of the right or left side of the body. One theory suggested that the ovary the egg came from was important, while others thought that it was the right or left testicle, or right or left side of the womb which mattered. Female foetuses were thought to be produced by the left side of the body, and male foetuses by the right. This was because in Hippocratic medicine, the right side was thought to be superior. Of course, in a male dominated society, boy children were valued the most highly!

30. **Not having sex can make you better at other things, like sports or music.**
PAST In Ancient Greece, some top athletes were as famous for their sexual abstinence as for their sporting prowess. Physicians thought that both men and women had 'seed' that was used up during sex, but that when unused was reabsorbed by the body and gave a person health and vigour. The idea that sexual abstinence was good for you survived in some form until the nineteenth century, when

Victorian rowers in Oxford and Cambridge made it part of their training regime. Sigmund Freud also believed that sexual energy could be redirected to other things, such as artistic creativity. Although there is no medical reason to believe that this is the case, many non-medical people do still take it very seriously, especially in sports such as boxing and American football.



TREATMENT

31. **Faeces from healthy people mixed with water is given to treat patients suffering from intestinal infection.**
PRESENT As unpleasant as this might sound, it's actually an effective way to treat bacterial infection, colitis, irritable bowel syndrome, and constipation. The procedure is called Faecal Microbiota Transplantation (FMT), and involves restoration of the colonic flora by introducing healthy bacterial flora from a human donor. This is done through a stool and warm water infusion. The stool and water mixture is delivered either by nasal or rectal tube straight to the colon. The benefits of FMT are that it is low-cost, and can be life-saving for patients with debilitating intestinal infections.

32. **In the absence of medical supplies, butter can be pasted around the edges of a wound to prevent bacteria from entering it.**
FICTIONAL Although commercially produced butter has a long shelf-life as it's made from pasteurised milk, like other foods it can go off. If left exposed, the butter will start to go mouldy. Putting food products on wounds is very unhygienic and likely to cause infection. To keep bacteria away, it's much better to keep the wound as clean as possible through regular

washing. Eating certain foods can promote healing, by ensuring the body has plenty of essential nutrients. For example, sweet potatoes are a rich source of Vitamins C, useful for the formation of scar tissue.

33. **Blowing tobacco smoke into the anus of a semi-conscious person will revive them.**
PAST The tobacco enema was a popular method of reviving people pulled from the river Thames in the late eighteenth century. In 1774, two London doctors formed The Society for the Recovery of Persons Apparently Dead From Drowning (later renamed to the catchier Royal Humane Society). The Society paid money to anyone who successfully revived a seemingly drowned person, and placed tobacco resuscitation kits at strategic points along the

Thames. At the time, it was believed that some of the best treatments for drowning were warmth and the administration of stimulating vapours, which would prompt respiration. As the drowned person obviously couldn't inhale the smoke, it was thought the next best thing was to blow it up their bum!

34. **Snake venom is used to fight cancer.**
PRESENT Snake venom has been used for medicinal purposes in China since at least the 1st century AD, but more recently scientists have found evidence for its effectiveness in inhibiting the growth of cancer cells. Snake venoms have a high toxicity potential, which means that they are useful in the development of anticancer agents. New technologies mean that biotoxins can be extracted from the venom, and once isolated, used to prevent cancerous cells from adhering together and interacting with surrounding tissue. This is particularly important in stopping or slowing the spread of tumours.

35. **The tailbone (coccyx) can be manipulated to make a person taller.**
FICTIONAL The coccyx is a small triangular section of bone at the very bottom of the spine, consisting of three to five bones joined together by ligaments. Commonly termed 'tailbone', it is

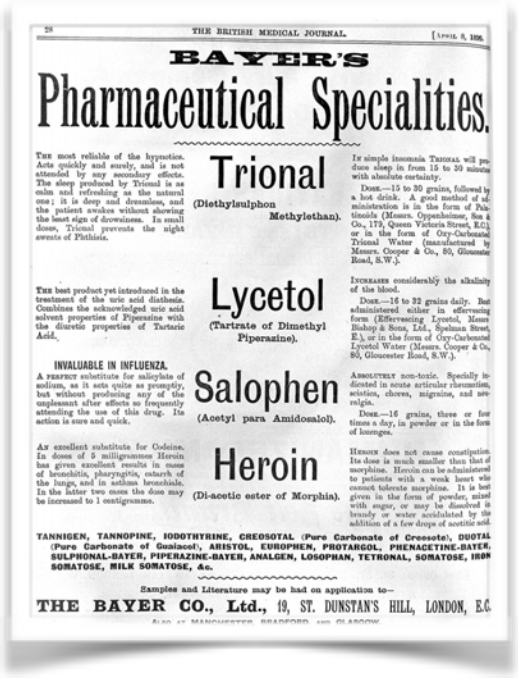
thought to be left over from when humans had a tail during an earlier stage of evolution. The position of the coccyx has no bearing on how tall a person is, and in fact has a limited range of movement. However, it is useful in providing balance when sitting, and also in supporting the pelvic floor muscles and important ligaments which stretch along the spine.

36. **A combination of onion, garlic and cow bile can help kill infections.**
PRESENT In 2015 collaborative research between scientists and academics working in Viking Studies found that an Anglo-Saxon remedy for eye infections containing onion, garlic and cow bile was able to kill about 90% of MRSA bacteria in testing. The Old English recipe stated that one must ‘take cropleek and garlic, of both equal quantities,’ then add ‘wine and bullocks gall,’ before letting it ‘stand nine days in the brass vessel.’ It sounds a bit like a witch’s brew, and in fact using exactly the right method was crucial, as the potion failed to kill the bacteria if prepared in a slightly different way. This research could potentially lead to the development of new drugs which might help to combat antibiotic-resistant infections.

37. **Hospitals place beds outside in all weathers to help ease symptoms of tuberculosis (TB).**
PAST It can be difficult for us today to imagine the impact tuberculosis had on society in the past. In Britain many thousands of people suffered from the debilitating lung disease which required months of treatment and which was frequently fatal. In the late nineteenth and early twentieth centuries large sanatoriums were set up to treat patients. Fresh air was seen as one of the best forms of prevention and cure for TB, and sanatoria patients would often have their beds moved outside where they would spend the majority of the day taking in the air, even in snow. However, the treatment did not directly address the bacterial cause of the disease. This would only be tackled with antibiotics later in the twentieth century. Interestingly, weather still has a part to play in fighting TB, as sunlight and good ventilation are both thought to be helpful in preventing the spread of the disease.

38. **Heroin is a non-addictive alternative for morphine used in cough medicine.**
PAST It might be hard to believe but at the beginning of the twentieth century heroin was sold as a medicine to treat coughs! The prevalence of infectious diseases like

tuberculosis meant that many people suffered from severe coughs and desperately sought help to cure the ailment. Other opiates like morphine or laudanum were already commonly used as cough suppressants, but were considered imperfect because they could lead to addiction. Heroin was produced, commercialised and sold by the German pharmaceutical company Bayer as it was thought to be a non-addictive alternative, and in 1906 the American Medical Association approved its use. As you might expect, reports soon flooded in that users quickly became hooked on the new substance. The drug became illegal in America and Britain in the 1920s.



xii THE BRITISH MEDICAL JOURNAL. [APRIL 8, 1899.

BAYER'S

Pharmaceutical Specialities.

THE most reliable of the hypnotics. Acts quickly and surely, and is not attended by any secondary effects. The sleep produced by Trional is as calm and refreshing as the natural one; it is deep and dreamless, and the patient awakes without showing the least sign of drowsiness. In small doses, Trional prevents the night sweats of Phthisis.

Trional

(Diethylsulphon Methylethan).

IN simple insomnia TRIONAL will produce sleep in from 15 to 30 minutes with absolute certainty.

DOSE.—15 to 30 grains, followed by a hot drink. A good method of administration is in the form of Palatinoids (Messrs. Oppenheimer, Son & Co., 179, Queen Victoria Street, E.C.); or in the form of Oxy-Carbonated Trional Water (manufactured by Messrs. Cooper & Co., 80, Gloucester Road, S.W.).

THE best product yet introduced in the treatment of the uric acid diathesis. Combines the acknowledged uric acid solvent properties of Piperazine with the diuretic properties of Tartaric Acid.

Lycetol

(Tartrate of Dimethyl Piperazine).

INCREASES considerably the alkalinity of the blood.

DOSE.—16 to 32 grains daily. Best administered either in effervescing form (Effervescing Lycetol, Messrs. Bishop & Sons, Ltd., Spelman Street, E.), or in the form of Oxy-Carbonated Lycetol Water (Messrs. Cooper & Co., 80, Gloucester Road, S.W.).

INVALUABLE IN INFLUENZA.

A PERFECT substitute for salicylate of sodium, as it acts quite as promptly, but without producing any of the unpleasant after effects so frequently attending the use of this drug. Its action is sure and quick.

Salophen

(Acetyl para Amidosalol).

ABSOLUTELY non-toxic. Specially indicated in acute articular rheumatism, sciatica, chorea, migraine, and neuralgia.

DOSE.—16 grains, three or four times a day, in powder or in the form of lozenges.

AN excellent substitute for Codeine. In doses of 5 milligrammes Heroin has given excellent results in cases of bronchitis, pharyngitis, catarrh of the lungs, and in asthma bronchiale. In the latter two cases the dose may be increased to 1 centigramme.

Heroin

(Di-acetic ester of Morphia).

HEROIN does not cause constipation. Its dose is much smaller than that of morphine. Heroin can be administered to patients with a weak heart who cannot tolerate morphine. It is best given in the form of powder, mixed with sugar, or may be dissolved in brandy or water acidulated by the addition of a few drops of acetitic acid.

TANNIGEN, TANNOPINE, IODOTHYRINE, CREOSOTAL (Pure Carbonate of Creosote), DUOTAL (Pure Carbonate of Guaiacol), ARISTOL, EUROPHEN, PROTARGOL, PHENACETINE-BAYER, SULPHONAL-BAYER, PIPERAZINE-BAYER, ANALGEN, LOSOPHAN, TETRONAL, SOMATOSE, IRON SOMATOSE, MILK SOMATOSE, &c.

Samples and Literature may be had on application to—

THE BAYER CO., Ltd., 19, ST. DUNSTAN'S HILL, LONDON, E.C.

ALSO AT MANCHESTER, BRADFORD, AND GLASGOW.

39. **Silver dressings are a good treatment for chronic ulcers and extensive burns.**
PRESENT Silver has long been used for medical purposes, particularly due to its antimicrobial properties which makes it useful as an aid in fighting off infection. In the past, surgical incisions were often sewn up using silver surgical sutures, and silver is still used today in small amounts for some wound dressings. Silver ointments or creams are often used in burns management, or to treat chronic ulcers. Whilst some new evidence has questioned whether the metal is necessarily better than other types of treatment for wounds, the continued use of silver could have a small role to play in the fight against antibiotic resistance. This is because topical antiseptics like silver have a low risk of bacteria developing resistance to it.

40. **If used wrongly, the universal antibiotic Kalocin can kill off all good bacteria in a person's body, risking an infinite number of infections.**
FICTIONAL Kalocin is a fictional drug from the novel *The Andromeda Strain* (1969). In the novel, the drug is a universal treatment for every known type of virus or bacterium. Unfortunately, if a person stopped taking the

drug, they quickly died from superinfection caused by the medicine having depleted their body's normal microbes. Whilst Kalocin and its effects are fictional, antibiotic resistance is a very real problem, described by the World Health Organisation (WHO) as 'one of the biggest threats to global health today.' Antibiotic resistance occurs when bacteria change in response to such medications, developing into strains which become harder to treat. This means that even common illnesses or small injuries become dangerous, and can once again kill. One of the major causes of this is the overuse of antibiotics, and WHO advises to take them only when necessary and prescribed by a healthcare professional.

SOCIETY

41. **Eating too many bananas makes you grow more body hair by increasing the level of potassium.**
    FICTIONAL Bananas are a great source of potassium, which our bodies need for maintaining healthy nerves and blood pressure. Potassium levels in the body which are too high (hyperkalemia) can result in symptoms such as vomiting, tingling, and chest pain - even heart failure in extreme cases. Most often, hyperkalemia is caused by conditions such as chronic kidney disease. In theory, it's possible to develop toxic levels of potassium by eating too many bananas, but you'd have to eat hundreds in one go - and they certainly wouldn't turn you into a werewolf!

42. **Bus drivers are more prone than the rest of the population to stomach ailments.**
    PAST In 1937 bus drivers in London conducted a major strike, campaigning for a 7-hour work day, as they claimed that the intensity of their work was leading to serious health problems. They argued that a digestive disorder, called 'Busman's Stomach,' was prevalent amongst the bus driving community, caused by their poor and irregular diet, stress, carbon monoxide levels, and the sedentary life

of bus driving. Although the bus drivers were able to use the disease as leverage for better working conditions, the theory of 'Busman's Stomach' fell out of favour by the 1940s. However, the concept of psychosomatic illness (physical problems brought on by emotional changes), and in particular the link between stress and the digestive system, is still upheld in medicine today.

43. **Smallpox has been eradicated.**
PRESENT Smallpox was an infectious disease caused by the variola virus, which often proved fatal. Symptoms included feverishness, sickness and diarrhoea, and a rash across the body which developed into fluid-filled blisters. Those who survived were often left with terrible scars, and it was one of the world's most feared diseases. The smallpox vaccine was the first vaccine ever to be developed. It was introduced in 1796 by Edward Jenner, who found that you could use cowpox, a related but milder disease, to inoculate against smallpox. The disease was officially declared eradicated in 1980, and the last known case was in 1977, in Somalia.

44. **Excessive cycling can cause permanent damage to the muscles in the face.**
PAST During the late nineteenth century, as cycling became more popular, doctors began to worry about its potential health risks. They were particularly concerned about the effect it would have on women, who were riding bicycles in ever increasing numbers. Some doctors even claimed that excessive cycling could cause female riders to develop 'bicycle face,' where the facial features became contorted due to the strain of exercising. These concerns arose as the freedom cycling allowed women was threatening to the existing status quo; especially as some female cyclists advocated the use of special clothing for riding, such as bloomers which (alarmingly) showed women's legs!

45. **Female professional trampolinists are usually incontinent.**
PRESENT During trampolining, the pelvic floor is exposed to high forces due to the impact of landing. Our pelvic floor muscles are what give us control over our bladder and bowel, and damage to them can lead to incontinence. Even though professional trampolinists are fit and therefore have a strong pelvic floor, the amount they have to train means that their

muscles regularly undergo high impact. Several studies of the experiences of professional female trampolinists have found that the majority suffer from urinary incontinence, most often during training itself.

46. Shoe fitters use X-rays to accurately measure the size of your feet.

PAST Following the discovery of x-rays in the 1890s, enthusiasm for the new technology spread far and wide. X-ray instruments like the fluoroscope could be used to see inside the human body, allowing doctors to check for a wide range of conditions. During the 1920s several commercially minded American doctors had the idea of selling the 'shoe-fitting fluoroscope' to shoe shops. Shoe-fitters claimed the device gave a scientific assessment of the foot's anatomy and thus customers could be fitted with a shoe that best suited their foot shape. However, in reality it was little more than a marketing gimmick. As the dangerous effects of radiation exposure became better known the shoe-fitting fluoroscope fell out of fashion, and was abandoned altogether by the 1970s.

47. **On average two people in Europe are accidentally buried alive every year.**
FICTIONAL It is extremely rare for people to be accidentally buried alive. It is not known how many premature burials there have been throughout history, largely because the victim will most often die of asphyxiation once interred. However, there have been a few reported cases. In 2014, a 45-year-old woman being treated for cancer was buried alive in northern Greece, after her doctors pronounced her dead. Residents near the cemetery reportedly heard shouts from inside the grave, and called the police. Unfortunately, the woman had suffocated before rescuers could reach her. The macabre nature of such a death has spawned many myths, legends, and stories about premature burial, including Edgar Allen Poe's *The Fall of the House of Usher* (1839).

48. **Some health drinks contain cocaine as a stimulant.**
PAST Did you know that when Coca-Cola was invented in 1886 it contained cocaine? Back then cocaine was popularly used as a medicinal substance. Its stimulating and pain-relieving effects meant that doctors and chemists often used it when developing new medicines. When Coca-Cola first came on the

market it was advertised as ‘a tonic and nerve stimulant’ which could help relieve the symptoms of headaches, hysteria, and even melancholia. In 1903, the Coca-Cola company stopped using cocaine as an ingredient in the drink amidst concerns that cocaine was causing a wave of drug addiction. The recipe for the famous drink today is a closely guarded secret!

49. The BCG vaccine is not deemed necessary for the prevention of tuberculosis (TB) in teenagers.

PRESENT Until 2005 teenagers in Britain routinely received the BCG vaccine to prevent infection with tuberculosis (TB). Most adults today have a little circular scar on their upper arm as a result. However, TB rates are now extremely low in the UK, and as TB is quite difficult to catch (you need to spend a long time with an infected person), vaccination was no longer deemed necessary. Nowadays, the NHS offers vaccines only for those under the age of 35 who are at particularly high risk of catching the disease. The vaccine is not thought to work well for older people, and even when in use the BCG was not 100% effective. It is believed that this is partly due to the many different strains of tuberculosis bacteria there are.

50. The MMR vaccine (measles, mumps, rubella) causes autism.

PAST In 1998 British doctor Andrew Wakefield published a research paper in the medical journal the *Lancet*, which suggested a connection between the measles, mumps and rubella vaccine (MMR), and autism. The paper was later retracted by the journal and is now

completely discredited as fraudulent. Wakefield was struck off the medical register in 2010. However, the confusion that followed these claims had an impact on public confidence in vaccination and led to a drop in the take-up of the MMR, resulting in several outbreaks of measles. Although the causes of autism are imperfectly understood, research to date has shown that it involves many complex factors, including genetics, the environment, and the development of the brain. There is no link between vaccination and autism.

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Back cover	'Mind-boggling Medical History' by Katharine Burt

Mind-Boggling Medical History is a fun and interactive game designed to introduce medical history to non-academic audiences. It helps to aid critical thinking about the role of history, and the difference between past and present medical theories and practices. We want to show how historical ideas can be used to prompt questions about current day understandings of medicine, as well as to challenge preconceptions about the history of medicine.

http://mbmh.web.ox.ac.uk