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Hippocrates and Ancient Greek Medicine

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The Offspring of Asclepius

Natural science and philosophy emerged in the Greek cities of Anatolia around Miletus in the early 6th century BCE. The intellectual revolution was precipitated by physical changes in the Maeander estuary, maritime skills including navigation by the stars, intensive contact with older civilizations, and aspects of the local cults. The same applied to the rapid development of medical science, which was broadly overseen by the god Apollo, whom the Greeks had incorporated into their pantheon from his origins in western Asia. Apollo's bow and arrows can both bring plague and cure it. In the *Iliad*, the local priest of Apollo near Troy prays to Apollo to blast the Greeks with plague because Agamemnon has abducted his daughter. He calls on him as 'God with the silver bow...Sminthean Apollo'. Sminthean means 'Mousey', and the mouse seems to have been an early symbol of medicine, later superseded by the snake coiling around a staff. Some scraping tools found in the area are shaped like a mouse's body. They belonged to one Hygeinos Kanpylios, probably a doctor, and look like his medical instruments.

Apollo had a son named Asclepius, who became the first doctor of medicine. He entrusted Asclepius to the wise centaur Chiron to bring up, because Chiron was an expert in soothing drugs and the art of healing. Asclepius himself had several children, including the doctors Machaon and Podalirius, who lead some Thessalian Greeks in the *Iliad*, and Hygieia, the personification of Health. Ancient doctors often claimed that they were directly descended from this ancestral line and called themselves Sons of Asclepius. One of them, the most famous of all, was Hippocrates of Cos. Medical professionals still take the oath attributed to Hippocrates, which begins thus:

I swear before my gods, my ancestors, my teachers, my fellow healers and apprentices, and by all the arts and knowledge I was privileged to learn, that I will stand by these words: I will love those who taught me these arts as I love my parents and I will offer my skills to the young with the same generosity that they were given to me... I will soothe the pain of anyone who needs my art, and if I don't know how, I will seek the counsel of my teachers. I will offer those who suffer all my attention, my science and my love. Never will I betray them or risk their well being to satisfy my vanity. I will not hurt my fellow or put a knife to his flesh if I don't know how, or give him an herb to soothe his pain, even if he begs for it in anguish, if it might take away his breath.

This resonant oath was preserved along with a group of the more than sixty treatises that have been transmitted under Hippocrates' name in medieval manuscripts.

This lecture will look in detail at Hippocrates, before saying a few words about Galen, the second most famous ancient Greek doctor, and concluding with some evidence for Greek medicine practised nearer home, in Roman Britain. A collection of Hippocrates' sayings, excerpted from his and other ancient medical manuscripts, was called his *Aphorisms*. In printed form, they became almost the 'bible' of Renaissance and Early Modern physicians. There were numerous beautiful illustrated imprints of his other treatises, in Greek or Latin, made available. But one hundred years ago, in 1839, the French philologist and philosopher Emile Littré made serious study possible for the first time of the whole corpus of texts attributed to Hippocrates, the *Corpus Hippocraticum*. He completed his 10-volume edition of the manuscripts in 1861. He compared all the manuscripts then known and tried to establish the original texts. By translating them into French, with excellent introductory essays, he made them widely accessible and also provided a consistent interpretation of terminology. Almost as important in English-



speaking lands was Francis Adams, a Scottish doctor who practised in Banchory, Aberdeenshire, from 1819 to 1861, and who diligently translated many of Hippocrates' works into readable English prose. They are available to read online (<http://classics.mit.edu/Browse/browse-Hippocrates.html>).

Some of the original texts were written as early as the second half of the fifth century BCE, including *On the Diseases of Women*, *Prognostics*, *On Fleas*, *Epidemics I and III*, *On Regimen in Acute Diseases*. To the early fourth century there probably belong *Epidemics II–IV–VI*, *On the Humours*, and a group of works about surgery, *On Fractures*, *On Joints*, and *On Injuries of the Head*. There was certainly an established school of thought called 'Hippocratic medicine' by the time Plato wrote his *Phaedrus* in the early fourth century, for he reports that Hippocrates said that the nature of the body can't be understood without thinking about the nature of 'the whole'—perhaps the whole natural universe (*Phaedrus* 270c). Hippocrates is also mentioned in Plato's *Protagoras* (311 b). Some of the so-called Hippocratic treatises may indeed be by Hippocrates himself, but some must have been by one of his students or even by a doctor or doctors of several generations later trained in the school he seems to have founded. Another group, focussing on diseases rather than injuries or gynaecology, seem to be the products of the Knidos medical centre—another, closely allied group who called themselves Asclepiads. A third group of Greek medical writings to whom the name Hippocrates was attached was rather more philosophical and less practically oriented. But all three are unified by the method of rational medicine they exemplify and recommend. They all criticise doctors who think that disease can be caused by divine intervention. They certainly attack superstition, prophets and dream-interpreters who interfere in medical issues.

Rational Medicine

Hippocrates himself was probably a native of the island of Kos. His works, produced in the second half of the fifth and early fourth century BCE, crystallized a long-standing tradition of medical inquiry shared with that fellow guild of medical experts on the mainland at Knidos. Hippocrates' brilliance needs to be understood as a consummation of decades, even centuries, of medical practice and accumulated lore. Kos was one of the Dorian colonies sent out from the Peloponnese, indeed from Epidaurus, the site of the celebrated theatre. In historical times, and perhaps earlier, Epidaurus was the site of an important cult of the healing hero Asclepius. Some scholars, both ancient and modern, have believed that Hippocrates was a member of the hereditary priestly clan, the Asclepiads, who devoted themselves to the temple cult of this hero.

The methods of the doctors and of the Milesian natural scientists were similar. They all sought to find physical rather than supernatural explanations for natural phenomena, whether related to geology, weather, disease, or injury. The Greeks' rational medicine is impressive if we compare it with the Babylonians' conviction that disease was caused by angry gods and invasive demons, and also with the spells and religious incantations that alternate with prescriptions for drugs in most Egyptian medical papyri. Yet the Greeks learned so much from other cultures that the picture is complicated. One Egyptian papyrus of the 15th century BCE, named the Edwin Smith Papyrus after the American who bought it in Luxor in 1862, displays a systematic approach to injuries. It includes descriptions of the presentation of each type of wound, along with the appropriate examination procedures, treatments, and prognoses. But the issue is injuries, whose external cause will usually have been witnessed, rather than the more mysterious diseases that appeared to arise from inside and might be felt to require a more religious explanation.

Scholars are conflicted about the degree to which the Greeks owed their advanced medical knowledge to the Egyptians. Greek doctors admired Egyptian pharmaceutical skills, knew that the Persian kings hired physicians from Egypt, and adopted one of their central medical practices from Egypt: this was incubation, or sleeping overnight in the sanctuary of a healing god. But this important source of experience was synthesized with the Greeks' inquiring, human-centered approach to life's problems, producing the rational, scientific tone and method of Hippocrates and his school.

A key concept developed by the medical practitioners was that of *likelihood*. Given a set of symptoms, they could offer a diagnosis, saying that it was *probable* that a patient had a particular, known condition. Moreover, they could predict what was likely to happen to the patient in the future, which meant delivering a prognosis. Hippocrates believed that this was a doctor's duty. It was at about this same time that the Greeks began to use arguments from



probability in other contexts, such as legal trials. it was a doctor's duty to use evidence acquired from substantial empirical experience to know what was *likely* to happen to a patient, 'to be able to tell the antecedents, know the present and foretell the futures in order to be able to benefit and not to damage'. Here is an example: 'those who are constitutionally obese are *more likely* to die early/quickly than those who are slender'.

The relationship between the Hippocratics and the other intellectuals of Ionia flowed both ways. New archaeological evidence has shown that advanced head surgery was performed on a thirty-year-old woman's injured cranium at Abdera, a colony of Clazomenae, one of the cities of the original Ionian League, by the middle of the seventh century BCE. The procedure was successful—she lived for another twenty years. The discovery of the remains of this patient during the excavations at Abdera shows that complicated surgical procedure on bones of the skull, including trepanation (the removal of a disc of bone to allow the removal of damaging bone splinters) was already in use more than two centuries before the sophisticated Hippocratic treatise *On Head Wounds* was written (around 400 BCE). This means that, even before Thales and the other Ionian philosophers, the science and practice of medicine was more advanced than we had hitherto realized.

The Hippocratic treatises are practical manuals dealing with everyday reality, not works of abstract speculation. Scholars have come to accept that, because of their focus on inference, evidence, and cause and effect, and because of their lack of recourse to supernatural explanation, they must be acknowledged as having played a vital role in the total Ionian intellectual advance. Aristotle, himself the son of a doctor who claimed a direct line of descent from Asclepius' son Machaon, was convinced of the cross-fertilisation:

Concerning health and disease, it is the business not only of the physician but also of the natural philosopher to discuss their causes up to a point...for those physicians who have subtle and inquiring minds have something to say about natural science and claim to derive their principles thence, and the most accomplished of those who deal with natural science tend to end up investigating medical principles.

Hippocrates' Principles

Three broad principles underlay all Hippocrates' method. First, people get sick on account of natural causes which can be explained scientifically. This was counter to the popular idea that people get sick because they have outraged the gods, or a malevolent demon has afflicted them, or because someone has cursed them or cast a spell on them. One Hippocratic treatise illustrates the opposition between such views. It is called *On the Sacred Disease*, which was the name given by custom to epilepsy. The mysterious, frightening symptoms which can be exhibited during epileptic fits were thought by the ancient Greeks to be signs of possession by a divinity. But the Hippocratic treatise is determined to refute this superstitious diagnosis: it opens, trenchantly, 'I do not believe that the 'Sacred Disease' is any more divine or sacred than any other disease, but, on the contrary, has specific characteristics and a definite cause. Nevertheless, because it is completely different from other diseases, it has been regarded as a divine visitation by those who, being only human, view it with ignorance and astonishment.' The treatise argues that epileptic seizures occur as a result of a blockage of the brain by phlegm. This has been replaced today by the notion of electrical signals in the brain becoming scrambled, whether as a result of disease or trauma. But the principle behind the Hippocratic approach remains uncontested.

Secondly, the Hippocratics studied anatomy to understand the different parts of the body. But they believed that health and disease relate to our bodily 'humours', which must be balanced and proportionate. This is explained in the treatise *On the Nature of Man*, perhaps the work of Hippocrates' son-in-law. Phlegm, yellow bile, blood and black bile are each connected with a bodily organ and have properties: phlegm is cold and moist and connected with the brain; yellow bile is hot, dry, and connected with the liver; blood is hot, moist, and connected with the heart; and black bile is cold, dry and connected with the spleen. The doctor needed to restore balance between these four humours. But this was more complicated than it sounds. First, the doctor had to take note of a patient's symptoms—her colour, temperature, and the nature of her emissions. These all helped indicate which humours were out of balance. But this information needed to be recorded repeatedly to trace the daily changes. The doctor also needed to know all about the patient's living conditions—what she ate, her source of income, where she lived, etc. This enabled diagnosis, prognosis, and courses of treatment to be prescribed.



Thirdly, the Hippocratics all believed that nature was its own best healer—a principle stated in Latin as *vis medicatrix naturae*. They saw most of the symptoms they recorded as changes in the humours while the body tried to heal itself: discharges, sweating, producing pus and vomiting were signs of the body attempting to rid itself of excess in a humour. The doctor's job was to aid this process. Hippocratic doctors were trained to take note of every possible factor: time of year, geographical location and climate as well as age, gender, habits and diet. They recorded any changes, whether mood swings, in sleep duration, dreams, appetite, thirst, nausea, location and severity of pain, chills, coughing, sneezing, belching, flatulence, convulsions, nosebleeds and menstrual changes. The physical examination required attention to be given to fever, respiration, paralysis and color of the limbs, pain on palpation, stool, urine, sputum and vomit.

The Treatises: Epidemics

The Hippocratic treatises are for the most part deeply impressive as examples of consistent and accurate, well-organised technical writing supported by the principle that if medicine were to achieve the status of a science, the findings and prognosis of a doctor with a particular patient needed to be tested and verified by others—i.e. in a process of *experimentation*. Take the *Epidemics*, which records 567 case histories, with the patient's appearance, bodily processes and changes in condition noted daily in a form of shorthand. Here is one example from case studies during a plague on the island of Thasos:

The wife of Philinos, having been delivered of a daughter, the discharge being natural, and other matters going on mildly, on the fourteenth day after delivery was seized with fever, attended with rigor; was pained at first in the cardiac region of the stomach and right hypochondrium; pain in the genital organs; lochial discharge ceased. Upon the application of a pessary all these symptoms were alleviated; pains of the head, neck, and loins remained; no sleep; extremities cold; thirst; bowels in a hot state; stools scanty; urine thin, and colorless at first. On the sixth, towards night, senses much disordered, but again were restored. On the seventh, thirsty; the evacuations bilious, and high colored. On the eighth, had a rigor; acute fever; much spasm, with pain; talked much, incoherently; upon the application of a suppository, rose to stool, and passed copious dejections, with a bilious flux; no sleep. On the ninth, spasms. On the tenth, slightly recollected. On the eleventh, slept; had perfect recollection, but again immediately wandered; passed a large quantity of urine with spasms (the attendants seldom putting her in mind), it was thick, white, like urine which has been shaken after it has stood for a considerable time until it has subsided, but it had no sediment; in color and consistence, the urine resembled that of cattle, as far as I observed. About the fourteenth day, spasms over the whole body; talked much; slightly collected, but presently became again delirious. About the seventeenth day became speechless, on the twentieth died.

More women than men died of this epidemic, notes the author. Here is a more cheerful case-study where the patient survived:

The Clazomenian who was lodged by the Well of Phrynichides was seized with fever. He had pain in the head, neck, and loins from the beginning, and immediately afterwards deafness; no sleep, acute fever, hypochondria elevated with a swelling, but not much distention; tongue dry. On the fourth, towards night, he became delirious. On the fifth, in an uneasy state. On the sixth, all the symptoms exacerbated. About the eleventh a slight remission; from the commencement to the fourteenth day the alvine discharges thin, copious, and of the color of water, but were well supported; the bowels then became constipated. Urine throughout thin, and well colored, and had many substances scattered through it, but no sediment. About the sixteenth, urine somewhat thicker, which had a slight sediment; somewhat better, and more collected. On the seventeenth, urine again thin; swellings about both his ears, with pain; no sleep, some incoherence; legs painfully affected. On the twentieth, free of fever, had a crisis, no sweat, perfectly collected. About the twenty-seventh, violent pain of the right hip; it speedily went off. The swellings about the ears subsided, and did not suppurate, but were painful. About the thirty-first, a diarrhea attended with a copious discharge of watery matter, and symptoms of dysentery; passed thick urine; swellings about the ears gone. About the fortieth day, had pain in the right eye, sight dull. It went away.



We can only imagine how brave the doctors who attended these plague-victims must have been, and there is no mention of Personal Protective Equipment.

Congenital Defects

Another early treatise shows that the Hippocratics made detailed studies of birth defects such as club foot. *De Articulis* shows that his school knew all the important characteristics of club foot, technically labelled Congenital Talipes Equinovarus (CTEV), a musculoskeletal birth defect which occurs once in about a thousand live births. It makes the ankle look as though it has been bent inwards and makes the sufferer appear to walk on their outside ankles or sides of their feet. It occurs at double the rate in males as in females. In half of all cases it is bilateral and affects both feet. There is believed to be an inheritable predisposition to club foot, although this is still the subject of intensive chromosomal research. Hippocrates treats it as a subspecies of lameness, signified by the stem *chōl-*. The adjective *chōlos* also occurs in Homer, being used of Thersites, who was ‘lame in one leg’ (*Il.* 2.217), and who is the butt of the laughter of the Achaian soldiers. The term is also used of Hephaestus (*Od.* 8.300). The Hippocratic author uses the verb *kulloein* to explain the consequences of such dislocations: ‘The legs are more bandied (*kulloutai*) when the dislocation is outward, but it is nevertheless easier for the possessor of outward-turning club foot to stand on his feet than if the legs are turned inwards.’

But the person with congenital club foot (the *kullos*), in whom the ankle is naturally present and the leg bones are not atrophied, is described as likely to be able to walk; the club-footed person is thus distinguished from someone who becomes acutely lame through injury. Later, in part 62, the author insists that ‘most cases of congenital club-foot are remediable, unless the declination be very great, or when the condition occurs at an advanced period of youth. The best plan, then, is to treat such cases as early as possible, before the deficiency of the bones of the foot is very great, and before there is any great wasting of the flesh of the leg.

There is more than one variety of club-foot. Most of them are not complete dislocations, but impairments connected with the habitual maintenance of the limb in a certain position. Treatment consists of putting pressure on the bones of the leg and feet so they begin to grow or move into correct alignment, as a wax-worker moulds an object. Pressure is applied by plaster made from wax and resin, compresses, bandages and soles of soft leather or lead, which are stitched in place, and then an outer shoe or boot of lead. ‘The most suitable are those calf-length boots called mud-treaders because they are used for travel on muddy ground; for this kind of shoe does not yield to the foot, but the foot yields to it’. So Hephaestus’ condition could have been treated by manipulation, orthotic bandaging and stiff, structured footwear functioning as a splint.

Gynaecology

Treatises on obstetrics and female diseases are the largest category in the Hippocratic corpus: *On the Nature of the Woman*, *On the Diseases of Women*, *Generation*, *On the Nature of the Child* and *On Sterile Women* were all composed between the mid-fifth and the mid-fourth centuries, although the manuscripts contain other, later works such as *The Eight-Month Child*, *Superfetation* and *On Young Girls*. Taken together, these treatises provide a remarkably comprehensive account of female physiology, menstruation, intercourse, conception, contraception, pregnancy tests, fetale development, birth, postpartum discharges and complications, uterine discharges and symptoms shown by women in other diseases. They include both more philosophical works for audiences interested in natural sciences and highly practical accounts of morbid conditions, therapeutic techniques, and recipes. *On Sterile Women*, for example, includes both causes of barrenness but also pregnancy tests and methods supposed to determine the baby’s sex. *Diseases of Women*. Book II lists and describes discharges from the womb. *Superfetation* begins with a discussion of two fetuses in one womb, but is mostly a compilation of accounts of different types of difficult birth, which makes painful reading. These were later developed and advanced by Hippocrates’ admirer Soranus.

The treatises on young girls offers a surprising insight into the ‘hysteria’ or ‘womb-itis’ that afflicts girls who have begun to menstruate before they are married. Their womb wanders around their body, making them delirious; the author explains its cause as a flow of blood that is taken to the heart and diaphragm instead of being discharged



through the uterus. The cure is simple; marriage, regular intercourse, and pregnancy. The Greeks did not think continuing virginity was good for a woman's bodily or psychological health. This helps to explain why so many Greek tragic plots involved havoc wreaked by women without husbands present at the time! Yet, however comical some of his theories may now seem, Hippocrates took his profession very seriously and made a great contribution to the professional ethics and standards that are not dissimilar to those in which doctors are trained today. Besides the requirement to produce detailed medical histories and records during treatment, the Hippocratic physician was expected to maintain high standards in making records of the diagnosis and recommended treatment. Hippocrates also used many other terms than hysteria that we still use today: besides symptom and diagnosis, they include therapy, trauma and sepsis, diabetes, gastritis, enteritis, arthritis, eclampsia, coma, paralysis, mania and panic.

Hippocrates' Reputation in Antiquity

Hippocrates' work and reputation led to the building of the Asclepieion, of which the ruins still survive, on Kos in the fourth century. This does not mean that medicine was not practised and taught there in Hippocrates' own time. It is a beautiful sanctuary on a hill, with views of the sea and the Turkish coast. It combined the features of a place to worship Asclepius, areas and buildings in which the sick and injured could be treated, and a university for the study of medicine. A mosaic from the sanctuary depicts Hippocrates welcoming the god Asclepius to the island, represented by a friendly, waving native of Kos on the right. We are lucky enough to have a poem, or rather a little verse drama, written in the 3rd century BCE and describing the visit of two women to the sanctuary. It is the fourth *Mime* of Herodas. Cynno, who lives on the island, hosts her friend Coccale, who is visiting her and who has come to visit the temple in order to give thanks for a recovery from sickness; there is also a temple servant, who receives her sacrifice. They greet Apollo, Asclepius, Hygieia, Podalirios and Machaon, and offer a cock to be sacrificed and a dedicatory tablet to be set up by the statue of Hygieia. They admire the beautiful statues, complain about the crowds, and gratefully receive the temple servant's blessing. Inspired by this poem, the 1902 discovery and excavation of the Asclepieion were led by a German archeologist called Rudolf Herzog and the local history buff, Iakovos Zarafitis. It was at Herodas' time that Hippocrates' reputation was secured at Alexandria, which collected and edited his works at its famous library.

But along with Hippocrates' authentic treatises and those by his immediate successors, a whole new narrative developed in which he appeared as a sort of hero, performing astonishing medical feats. He appears in numerous artefacts, used by doctors or grateful patients, from oil-lamps to relief sculptures. His feats were recorded in a series of letters supposedly penned by him, and also appear in various other ancient authors, including Soranus' unreliable biography of the predecessor he heroised. The *Letters*, known as the Hippocratic Apocrypha, consist of twenty-two documents relating anecdotes in his life.

First, Hippocrates is summoned by the Persian King Artaxerxes to avert a plague in the army of the Persians, the historic enemy of the Greeks. Artaxerxes had heard that Hippocrates was the most brilliant physician in the world, so he sent an embassy to see him. They offered him all the silver and gold he could possibly want. But Hippocrates shook his head and said, 'No. I have enough food, clothing, shelter and everything else I need for life, and I don't want all that Persian opulence. I will not help those who are the enemies of the Greeks'. In the ancient world, patriotism beat money and humanist concern for other ethnic groups hands-down. In 1792, the artist Girodet painted the scene in which Hippocrates refuses the gifts of the king. The Persians around Hippocrates show different expressions as the great doctor refuses to help them; they are miserable, astonished and furious. Hippocrates' foot is pushing away the pile of money on the floor.

In the second exploit, Hippocrates is summoned by the Senate of the people of Abdera to cure the apparent madness of the philosopher and natural scientist Democritus. Democritus's main symptom is that he laughs at everything including funerals and everyone including revered politicians. But Hippocrates diagnoses Democritus as both sane and in fact very wise. It is his desire for solitude and serenity which makes him discriminate himself from ordinary people by displaying odd behaviour. For he alone had recognised the absurdity of human existence, and was therefore entirely justified in laughing at it. The two intellectuals enter a correspondence in which they discuss moral and medical aspects of madness and the relationship between the noble outsider and his ordinary fellowmen. It is a discussion that points forward at recurrent themes in the history of ideas. Hippocrates stands out as a philanthropist and Democritus as a misanthropist, even if a sane one.



Thirdly, Hippocrates is supposed to have saved Greeks from plagues and pandemics, including the great plague of Athens early in the Peloponnesian War, described in detail by Thucydides and in which Pericles the statesman died. Hippocrates is said to have kindled greatfires in the streets of Athens, to turn the air hot and dry and inimical to the plague, instead of cold, moist and hospitable to it. There was even a document purporting to be a Decree of the Athenians honouring Hippocrates for his 'great good will in bringing deliverance to the Hellenes when, as an epidemic was coming from the land of the barbarians to Hellas, he dispatched his own students to various regions and ordered what treatments it was necessary to use to escape the oncoming epidemic without fail, showing how the medical art of Apollo, which was handed down to the Hellenes, saves their sick without fail'.

Galen

The second most important figure in ancient Greek medicine is Hippocrates' admirer Galen, who lived from 129 to around 200 CE. His career offers a vivid route into Roman imperial culture. He was born into a well-to-do Greek family in Pergamum, always one of the Greek most cities of Asia most accommodating to Rome. The son of an architect, he was given a superb education, and his career was chosen after his father had a dream in which the healing god Asclepius ordered him to make his son study medicine. Galen did not get along with his mother, whose hot temper the dispassionate young intellectual did not share. As soon as his father died, when Galen was only nineteen, he took to travelling and studying abroad. He spent four years in Alexandria (153-7 CE), and read every previous medical writer he could access.

His first big career advance came in 157, when he was appointed physician to the gladiators owned by the High Priest of Asia back at home in Pergamum. The gladiators were required to perform in the imperial cult, and Galen was to refine his understanding of injuries while treating them. He won the job against competition by performing operations, publicly, on a monkey. He made an incision in its stomach, to reveal the intestines, and challenged the other physicians present to replace them and insert the necessary sutures. None took up the gauntlet. Galen recalls, in a ceremonial first person plural:

We ourselves then treated the ape displaying our skill, manual training, and dexterity. Furthermore, we deliberately severed many large veins, thus allowing the blood to run freely, and called upon the Elders of the physicians to provide treatment, but they had nothing to offer. We then provided treatment, making it clear to the intellectuals who were present that (physicians) who possess skills like mine should be in charge of the wounded.

From Pergamum, Galen went to Rome, where he eventually settled, working for the Emperors Marcus Aurelius, his son Commodus and Septimius Severus.

This enterprising Greek doctor turned curing patients into a competitive performance. On one occasion he was summoned to treat a slave with wounds to the chest which no other doctor had been able to heal. Galen excised the breastbone, and in a spectacular procedure exposed the heart, after which the patient recovered. When another physician denied that the kidneys were involved in the excretion of urine, Galen publicly enacted a vivisection on a male animal, which involved tying up its kidneys and penis, blowing into its bladder and puncturing the tube which connected it to the bladder, thus releasing a spurt of urine.

So successful a doctor and self-promoter was Galen that he excited envy in his rivals, who spread rumours that he was a charlatan. Eventually he felt compelled to undergo a public scrutiny of his anatomical theories. At the public venue of the Temple of Peace, other doctors repeatedly challenged him to defend his findings. He refuted them with his scalpel and practical demonstrations on patients and the cadavers of animals. These were inevitably bloody and theatrical, and he spectacularly pulled off the defence of his reputation, but the experience made him more than ever critical of other doctors. He regarded them as either incompetent or avaricious, and always as unscientific. His major contributions were to a systematic method of diagnosis, identification of cause of illness, symptoms and prognosis, described and reasoned in his massive fourteen-book treatise *On Therapeutic Method*. But he also advanced understanding of anatomy and of diagnosis by means of the pulse. His pulse readings were so



sophisticated that he could pride himself on the case of Justus' wife, from whose pulse he had been able to diagnose not physical illness but infatuation with a dancer named Pylades.

Never marrying or fathering a child, Galen was a workaholic. Despite inheriting a personal fortune, he was almost unbelievably prolific, producing at least five hundred treatises of which more than eighty survive; these make up more than half of the entire corpus of ancient medical writing and a substantial proportion of *all* the ancient Greek we can read. Galen brought the longstanding tradition of Greek rational medicine to an unprecedented level. He also personally modelled many ideas about medicine in both the Arab and the Western worlds. His works were translated into Arabic in the 9th century, and thence into Latin. In Latin translation, several of them constituted core texts on the basic European medical curriculum by the late 13th century. One the Greek manuscripts began to appear in the West in the 15th and 16th centuries, a more detailed picture of the incomparable doctor's methods could be inferred from a comparative study of the textual traditions.

Ancient Greek Doctors in Britain

In conclusion, let's bring the story home by looking at the fascinating evidence that the Romans brought Greek doctors with them when they were ruling Britain. Inscriptions honouring the healing god Asclepius/Aesculapius in Greek rather than Latin have been found in several places in the north of England, including Lanchester near Durham and Maryport in Cumbria.

At Chester, near what is now the telephone exchange, a doctor named Hermogenes once dedicated a votive offering in well-shaped Greek lettering of the early 2nd century CE. It read 'Hermogenes the physician (*iatros*) has set up this altar to the all-powerful preservers (*sōtersin hupermenēsīn*)', almost certainly meaning Aesculapius and his companion goddess Hygieia). Perhaps Hermogenes was official doctor to the 20th Roman legion, who built and resided in the camp at Chester. But it so happens that the doctor who looked after the dying Emperor Hadrian was named Hermogenes. This famous Greek medic had good credentials, since he seems to have been trained in the medical school of the peerless anatomist Erasistratos. Erasistratos, who came from Kos, the island where Hippocrates himself had practised, was Aristotle's grandson, no less. Cassius Dio 69.22 tells us that when Hadrian was dying slowly from dropsy, Hermogenes helpfully pointed out to him the place on his chest which, if an attendant struck a blow, would allow him to die fast and painlessly (in the event Hadrian could persuade nobody to help him out, and ended up eating and drinking himself to extinction).

And my favourite exhibit in the Museum of London is a pewter amulet with a magic spell designed to ward off plague, inscribed in ancient Greek by a man called Demetrios. He will have worn it suspended from his neck. It was found on the north side of the Thames, at the point where the ancient underground river Walbrook disgorged at Cannon Street station. Thirty precious lines of Greek begin with these magical words: *ABRAI BARBASO BARBASOCH BARBASOTH EULIOR ATHEMORPHI!* Demetrios continues to describe the plague in vivid adjectives: *Cacophonous..carried by the air, slashing from afar, man-slaying, agony-intruding, depressing, flesh-eating, liquefying, deep in the veins.*

He invokes four deities: three mysterious figures who often appear in ancient spells and whose names ultimately derive from Hebrew—Iao, Sabaoth and Abrasax—and the Greek doctor god, 'Phoebus [*Apollo*] of the unshorn hair, archer'. Apollo is prayed to about plagues everywhere in ancient Greek literature including the *Iliad*, as we saw, and Sophocles' *Oedipus*. Demetrios was probably trying to protect himself from the 'Antonine' smallpox-like plague. It began in 165 CE during the reign of Marcus Aurelius and devastated Roman legions across the empire. The forms of Demetrios' letters and some spellings suggest either that he was bilingual in Greek and Latin, or even that Latin was his first language and he was writing in exotic-sounding Greek because he believed it possessed magical powers.

In two final transnational twists, the hexameter verse line invoking Apollo is a variant of an anti-plague spell also recorded in an ancient Greek text by the Syrian Lucian. Lucian says the spell was actually manufactured at the time of the Antonine plague by a Black Sea charlatan called Alexander [36]. He had invented a fraudulent new avatar, in snake form, of Apollo's doctor son Asclepius. He named his new oracular serpent Glykon and attributed weird prophetic statements to him.



Back here in Londinium, we sadly do not know whether Demetrios' internationally known spell—fraudulent or not—proved effective. But we are all facing a latterday plague. WE should obviously prioritise the rational medical advice of government scientists, resulting from the empirical study of patients and collation and analysis of evidence. But there is little harm in supplementing this with Demetrios' resonant ancient Greek spell. Come on, altogether now, *ABRAI BARBASO BARBASOCH BARBASOTH EULIOR ATHEMORPHI!*

Suggested Further Reading

- Cavanaugh, T. A. (2017) *Hippocrates' Oath and Asclepius' Snake: the Birth of the Medical Profession*. New York: Oxford University Press.
- Edelstein, Ludwig (1943) *The Hippocratic Oath: Text, Translation, and Interpretation*. Baltimore: Johns Hopkins University Press.
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- King, Helen (1998) *Hippocrates' Woman: Reading the Female Body in ancient Greece*. London & New York: Routledge.
- King, Helen (2019) *Hippocrates Now: The 'Father of Medicine' in the Internet Age*. London: Bloomsbury.
- Pormann, Peter E. (2018, ed.) *The Cambridge Companion to Hippocrates*. New York: Cambridge University Press.
- Temkin, Owsei (1991) *Hippocrates in a World of Pagans and Christians*. Baltimore: Johns Hopkins University Press.

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