

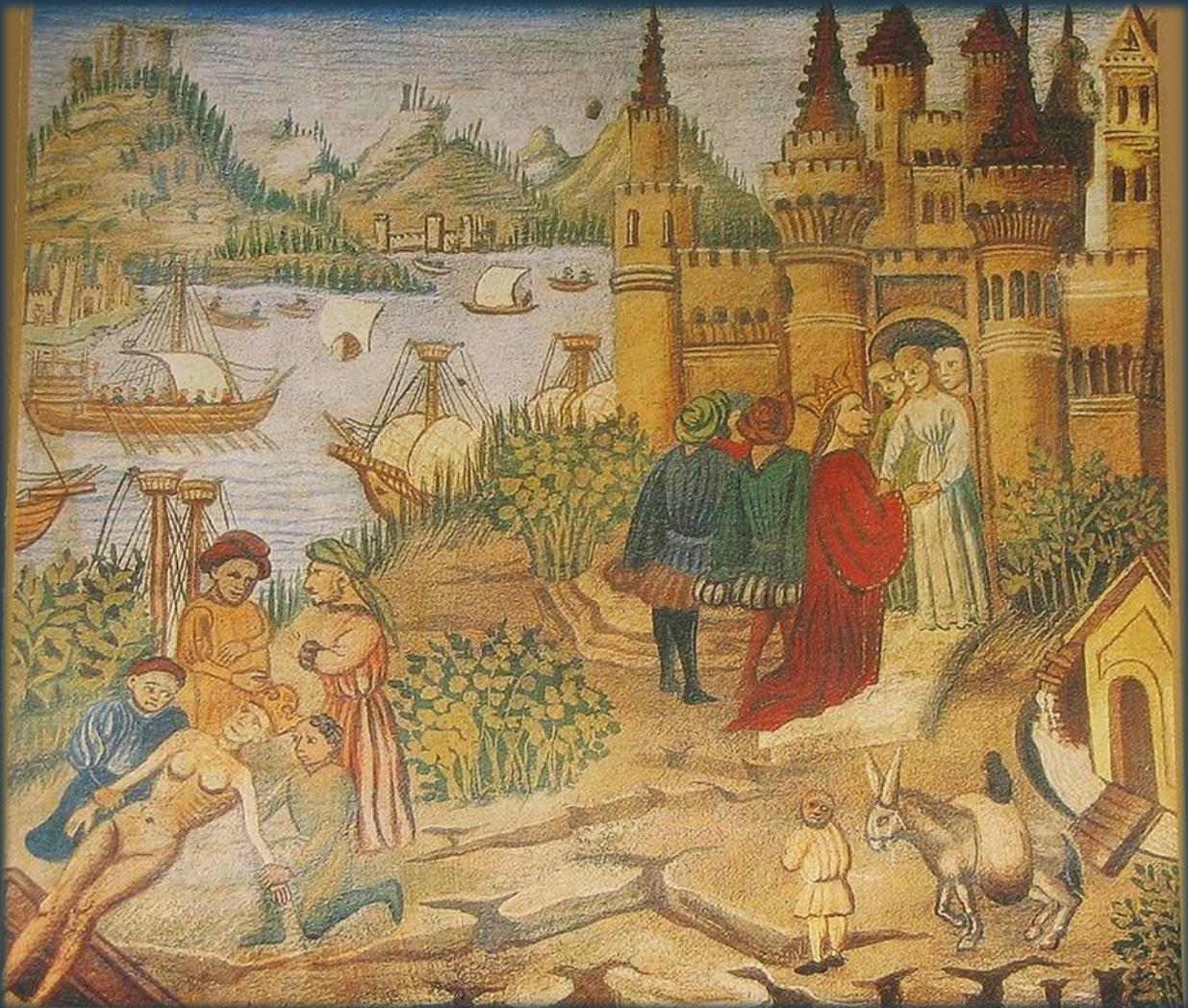
Amazing Medicines, Horrible Illnesses and the Surprising Cures of Ancient History

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⚕ Asklepion and the use of Dreams for Curing Diseases with the Help of the Gods

HEALERS: Greek God Asklepios and the first hospitals of the western world

[ANCIENT-ORIGINS](#) | [John Black](#)



Son of Apollo, Asklepios was a god associated with medicine. (CC BY-SA 3.0)

In Ancient Greece, the god Asklepios (Asclepius) was a powerful god related to medicine who, according to the Greek mythology, had the power to bring people back from dead – a power that many ancient gods from multiple mythologies had. He was one of the sons of the god Apollo.

We are all familiar with Asclepius in a way, since the symbol that is used for medicine, the snake entwined staff, was the rod of Asclepius – a tool that he used probably given to him by the gods.



The emergency services' Star of Life features a rod of Asclepius. (Public Domain)

Asclepius was brought up by a mysterious figure of ancient Greek mythology, the centaur Chiron, who raised Asclepius, instructing him in the art of medicine. It is said a snake licked the baby's ears clean and in doing so imparted secret knowledge. The Greeks believed snakes were wisdom-keepers and sacred beings of resurrection and healing. And so the rod of Asclepius bore a snake.

Because Asclepius used his powers to bring people from Hades (meaning resurrecting them), the God of Hades complained to Zeus as Asclepius converted many people from humans to immortals. Zeus resolved this by killing Asclepius with a thunderbolt.

Asklepion (Asclepeion) were holy temples for worshipping Asclepius, but at the same time they were the first known hospitals in the history of western civilization.

There were approximately 320 Asklepion (hospitals) in Ancient Greece. What is important is that for the healing of the patients a holistic method was used by Asclepius. **Disease was considered a result of multiple social, environmental, psychological, spiritual, emotional and physical interactions.** And for health to exist there was a need for balancing and harmonizing all those factors. As an additional measure, medical intervention (surgery or medicine) was applied. That was a perfect balance between science and spirituality.

At the Askleion, the patient would stay in a nice environment and enjoy theatre and music as well as having diet changes, hydrotherapy and psychotherapy. Once the therapists decided that the patient was ready, then he would be sent to the temple for prayer and sleep. The next morning, the patient would tell the doctor what dreams he had experienced – it was believed that dreams signified a visit by Asclepius, who held the key to curing all illness. The patient would then be given instructions for healing, according to the dream.



*In ancient Greece, an Askleion was a healing temple, sacred to the god Asclepius. Isle of Kos, Greece.
(Kees Wielemaker/CC BY-ND 2.0)*

It is interesting to see how in 1,000 BC the approach to healing was not only approached completely differently, but may also have been much more effective. And today, 3,000 years later, we gradually begin to reconsider going back to the methods that were used in ancient Greece. Many of the rituals that were used by ancient Greeks in the Askleion were later incorporated into the Christian religion (but Asclepius was replaced with Saints and Christian deities). During the last few years a few alternative healing centers have popped up all over the world, including those that use dreams as a method for assisting healing.

Why did this valuable holistic approach in which the patient was treated with humanity and care disappear for so many years? And how did we give birth to powerful pharmaceutical companies and medicines that do not cure but only postpone disease? Medicine in ancient times was more natural, more holistic, and more effective in searching for the root of the problem—and treated the patient with care.



Statue of Asclepius, ancient Greek god of medicine and healing. (CC BY-SA 3.0)



Lower level of the main treatment building at ancient Asklepium. (Ken and Nyetta/CC BY 2.0)



Relief from illness was thought to come through dreams sent by Asclepius. (Alex/CC BY 2.0)



Marble relief of Asclepius and his daughter Hygieia.. (CC BY-SA 3.0)

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Alcohol as Medicine Through the Ages

TREATMENT: Alcohol as Medicine and the Water of Life

[ANCIENT-ORIGINS](#) | [April Holloway](#)



Bacchus / Dionysus was the Greco-Roman god of winemaking. (CC BY-SA 3.0)

While no one knows exactly when alcohol was first produced, it was presumably the result of a fortuitous accident that occurred at least tens of thousands of years ago.

However, the discovery of late Stone Age beer jugs has established the fact that intentionally fermented beverages existed at least as early as the Neolithic period around 10,000 years ago, and it has been suggested that beer may have preceded bread as a staple.

Wine clearly appeared as a finished product in Egyptian pictographs around 4,000 BC, and residues of wine samples in Greece date to the same period. But alcohol was not consumed in the same way as it is today.

In fact, in ancient times, alcohol was seen as an important medicinal ingredient and as an essential part of the diet. From the moment the first alcoholic beverages were discovered, man has used it as a medicine

Apart from the stress relieving, relaxing nature that alcohol has on the body and mind, alcohol is an antiseptic, and in higher doses has anesthetizing effects. But it is a combination of alcohol and natural botanicals, which creates a far more effective medicine and has been used as such for thousands of years.

It is the origin of the most famous toast, “Let’s drink to health”, which exists in many languages around the world.

One of the earliest signs of the use of alcohol as a medicine dates back around 5,000 years to a jar found in the tomb of one of the first pharaohs of Egypt, Scorpion I. With extremely sensitive chemical techniques, bioarchaeologists were able to identify the different compounds within the residue left in the jar. They found that the remnants contained wine, as well as a number of herbs known to have medicinal properties.



Ancient Egyptian Wine Amphorae. (CC BY-SA 3.0)

Wine was also a frequent component of ancient Roman medicine. As is well known nowadays, alcohol is a good means of extracting the active elements from medicinal plants. Wine was the only form of alcohol known to the Romans as distillation wasn't discovered until the middle ages. Herbs infused in wine were a regular medicinal stratagem which would have a degree of effect given the alcohol's ability to extract the active compounds of a number of herbs.



Statue of Hippocrates (CC BY 2.0)

One of the most famous practitioners of alcohol-based herbal remedies was the father of modern medicine, Hippocrates, whose own special recipe for intestinal worms was known as Hippocraticum Vinum. Hippocrates was making a crude form of vermouth in approximately 400 BC using local herbs in wine, but herbal infusions took on a whole new level of potency once distillation was discovered.

The spread of Christianity with the crusades from 1095 onwards brought knowledge about the art of alchemy and distillation from the early Arab scholars. The 'Water of Life' was being refined all over Europe (known as such due to it being safer to drink than disease-ridden water) and soon commercial apothecaries grew from the spread of the knowledge of distillation and botanical extraction selling both raw ingredients and herbal tinctures. Throughout antiquity, available water was polluted with dangerous microbes, so drinking alcohol, which involved the liquid being boiled or subjected to similarly sterilizing treatments, was seen as being healthier and safer.

One of the earliest records of medicinal alcohol dating to this period comes from Roger Bacon, a 13th century English philosopher and writer on alchemy and medicine.

According to the translation (published in 1683) Bacon suggested wine could: *"Preserve the stomach, strengthen the natural heat, help digestion, defend the body from*

corruption, concoct the food till it be turned into very blood." But he also recognized the dangers of consuming in excess: *"If it be over-much guzzles, it will on the contrary do a great deal of harm: For it will darken the understanding, ill-affect the brain... beget shaking of the limbs and bleareyedness."*

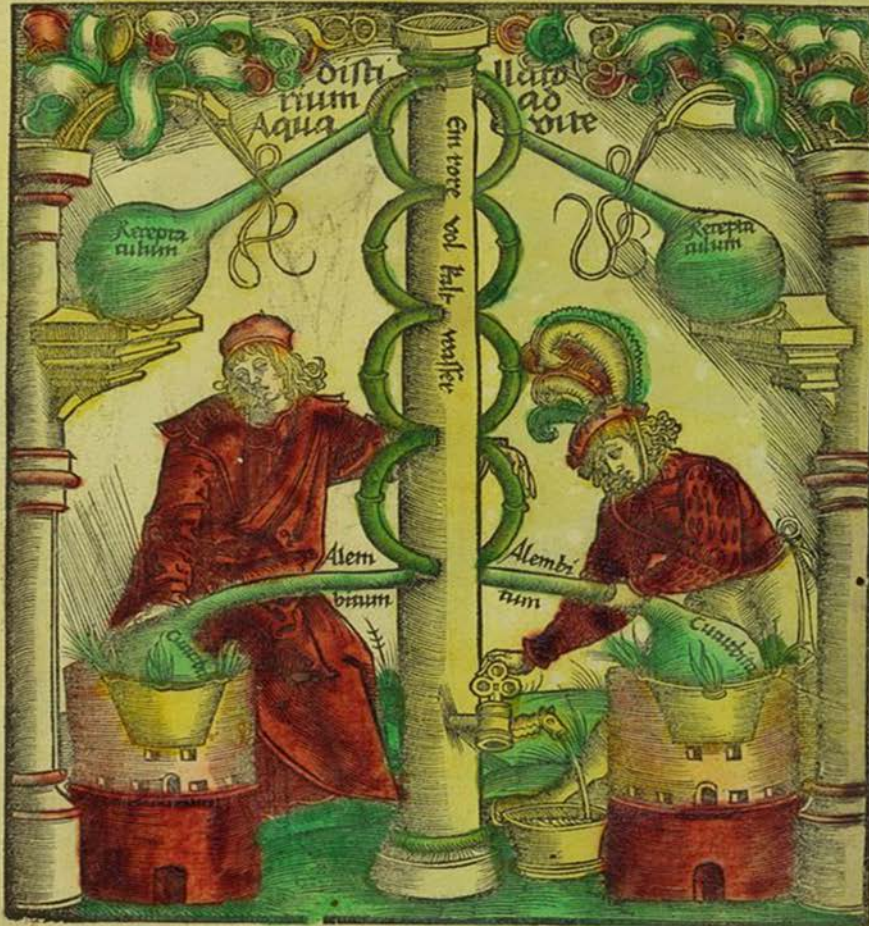
European colonization during the 15th and 16th centuries gave the apothecaries an abundance of exotic herbs, spices, barks, peels and berries to add to their medicine cabinets and from this point until relatively recently, a large percentage of medicines were made with an alcoholic base.

Conventus S. Basilij Sabitzer

Liber de arte Distil

landi de Compositis.

Das büch der waren kunst zu distillieren die
Composita vñ simplicia / vñ dñ Büch thesaurus pauperū / Ein schatz d arme ge-
när Wicariū / die brüßamlin gefallen vñ dē büchern d Arzney / vñ durch Experimēt
vñ mir Hieronimo brüßschwick vñ geclubt vñ geoffenbart zu trost denē die es begere.



Artist's representation of distillation apparatus for aqua vitae, the "water of life". (Public Domain)

Gin is a good example of a spirit which was originally designed to be used as a medicine, the use of Juniper as a diuretic was believed to be able to cleanse the fevers and tropical diseases that the Dutch settlers were suffering from in the newly colonized West Indies. Many of today's brands such as Chartreuse and Benedictine were born in the monasteries of Europe designed as stomach tonics and general elixirs.



Medicinal Jars and Healing Herbs (CC BY 2.0)

However, by the 18th century, there were growing concerns about the more harmful effects of alcohol, including drunkenness, crime, alcoholism and poverty. In 1725, the first documented petition by the Royal College of Physicians expresses fellows' concerns about "pernicious and growing use of spirituous liquors". By the 19th century, temperance movements began to emerge in Britain - at first some advised restrictions on certain drinks only, but over time their stance shifted to call for total abstinence.

The irony is that we now live in an age where although alcohol is socially acceptable, classing it as 'good for you' is frowned upon and is a notion which seems to have been born from the development of modern medicine.

Old-fashioned pharmacies with their jars of colored macerations died out in the early part of the 1900's when science was able to synthetically reproduce the key properties of nature therefore no-longer needing alcohol as a base. Drug companies have also been keen to brush over the fact that organic-based medicine is free, whereas tablets are not. You can't patent nature, but you can patent pills.

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The Sushruta Samhita and Plastic Surgery in Ancient India, 6th century BC

SURGERY: Nose Jobs and Reconstructive Surgery in Ancient Times

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Detail of the Sushruta-Samhita - A Treatise on Ayurvedic Medicine (Public Domain)

Plastic surgery seems to be an invention of the modern age. The desire to attain physical beauty is no doubt one of the factors that has contributed to the popularity of this procedure. Apart from cosmetic reasons, plastic surgery is also carried out for reconstructive purposes.

Yet, plastic surgery has been around longer than most people realize. One of the earliest instances of plastic surgery can be found in the *Sushruta Samhita*, an important medical text from India.

The *Sushruta Samhita* is commonly dated to the sixth century BC, and is attributed to the physician Sushruta (meaning 'very famous' in Sanskrit). The *Sushruta Samhita*'s most well-known contribution to plastic surgery is the reconstruction of the nose, known also as rhinoplasty.

The process is described as such:

The portion of the nose to be covered should be first measured with a leaf. Then a piece of skin of the required size should be dissected from the living skin of the cheek, and turned back to cover the nose, keeping a small pedicle attached to the cheek. The part of the nose to which the skin is to be attached should be made raw by cutting the nasal stump with a knife. The physician then should place the skin on the nose and stitch the two parts swiftly, keeping the skin properly elevated by inserting two tubes of eranda (the castor-oil plant) in the position of the nostrils, so that the new nose gets proper shape. The skin thus properly adjusted, it should then be sprinkled with a powder of licorice, red sandal-wood and barberry plant. Finally, it should be covered with cotton, and clean sesame oil should be constantly applied. When the skin has united and granulated, if the nose is too short or too long, the middle of the flap should be divided and an endeavor made to enlarge or shorten it.



A statue dedicated to Sushruta at the Patanjali Yogpeeth institute in Haridwar.

(Alokprasad/CC BY-SA 3.0)

Other contributions of the *Sushruta Samhita* towards the practice of plastic surgery include the use of cheek flaps to reconstruct absent ear lobes, the use of wine as anesthesia, and the use of leeches to keep wounds free of blood clots. It may also be pointed out that the *Sushruta Samhita* is also one of the foundational texts of the Ayurveda, the traditional medical system of India. Therefore, the *Sushruta*



The Edwin Smith Papyrus - the world's oldest surviving surgical document - details practical treatments to illnesses and injury, but does not mention plastic or reconstructive surgery like the Sushruta Samhita. Written in hieratic script in ancient Egypt around 1,600 BC. (Public Domain)

Samhita contains more than just the description of plastic surgery procedures, with 184 chapters containing descriptions of 1,120 illnesses, as well as several hundred types of drugs made from animals, plants and minerals. Furthermore, the *Sushruta Samhita* also contains three hundred surgical procedures divided into eight categories, and 121 different types of surgical instruments.

Sushruta taught that in order to be a good doctor, one should possess medical knowledge in both its theoretical and practical forms.

To this end, he devised various experimental modules (these can also be found in the *Sushruta Samhita*) for his students to practice the different surgical procedures contained in his medical text. For instance, ‘incision’ and ‘excision’ were to be practiced on vegetables and leather bags filled with mud of different densities, ‘probing’ on moth-eaten wood or bamboo, and ‘puncturing’ on the veins of dead animals and lotus stalks.

During the eighth century AD the *Sushruta Samhita* was translated into Arabic by a person known as Ibn Abillsaibial. This Arabic translation, known as the *Kitab Shah Shun al-Hindi* or the *Kitab i-Susurud*, eventually made its way to Europe by the end of the medieval period. In Renaissance Italy, the Branca family of Sicily, and the Bolognese doctor, Gasparo Tagliacozzi, were familiar with the surgical techniques found in the *Sushruta Samhita*. Nevertheless, European mastery of plastic surgery, and surgery in general, only came several centuries later.

Meanwhile, in India the *Sushruta Samhita* has made Indian physicians highly skilled in surgical practice. In 1794, an account was published in the *Gentleman’s Magazine of London* describing the use of plastic surgery used to reconstruct the nose of a Maratha cart-driver mutilated by the soldiers of Tippu Sultan. The procedure was similar to that taught by Sushruta, though instead of grafting skin from the cheek, skin from the forehead was grafted instead. In a way, this shows that medical knowledge in India was not a dead subject, and that innovations could be made to further refine surgical techniques from the sixth century BC. Thus, Sushruta’s procedure for rhinoplasty was introduced to the West in this manner.

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Paracelsus: The Father of Toxicology and the Enemy of Physicians

HEALERS: Paracelsus, revolutionary who defied traditional medical practice

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Detail, A portrait of Paracelsus, Father of Toxicology. (Allie_Caulfield/CC BY 2.0))

Toxicology is a branch of knowledge dealing with the scientific study of the characteristics and effects of poisons on living organisms. The man considered to be the ‘father’ of this discipline is Philippus Aureolus Theophrastus Bombastus von Hohenheim, better known as Paracelsus.

It is said that Paracelsus meant ‘equal to Celsus’ (referring to the Roman encyclopaedist Aulus Cornelius Celsus), and the change in his name was meant to be an indication of Paracelsus’ desire to rival ancient medical authorities such as Celsus and Galen.

Following in His Father's Footsteps

Paracelsus was born in 1493 in Einsiedeln, Schwyz, (modern day Switzerland). Paracelsus' father, Wilhelm Bombast von Hohenheim, was a Swabian nobleman said to have been born out of wedlock in an impoverished family of knights. Wilhelm was himself a physician, and was mentioned by Paracelsus to be one of his earliest teachers. When Paracelsus' mother, Els Ochsner, died when he was just nine years old, father and son moved to Villach in Carinthia.

By watching his father giving medical comfort and aid to visiting pilgrims, the young Paracelsus developed a desire to emulate him. Wilhelm also nurtured Paracelsus' growing interest by teaching him the basics of medicine. Furthermore, Wilhelm gave his son herbs and stones, water and metals, as friends, thus initiating him into the wonders of nature.

Conflicting Stories on Paracelsus' Further Learning



Apart from his father, Paracelsus was also taught by several bishops, including Eberhard Paumgarthner, the bishop of Lavant, and Matthæus Schacht, the bishop of Freising. Paracelsus also studied alchemy under the occultist abbot of Sponheim, Johannes Trithemius.

At the age of 16, he began studying medicine at the University of Basel in Switzerland. According to one source, it was at Basel that Paracelsus met

and studied under the guidance of a wealthy physician, Sigismund Fugger. In 1516, however, Paracelsus was forced to leave the city hurriedly, as he ran into some problems with the authorities for his studies in necromancy.

The true history is unclear: According to another source, Fugger's laboratory was located in Schwaz, Austria, rather than in Basel. Yet another source suggests that there was no proof that Paracelsus even took a degree in medicine.



*Paracelsus defied traditional medical practice and brought us a greater understanding of natural science.
(Public Domain)*

The Many Travels of Paracelsus

The sources agree, nevertheless, that Paracelsus spent a long period of time wandering abroad. Paracelsus' travels took him to such countries as Germany, France, Hungary, the Netherlands, Denmark, Sweden, and Russia.

One source claims that whilst in Russia, Paracelsus was captured by the Tatars, and brought to the court of the Grand Cham. He became a court favorite, and even accompanied the Cham's son on a diplomatic mission to Constantinople. It is further claimed by this source that in Constantinople, an Arab adept imparted the secret of the universal solvent (the alkahest) to Paracelsus. It is also said that Paracelsus attended many of the most important European universities during his travels, and gained practical medical knowledge whilst serving as a surgeon in the camps of various mercenary armies.



Fortunately for us, the records of Paracelsus' travels become clearer for the last 15 years of his life. In 1526, Paracelsus arrived in Strasburg, where he joined a guild of surgeons. In the same year, he returned to Basel to treat a leg ailment of Johannes Frobenius, a famed publisher. It has been suggested that thanks to Frobenius' influence, Paracelsus was appointed to the office of the city physician of Basel, which entitled him to lecture at the city's university.

The Luther of the Physicians

It was his actions during this time that perhaps later earned Paracelsus the nickname 'the Luther of Physicians'. Among his 'heretical' actions were his opposition to the revered Galeno-Arabic system, the burning of Avicenna's writings in a public square, and his attack on the greed of apothecaries.

Those in authority came to hate him, and Paracelsus was soon expelled from the city (again.) Paracelsus began to wander around Europe yet another time, and eventually died in Salzburg in 1541.

Theophrastus Paracelsus
Medicus.

22



Zeihen mich mit argem wohn/
Als solt ein heimlichn Geist ich han/
Gottes gab all die kunst ist mein
Dem Menschen zu gut bereit allein.
Starb im Jar. 1541.

Woodcut of an elder Paracelsus by Tobias Stimmer, 1541. (Public Domain)

Paracelsus' Contributions to Medicine

One of Paracelsus' contributions to the field of medicine was the idea that pathological changes were caused not only by internal factors, i.e. the four humors, but also by external factors. These included 'cosmic influences differing with climate and country, as well as 'toxic matter originating in food'.

Paracelsus proposed that all natural substances have two types of influences –a helpful one, and a harmful one, which were separated by means of alchemy.

This led to one of Paracelsus' most famous adages, which is also the fundamental principle of classical toxicology, "*Alle Dinge sind Gift und nichts ist ohne Gift, allein die Dosis macht es, dass ein Ding kein Gift ist.*" meaning "All things are poison and nothing is without poison; only the dose makes a thing not a poison."

This has often been shortened to "The dose makes the poison."



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Were the tattoos of Ötzi the Iceman therapeutic?

TREATMENT: Prehistoric acupuncture and medicinal tattoos

[ANCIENT-ORIGINS](#) | [April Holloway](#)



The naturally preserved mummy of Ötzi the Iceman undergoes forensic examination. His body sports many interesting tattoos. (Creative Commons Fair Use)

Ötzi the iceman is a 5,300-year-old mummy, who was discovered by some German tourists in the Oetz Valley, Austria, in 1991. He was originally believed to be the frozen corpse of a mountaineer or soldier who died during World War I. Tests later confirmed the iceman dates back to 3300 BC and most likely died from a blow to the back of the head. He is Europe's oldest natural human mummy.

Remarkably, his body contained the still intact blood cells, which resembled a modern sample of blood. They are the oldest blood cells ever identified. His body was so well-preserved that scientists were even able to determine that his last meal was red deer and herb bread, eaten with wheat bran, roots and fruit.

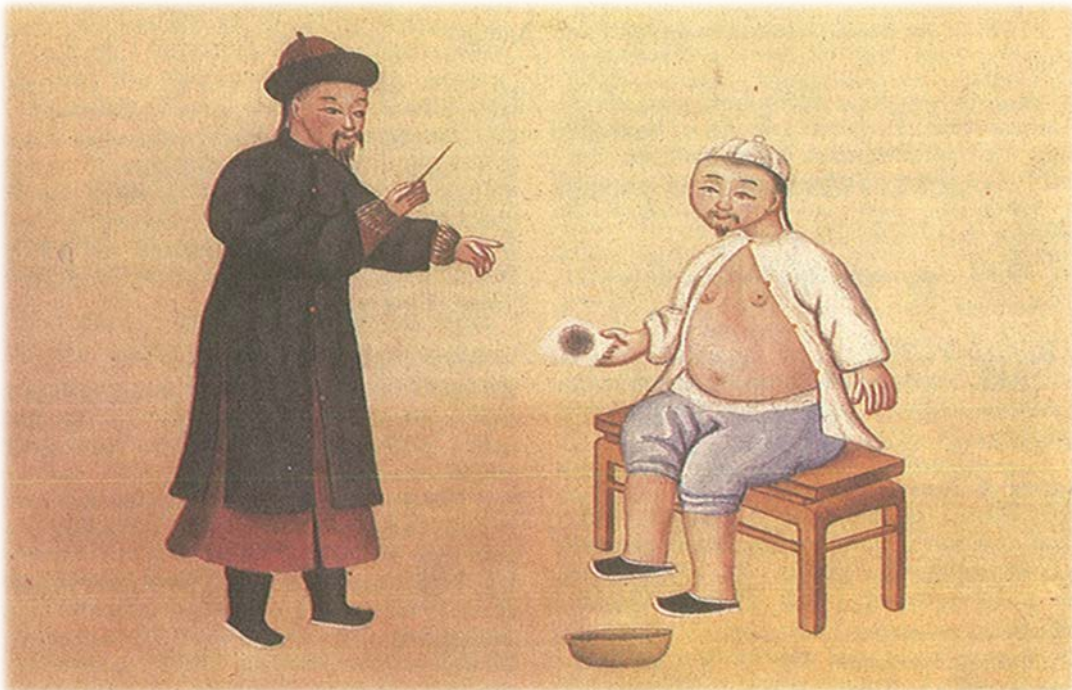
One of the more surprising discoveries about Ötzi, is the series of tattoos found all over his body, which researchers believe may have been an early form of acupuncture.

His body art, the only known example of Copper Age tattoos, includes 50 tattoos across the body, most of which are formed of lines and crosses made by making small incisions in the skin and then rubbing them with charcoal.

Until recently, it was believed that the tattoos were merely decorative, however, a new study has revealed **that it is more likely the tattoos were made for therapeutic purposes and were an ancient form of acupuncture.**

“Radiological images of the tattooed areas show degenerative areas under the tattoos that could have caused pain,” said a spokesman for the South Tyrol Museum of Archaeology. “As the tattooing spots lie approximately over the acupuncture medians, it seems common opinion that they could have been use for that.”

Ötzi’s tattoos were found on all the parts of the body that showed evidence of wear and tear, including his ankles, wrists, knees, Achilles tendon, and lower back, leading the researchers to suspect that the tattoos were used therapeutically to relieve ailments like rheumatism and arthritis. If this is true, then this could constitute the earliest form of acupuncture, which was thought to have been invented more than 2,000 years later in Asia.



Acupuncture was thought to originate around 100 BC in China. (CC BY 2.0)



Reconstruction of Ötzi the Iceman. (Thilo Parg/Wikimedia Commons/CC BY-SA 3.0)

The spokesman for the South Tyrol Museum of Archaeology said that if indeed the tattoos were created as a form of acupuncture, “people of the Iceman's times would have known not only about nature around them, but also about the human body and its reactions - I think this is remarkable.”



Ötzi the Iceman while still frozen in the glacier, photographed by Helmut Simon upon the discovery of the body in September 1991. (Creative Commons Fair Use)

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Seven Impressive but Terrifying Cases of Ancient Surgery

SURGERY: Ancient Surgeons Cut and Drilled to Heal the Sick

[ANCIENT-ORIGINS](#) | [April Holloway](#)



A trepanated skull, Neolithic. The perimeter of the hole in the skull is rounded off by ingrowth of new bony tissue, indicating that the patient survived the operation. (CC BY-SA 2.0 FR)

It is hard to fathom the way in which invasive surgery was carried out prior to the development of modern anesthesia, but ancient people around the world have been cutting and drilling into the human body for thousands of years.

Here we look at some **impressive but terrifying cases of ancient surgery**, from leg surgery to dental implants, and brain surgery—in some cases dating back an incredible 11,000 years:

[Ancient Surgery: Practice of Drilling Holes in Skulls Found in Peru - Click for More](#)



Mummies rest in the Cemetery of Chauchilla, southern Peru. (CC BY-SA 2.5 ES)

In 2012, archaeologists excavating burial caves in the south-central Andean province of Andahuaylas in Peru discovered the remains of 32 individuals dating back between 750 and 1,000 years and, incredibly, they found evidence of 45 separate surgical procedures on the skulls of the individuals.

Cranial surgery, known as trephination, is one of the first ever surgical practices and is known to have begun in the Neolithic era. It involves drilling a hole in the skull of a living person to cure illness such as convulsions, headaches, infections or fractures.

The skulls found in Peru show evidence that sections of the cranium were removed using a hand drill or a scraping tool. Some of the remains showed evidence of their hair having been shaved and an herbal remedy placed over the wound, which all point to the fact that this was an attempt to heal sick or injured individuals.

[2,000-year-old trepanation surgery in ancient Siberia – Click for More](#)



A trepanated skull. (CC BY-SA 3.0)

In February, 2015, Russian scientists examined ancient human skulls and then tested bronze tools on a modern skull to see how ancient doctors in Siberia more than 2,000 years ago performed brain surgery on three adults. It is still unknown what anesthetic, if any, was used to dull the pain during the surgery.

The researchers believe the surgeries were carried out using the same principles as those found in the *Hippocratic Corpus*, which requires strict adherence to medical ethics and techniques. Hippocrates wrote the oath around 500 BC.

The ancient doctor or doctors who performed the surgeries did them at a location on the skull that minimized damage to the brain and assured longer survival. Remarkably, it appears one of the men lived for years after the trepanation surgery because some of the bone grew back.

[From jewel-capped teeth to golden bridges: 9,000 years of dentistry – Click for More](#)



Ancient Egypt Dentistry: The work shows intricate gold work around the teeth. This mummy was found with two donor teeth that had holes drilled into them. Wires were strung through the holes and then around the neighboring teeth. (Public Domain)



Dentistry, in some form or another, has been practiced for at least 9,000 years, although tooth extraction and remedies for tooth aches probably go back much further. The study of ancient remains from around the world has demonstrated the ingenuity that existed in the application of surgical and cosmetic dental practices going back many millennia.

The Indus Valley Civilization has yielded evidence for the earliest form of dentistry, which dates back to 7000 BC. Sites in Pakistan have revealed dental practices involving treating tooth-related disorders with bow drills, operated perhaps by skilled bead craftsmen. The reconstruction of this ancient form of dentistry shows that the methods used were reliable and effective.

[Evidence of successful brain surgery and ancient pharmaceutical warehouse – Click for More](#)

In 2014, archaeologists unearthed evidence of ancient surgery among the remains of people who lived in a settlement near Istanbul, Turkey, between the 11th and 6th centuries BC. A skull, buried among the many remains undergoing excavation in the location of the ancient Roman city of Bathonea, was found to have been cut into, and examinations showed the patient survived the apparent surgery.

Excavation team member and forensic science expert Ömer Turan said: *“The skull of this person, who is over the age of 30, was cut very regularly by medical workers, just like today’s brain surgeons. It is a painful process to open the skull. A person cannot tolerate this pain and should be anaesthetized, so this type of operation in such an early era makes us think there was a kind of anesthesia. Biological studies on the bones will enable us to find out which substance was used. The traces of recovery are apparent in the place of operation.”*

Over 400 small bottles were also unearthed on site. Chemical examination revealed that these terra cotta *unguentarium* had contained methanone, phenanthrene, and phenanthrene carboxylic acid. Study showed the bottles had been filled with the mixed chemicals deliberately, using specific calculations. These findings, and the quantity of bottles, led the excavation team to surmise **the location was the equivalent of a pharmaceutical production center.**



Ancient Roman surgical tools (found at Pompeii). (Public Domain)



Roman terracotta unguentarium, commonly used to hold medicinal solutions. 1st Century AD.

(CC BY-SA 4.0)

[First Ever Evidence for Ancient Bone Surgery found in Peru: Holes Drilled in Legs – Click for More](#)



Researchers discovered the first evidence of surgery on skeletal non-cranial remains at the ruins of Kuelap, Peru. (Jorge Gobbi/CC BY 2.0)

Drilling holes in the head, otherwise known as trepanation, is the earliest surgical technique known. In 2015 researchers discovered the first example of the drilling technique used on other body parts in pre-Columbian Peru. Marks were identified on two skeletons found at the pre-Columbian site of Kuelap, in north-eastern Peru.

The bones of the individuals, dated to 800–1535 AD, displayed evidence of having undergone drilling techniques on their legs in a manner similar to trepanation. It is thought this was done to treat a possible lower leg infection, and this is a rare find.

The two skeletons from the Kuelap site in Peru were male, one aged 30 to 34 years old, the other an adolescent. Examinations revealed the pair were seemingly healthy overall, without major stresses detected on the bones. However, the depth and placement of the drilled holes suggest the surgeries were done to relieve pressure from an injury or infection which caused a build-up of fluid in the leg.

[11,000-year-old site of Asikli Hoyuk reveals early brain surgery – Click for More](#)



Ancient remains found at Aşıklı Höyük, Turkey. (CC BY-SA 2.0)

The ancient Neolithic settlement of Asikli Hoyuk (Aşıklı Höyük) boasts many important discoveries. Excavations have revealed crucial information on the history of brain surgery, early mining, astounding craftsmanship, and human transitions from nomadic to sedentary lifestyles. The site continues to surprise archaeologists and visitors alike as it reveals the secrets of the original inhabitants dating back to 9000 BC, even after 25 years of modern excavation.

In a recent dig, archaeologists found skulls at Asikli Hoyuk demonstrating the earliest-known brain surgery. Trepanation, or drilling holes into the skull in an attempt to relieve or cure ailments or mental illness, has been found on a number of skulls at the site, astounding researchers.

[2,300-year-old dental implant in Iron Age woman – Click for More](#)



*Iron Age set of surgical tools including scalpels, retractors, needles forceps, hooks and surgical saw.
(Public Domain)*

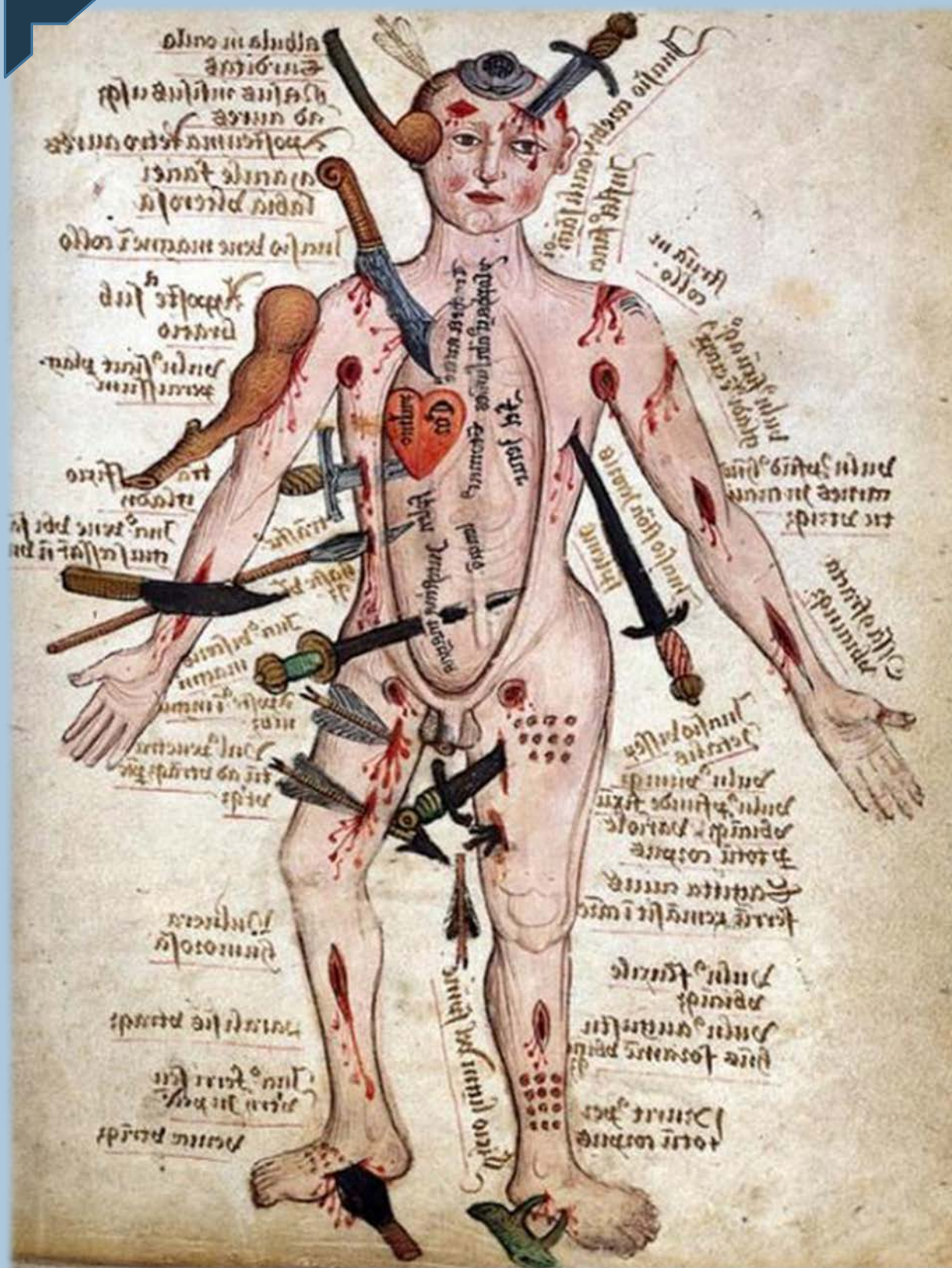
A study in 2014 revealed the discovery of an Iron Age tooth implant among the remains of a Celtic woman in northern France. The implant is the oldest of its kind discovered in Western Europe.



Smiling skull (Dan Eckert/C BY 2.0)

The finding was made in a 2,300-year-old richly furnished burial chamber in Le Chene, France.

The iron implant, which is the same size and shape as incisors from her upper jaw, was found alongside the rest of her teeth. It is believed that the iron pin was covered with a wooden- or ivory-carved tooth.



"Wound Man", a medieval work attributed to Galen, the most accomplished medical researcher of antiquity. (Wellcome Images/CC BY 4.0)

The Incredible Medical Interventions of the Monks of Soutra Aisle

HEALERS: Parasite killers, appetite suppressants, and hangover cures

[ANCIENT-ORIGINS](#) | [Dhwty](#)



Medieval medicine. Detail of an illumination of 'medicinae Canon' of Avicenna. (Public Domain)

Soutra Aisle refers to a set of ruins in Scotland that were once part of a larger complex comprising a hospital and a friar. Excavations at Soutra Aisle have provided an extraordinary window into the lives of the Augustinian monks that resided there, including their vast array of medicinal treatments from pain killers,

to appetite suppressants, parasite killers, labor induction concoctions, and hangover cures.

Soutra Aisle is a vitally important site for the understanding of medieval medical practice.

Apart from their religious duties, the monks of the Middle Ages had a variety of tasks to do each day. These include the planting of their own grains and vegetables, the production of wine, ale and honey, the copying of manuscripts, and the provision of medical care for the sick.

The hospital at Soutra Aisle, along with the friary, was collectively known as the *House of the Holy Trinity*. The archaeological investigation of this site has provided us with an insight into the way this medieval hospital functioned during its heyday.



Reconstruction of the medieval hospital of Soutra Aisle built from stones found on site. (CC BY-SA 3.0)

The Soutra Aisle Hospital

The medieval hospital is located on top of a hill known as Soutra Hill, which is found in the Scottish Borders, near the boundary between Scotland and England. Additionally, the hospital was located on the 'King's Highway', the main road from Scotland to England that followed the line of Dere Street, a major Roman road. The hospital was

founded in 1164 by the Scottish king, Malcolm IV, and was under the Augustinian order of monks. It has been pointed out that unlike many other monasteries founded during this period, the one at Soutra was established for the following specific aims: to treat the sick, to provide hospitality to travelers, to give alms to the poor, and to provide legal sanctuary. It has been speculated that during its heyday, the site housed around 300 people (monks and servants) on a permanent basis to cope with the large amount of people seeking rest, or needing medical treatment.

One of the most important—not to mention dangerous—archaeological discoveries at the hospital was the medical waste left behind over the centuries by the patients treated there. In 15 trenches dug on the three-quarters of a square mile site, archaeologists were able to identify medical waste, defined as having the following three criteria: blood, lead, and certain common drug plants used only for medical purposes.

Due to the impermeable clay base of the area, the hill is constantly waterlogged, resulting in the preservation of archaeological material. In addition, fragments of pottery vessels were also unearthed at Soutra Aisle.



Reconstruction of part of the hospital at Soutra Aisle, viewed from the south (M J Richardson –Creative Commons license)

Medicinal treatments at Soutra Aisle

Analysis of the vessels retrieved at Soutra Aisle revealed that they were once used to store medicines such as painkillers and general anesthetics made from hemlock, henbane and opium poppy. A salve of opium and lard is said to have been used to dress open wounds after surgery or amputation. The remains of amputated body parts, and dressings with human tissues attached are further evidence that the monks at Soutra Aisle carried out surgical procedures on their patients.

Parasite killers, appetite suppressants, and hangover cures

Among the remnants at Soutra Aisle, archaeologists also found a mix of tormentil – a herb with a high concentration of tannin, which was used to kill the eggs of parasitic worms, as well as alleviating diarrhea and stopping internal bleeding. In addition, they found the remains of the plant *Lathyrus linifolius*, used as an appetite suppressant during times of crop failures and as a weight loss cure for the overindulged. There is also evidence that the Augustinian monks concocted a hangover cure from toxic plant seeds and liquids left over from salt-making, which would induce vomiting.



A monk sneaking a drink in the cellar. Illumination from a copy of 'Li livres dou santé'. (Public Domain)

Labor induction and abortions

Another intriguing find at Soutra Aisle is the discovery of the remains of stillborn babies, and the presence of ergot fungus and juniper berries. The ergot fungus is a parasitic fungus that attacks cereal crops, and is now known to contain alkaloids, including ergometrine, which causes contractions of the uterus. Juniper berries are also said to have been referred to as a 'uterine stimulant'. Therefore, it has been speculated that the combination of these two elements might have been used to help with childbirth, or abortion. As Augustinian monks were strictly forbidden to practice midwifery, it raises the possibility that this was either practiced illegally by the monks at the hospital, or that female midwives were also working at Soutra Aisle.



The fall of Soutra Aisle

Following a scandal in 1460, in which a renegade master, Stephen Fleming, was deposed, the medieval hospital went into a decline. Most of the hospital's estates were confiscated, and given to the Trinity College Hospital in Edinburgh. As a result, the once rich establishment was without an income. Despite losing its important status, the hospital survived through the Scottish Reformation in the following century, and continued to struggle until the middle of the 17th century.

A fragment of the church still remains today, as it was converted into the family burial vault of the Pringles of Soutra/Beatman's Acre in 1686. Yet, as the archaeological investigations have indicated, the importance of the medieval hospital of Soutra Aisle lies not in the building itself, but in the medical discoveries unearthed in its vicinity.

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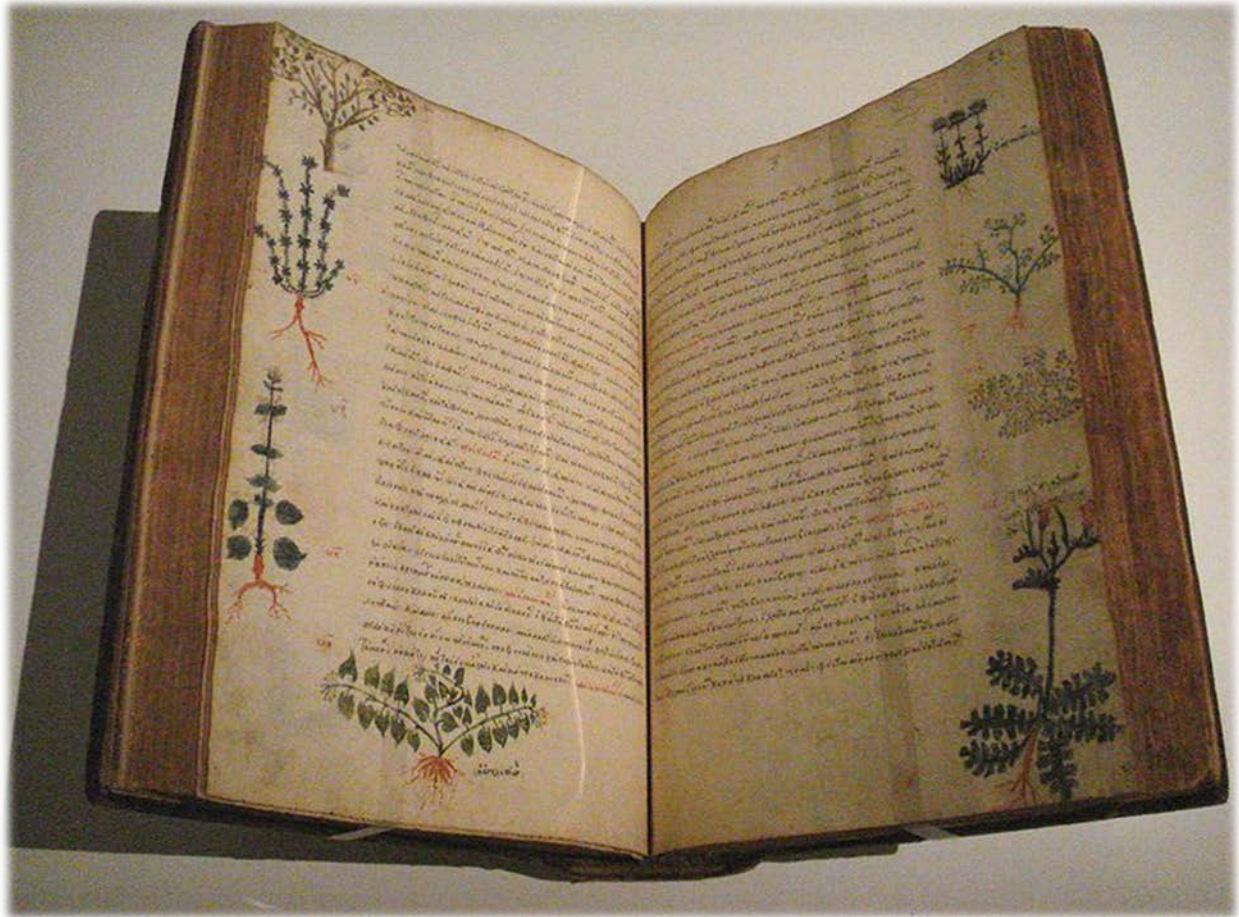
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Ancient Roseroot, an ancient remedy for fatigue and disease, gets new respect

TREATMENT: Ancient root may be key to modern medicine

[ANCIENT-ORIGINS](#) | [Mark Miller](#)



15th century Byzantine copy of De Materia Medica by the ancient Greek doctor Dioscorides that mentions Rhodiola rosea as beneficial. (Public Domain)

Ancient Greeks, Vikings, Caucasians, prehistoric Siberians and Mongolians, and ancient Chinese emperors were all taken with the medicinal properties of the wild herb *Rhodiola rosea* (golden root or roseroot). Many centuries after it was introduced to Siberia, people there still say those who drink roseroot tea will live to be 100.

Now new research has shown that this ancient medicinal herb may also be effective in treating depression.

Since 1960, more than 180 studies have been done to gauge the efficacy of roseroot in promoting health. Now medical researchers at the University of Pennsylvania have

done the “first randomized, double-blind, placebo-controlled, comparison trial of oral *R. rosea* extract versus conventional antidepressant therapy of mild to moderate” depression. This latest research, along with previous studies, found that the ancients were right to be enamored with roseroot; it works not just in reducing some symptoms of depression, but it also gave “significant reductions in fatigue, depression, and performance ratings” in two groups tested in another study.

In ancient times, Siberians found the root so valuable they would trade it for wine, fruit and honey.

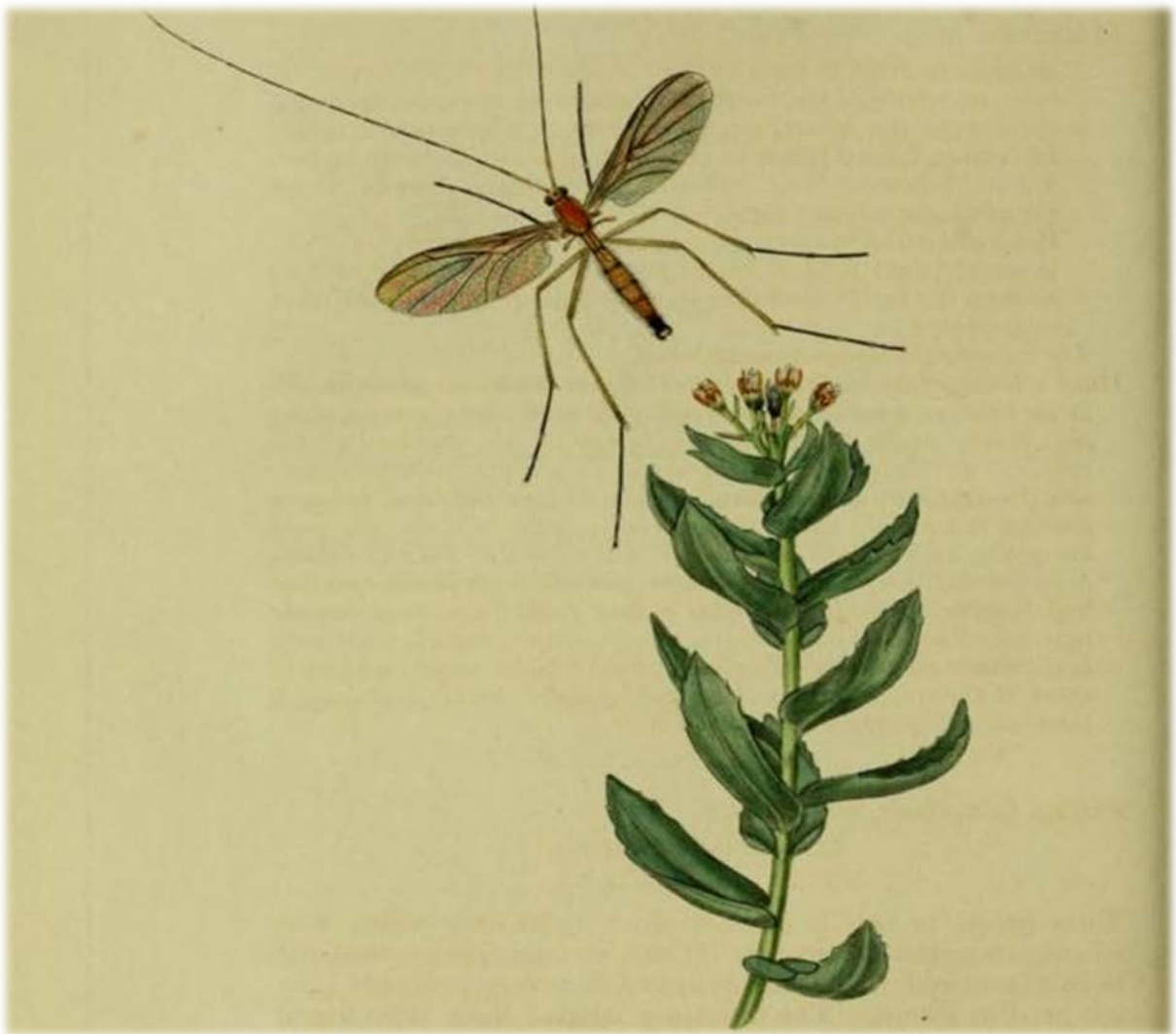


Rhodiola rosea or roseroot herb is an ancient remedy that has been studied in the 20th and 21st centuries for alleviating depression and reducing fatigue. (Flickr/CC BY-SA 2.0)

The MDidea article states: “In Siberia to this day, it is said that people who drink *Rhodiola rosea* tea will live to be more than 100. The herb still is given to newlyweds to assure fertility and the birth of healthy children. For centuries the details of how and where to harvest the wild root were a closely guarded secret among members of certain Siberian families, who would transport *Rhodiola rosea* down ancient trails in the Altai and Caucasus mountains and trade it for Georgian wine, fruit, and honey.”

Roseroot is known in Asia and Eastern Europe to be efficacious in easing fatigue and enhancing work performance, alleviating depression, stimulating the nervous system and preventing high-altitude illness, writes Herbwisdom.com

Dioscorides, an ancient Greek doctor, mentions roseroot in his book *De Materia Medica*, or *On Medical Material*.



A drawing of an insect with roseroot from John Curtis' 19th century book 'British Entomology' (Public Domain)

"Rhodiola has a legendary history dating back thousands of years," says herbwisdom.com.

"In 77 A.D., the Greek physician Dioscorides documented the medical applications of the plant, which he then called rodia riza, in his classic medical text De Materia Medica. The Vikings depended on the herb to enhance their physical strength and endurance, while Chinese emperors sent expeditions to Siberia to bring back the golden root' for medicinal preparations. The people of central Asia considered a tea brewed from Rhodiola rosea to be the most effective treatment for cold and flu. Mongolian physicians prescribed it for tuberculosis and cancer."

The root made its way west via Bronze Age trade routes between Greece and what is now the Republic of Georgia. Sailors and traders made their way from "the Aegean Sea, the Hellespont (Dardanelles), the Sea of Marmara, the Bosphorus, and the Black Sea to a land called Colchis" in Georgia.

The tale of the voyage of Jason and the Argonauts has some myth and fiction in it, but it documents contacts between the Greeks and people of Colchis more than 3,000 years ago.



Map of the Argonauts' route. Note Colchis (Kohlkis) in the upper right. (Maris stella map/CC BY-SA 2.5)

The University of Pennsylvania researchers' study says roseroot and other herbs used to treat depression may not be as effective as the modern control drug, but it may be better in one way:

"In the current trial, we believe that we may have shown a potentially more favorable benefit to risk ratio for R. rosea subjects (even though sertraline demonstrated a greater efficacy), and others have shown similar results for hypericum and other botanicals in mild to moderate depression."

In other words, side effects of the modern drug sertraline are more severe than roseroot, which may cause patients to stop taking the modern drug. In fact, two subjects in the recent study quit taking sertraline because of side effects.



Roseroot - *Rhodiola rosea* (Jeremy Halls/CC BY-SA 2.0)

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The Ancient Origins of Prosthetics

TREATMENT: Ancient solutions for people who suffered limb loss

[ANCIENT-ORIGINS](#) | [Bryan Hilliard](#)



A 3,000-year-old prosthetic toe from ancient Egypt. The big toe is carved from wood and is attached to the foot by a sewn leather wrapping. (Jon Bodsworth)

In the field of medicine, a prosthesis is a man-made device used to replace a missing body part. Although one may think that the use of prosthetic devices is a modern phenomenon, it was a medical solution already in use several thousand years ago.

The oldest known prosthesis that is in existence is from ancient Egypt. In 2000, researchers in Cairo unearthed a prosthetic big toe made of wood and leather which was attached to the almost 3,000-year-old mummy of an Egyptian noblewoman. As the ancient Egyptians perceived the afterlife as a perfect version of this life, it would have been important for them to go there with their body parts intact. This is evident in the fact that a variety of prosthetic devices have been found on mummies. These include feet, legs, noses, and even penises. (Yep, the ancient Egyptians believed that procreation was an activity that was possible in the afterlife).

While this ideological belief may explain the presence of such prosthetics on mummies, recent research shows that the prosthetic toe of the 3,000-year-old mummy may have had a practical function, and the device was used while the woman was still alive.

With the help of volunteers who were missing their big toes, it was shown that the use of prosthetics would have made walking around in ancient Egyptian sandals much easier.

The use of prosthetics demonstrates the resourcefulness of people in ancient times. It has been pointed out that until very recent times, prosthetic devices were made of basic materials, such as wood and metal, and were attached to the body with leather. The use of iron as a material for prosthetics, for instance, can be seen in the account of Marcus Sergius. This Roman general had lost his right hand during the second Punic War. According to historical accounts, Sergius had a prosthetic arm made of iron that allowed him to hold his shield. This meant that he could return to the battlefield and continue fighting. That's one dedicated military man.



*Roman artificial leg of bronze plates fastened to a wooden core, excavated from a tomb near Capua.
(Wellcome/CC BY 4.0)*

Despite these early advances in 'prosthetics technology', not much changed in the use of prosthetic devices from the Roman era until the middle ages, and so it is unsurprising that many of us assume that the use of such devices is a relatively recent phenomenon.

However, iron prosthetic arms and legs were still in use during the middle ages, which was more than a thousand years after Marcus Sergius. It was the metalworkers who made armors for the knights who also crafted the prosthetic devices for their clients. Interestingly, it has been claimed that the purpose of these devices were not so much practical as aesthetic. It seems that these artificial limbs were used to disguise lost limbs, which was considered at that time to be an embarrassing deformity.



Artificial iron arm, once thought to have been owned by Gotz von Berlichingen (1480-1562), the German knight and adventurer who served with the Holy Roman Emperor Charles V against the Turks. Artificial limbs such as these were expensive items made by armorers, and they allowed wearers, who had lost a limb in combat, to continue with their fighting career. This example is believed to date from 1560-1600.
(CC BY-SA 2.0)

Three thousand years on, and prosthetic devices continue to be in use and are just as crucial for people with missing limbs now as they were to people thousands of years ago. Today's devices are much lighter, made of plastic, aluminum and composite materials to provide amputees with the most functional devices. They are designed to return amputees to the lifestyle they were accustomed to, rather than to simply provide basic functionality or a more pleasing appearance. Prostheses today are more realistic, with flesh-like silicone covers, and are able to mimic the function of a natural limb more now than at any time before.

In the beginning it was the ancients who invented these medical solutions for the betterment of lives, and we continue to perfect their ideas to this day.



Eyepatches, not just for pirates. The eyepatch was a simple cover common for people who had lost an eye—usually from dangerous occupations. (Wellcome/CC BY-SA 4.0)

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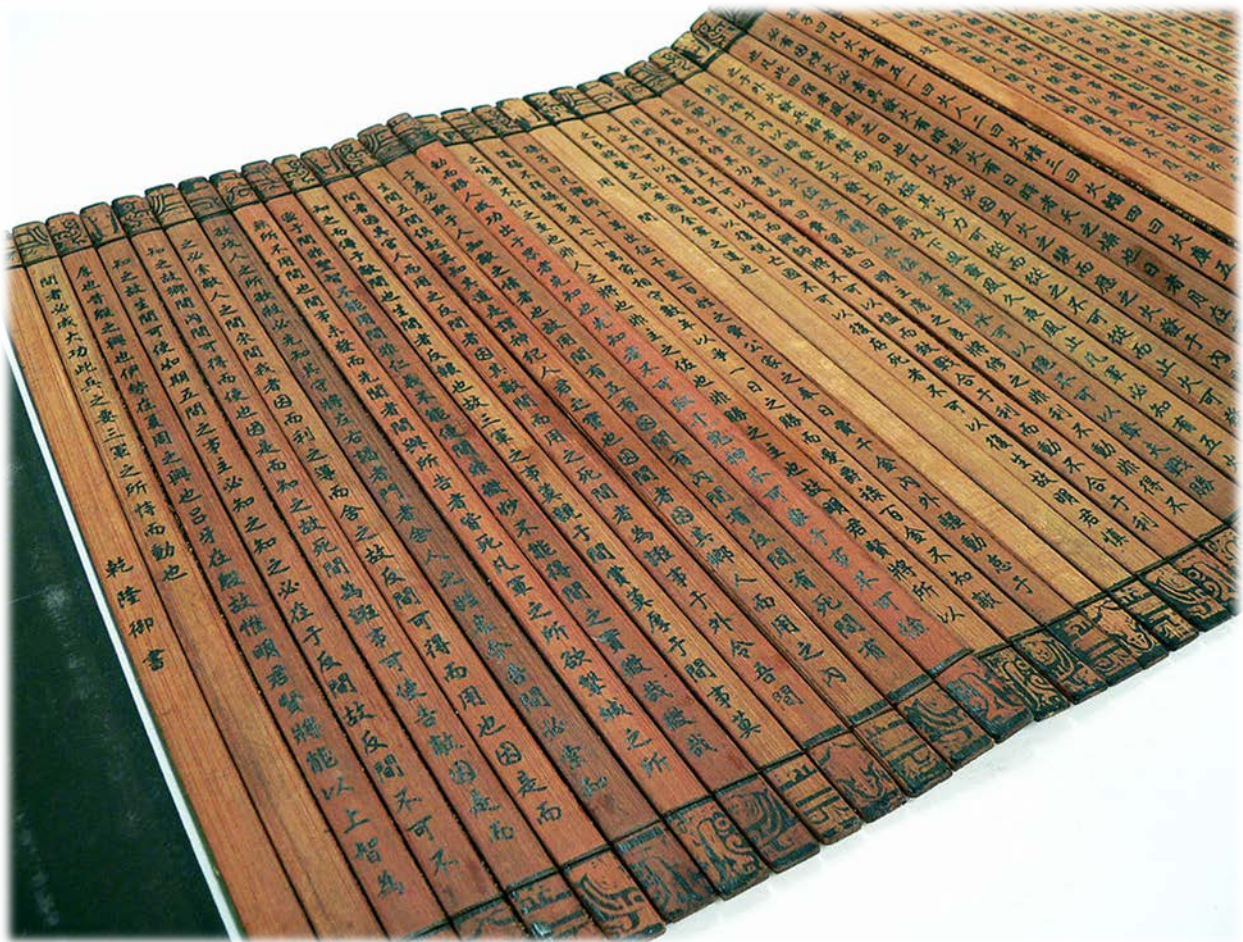
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Ancient bamboo medical books of legendary Bian Que

HEALERS: Earliest Chinese physician was centuries ahead of his time.

[ANCIENT-ORIGINS](#) | [April Holloway](#)



An unfolded traditional bamboo scroll book made up of individual strips. (CC BY 2.0)

Recipes for treating ailments that date back 2,000 years were found on 920 bamboo strips unearthed at a construction site in southwestern China in 2013. Archaeologists speculated that the traditional Chinese remedies may have been written by the successors of Bian Que, reported to be China's earliest known physician.

Further testing confirmed that the texts were written by Bian Que himself. Translation work has also revealed the remarkable contents of these ancient medical manuscripts.



Bian Que. According to legend, he was the earliest known Chinese physician. (CC BY 4.0)

The bamboo strips, which were once widely used as a writing material, were found along with other relics of the Western Han Dynasty, which came to power in 260 BC.

Experts say the works are based mainly on studies of determining disease by taking the patient's pulse. Other practices mentioned include: internal medicine, surgery, gynecology, dermatology, ophthalmology as well as traumatology.

In addition, 184 tiles are related to the medical treatment of horses, considered by the experts as one of the most important veterinarian works in ancient China.



Bas Relief of “Saluzi” (circa 636-649 AD). This horse, named “Saluzi” or Autumn Dew, is one of six chargers commissioned by the Emperor Taizong. Historical records say he was ridden in battle by the Emperor during a great siege, when, after being stuck with an arrow, the Emperor was forced to dismount and switch horses with one of his favorite Generals. The General is shown here pulling the arrow out of Autumn Dew’s chest while the horse stoically bears the pain. (Public Domain)

The bamboo strips were found, along with many other precious relics, within four Western Han Dynasty (206 BC – 24 AD) tombs located in the town of Tianhui. Among the finds were four models of looms, nine medical books, 50 inscribed wooden tablets, 240 lacquer wares, jewelry, and tomb figures.

Out of the nine medical books, some have been verified to be the long lost medical treatises written by the physician Bian Que. In addition, archaeologists also uncovered a 14-centimeter long figurine with major acupoints marked out. It is believed to be a key to deciphering the origin of acupuncture treatment.

According to Chinese legend recorded in the Records of the Grand Historian, Bian Que was gifted with remarkable abilities from a deity. The story states that he was given a packet of medicine which gave him the ability to see through the human body. He thereby became an excellent diagnostician with his x-ray like ability. It is said that he pioneered pulse-taking, used anesthesia and even performed an organ transplant.

One legend stated that once, while visiting the state of Guo, Bian Que saw people mourning on the streets. Upon inquiring what their grievances were, he got the reply that the heir apparent of the lord had died, and the lord was in mourning. Sensing something afoot, he is said to have gone to the palace to inquire about the circumstances of the death. After hearing of how the prince "died", he concluded that the prince had not really died, but was rather in a coma-like state. Using his acupuncture, he was said to have brought the prince back to consciousness. Prescribing the prince with medicine, the prince healed within days.

Whether there is factual basis to the legends or not, Bian Que is known to have been a remarkable physician who was centuries ahead of his time. The discovery of his ancient remedies is an incredibly rare and important find.



Ancient bamboo strips with characters, circa 300 BC. (Public Domain)

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The Ancient Egyptian health care system at Deir el-Medina

TREATMENT: “Place of Truth” had complex system of health and social care

[ANCIENT-ORIGINS](#) | [April Holloway](#)



The ancient village of Deir el-Medina reveals an early health care system. (CC BY 3.0)

Stanford archaeologists have undertaken the first ever detailed analyses of human remains found at Deir el-Medina, an ancient Egyptian village which was home to the artisans who worked on the tombs in the Valley of the Kings during the 18th to 20th dynasties of the New Kingdom period (c. 1550–1080 BC), including those of Ramesses II and his long line of successors.

Their findings reveal a detailed and fascinating picture of a health care in the ancient world.

Deir el-Medina, once known as Set Maat (“The Place of Truth”) is located on the west bank of the Nile, across the river from modern-day Luxor. It was a grueling hour's climb for the workers, across the mountainside that looms above Egypt's Valley of the Kings. The village may have been built apart from the wider population in order to preserve secrecy in view of sensitive nature of the work carried out in the tombs.



The workers of Deir el-Medina worked in the world famous 'Valley of the Kings'. (BigStockPhoto)

In addition to the extremely well-preserved village of Deir el-Medina, a UNESCO World Heritage site, many ancient records exist, including personal letters, bills, lawsuits, prayers, ancient Egyptian literature, and thousands of papyri, which have enabled archaeologists to piece together what life was like in this ancient worker's settlement. By combining an analysis of written documentation, with the study of the skeletal remains, Stanford postdoctoral scholar Anne Austin, has been able to shed new light on what she calls “the earliest documented governmental health care plan”.

According to a Stanford report on the research, Austin found physical evidence to corroborate records describing a comprehensive health care system, in which workers could take paid sick days and visit a ‘clinic’ for a free check-up, and the disabled were well cared for.



The ancient village of Deir el-Medina had a complex system of health and social care. (CC BY 3.0)

"I found the remains of a man who died at the age of 19 or 20 and was born without a useful right leg, presumably because of polio or another neuromuscular disorder," Austin said. To work in the royal tombs, he would have had to endure a difficult climb, but she found "no signs of other health issues, or of having lived a hard life. That suggests to me that they found a role for him in this community even though the predominant role, of working in the tombs, could not be met."

Like in other Egyptian communities, the workmen and inhabitants of Deir el-Medina received care for their health problems through medical treatment, prayer, and magic.



The records at Deir el-Medina, for example, note both a "physician", who saw patients and prescribed treatments, and a "scorpion charmer" who specialized in magical cures for scorpion bites. Incredibly, archaeologists even recovered an ancient prosthetic toe, which would have enabled a worker with a missing toe to continue working.

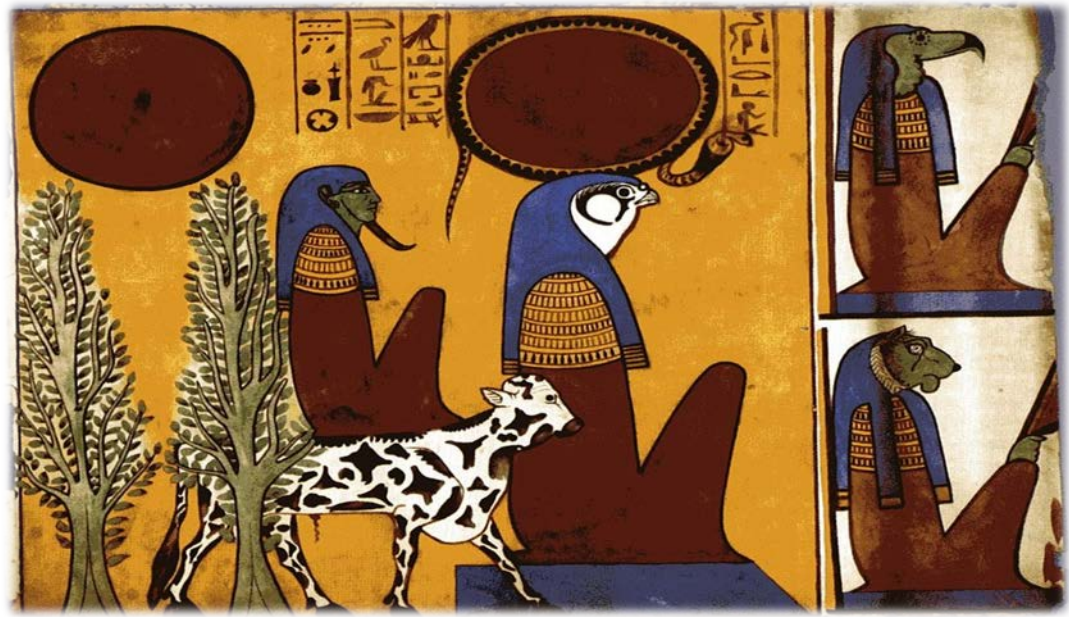
Occupational Stress

Despite the healthcare available in Deir el-Medina, Austin also found evidence of significant occupational stress, which may have been fueled by a pressure to work, either from the state or from their own sense of duty and obligation.

For example, the bones of one mummy displayed osteomyelitis – inflammation in the bone due to blood-borne infection. *"The remains suggest that he would have been working during the development of this infection,"* Austin said. *"Rather than take time off, for whatever reason, he kept going."*

"The more I learn about Egypt, the more similar I think ancient Egyptian society is to modern American society. Things we consider creations of the modern condition, such as health care and labor strikes, are also visible so far in the past."

Austin's research at Deir el-Medina is continuing in the hope of identifying specific diseases present in the village, and further unravelling the complex social, health, and community life within this ancient and important settlement.



Scene from the Tomb of Sennedjem at Deir el-Medina, Egypt. (CC BY-SA 3.0)

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Inscription detailing ancient Egyptian medical instruments, including bone saws, suction cups, knives and scalpels, retractors, scales, lances, chisels and dental tools. (CC BY-SA 3.0)

Ancient skull was drilled and harvested for medicine in the 18th century

SURGERY: Ground up bones were thought to be powerful remedies

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Trepanation holes in a human skull. (CC BY-SA 3.0)

The skull of a man who was beheaded in the 15th century was at the center of a mystery until experts revealed the cranium was harvested to be used as medicine.

Within the crypt of Italy's Otranto Cathedral resides an unnerving sight – the skulls and bones of some 800 men sit behind large glass panels, staring out as a commemoration of a tale of religious resistance. The dead men, alleged to have been executed by invading Ottoman Turks in 1480, are known as the “martyrs of Otranto.”



*Skulls and bones of 'the Martyrs of Otranto' stare out from behind glass panels in Otranto Cathedral, Italy.
(Laurent Massoptier/CC BY 2.0)*

One of these skulls is unique in that it possesses 16 perfectly round holes on its top. How the holes were made, and for what purpose, confounded experts and visitors to the cathedral. However, researchers were recently able to determine that the holes were trepanned – or drilled – into the skull after death as a way of harvesting the ground-up powder.

The skull was kept behind the glass and could not directly be accessed by researchers, but visual examination determined the holes were all regular, round shapes. Eight of the 16 holes were bored all the way through the skull.

Skull and bone powder was thought to treat many illnesses and diseases, such as epilepsy, paralysis or stroke. These ailments and others were believed to be caused by demons or magical influences.



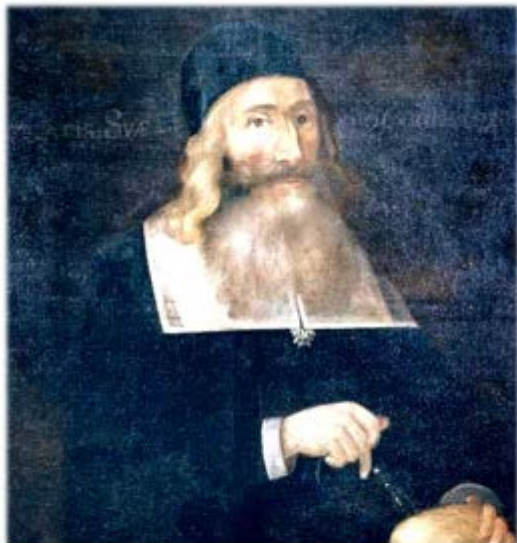
A gruesome 18th-century French illustration of trepanation. (Public Domain)

A research paper on the skull has been published in the *Journal of Ethnopharmacology*. It details the findings of Gino Fornaciari, professor of history of medicine and paleopathology at the University of Pisa, and colleagues.

Fornaciari and colleagues surmise that the depressions and holes were drilled into the skull long after the death of the victim, and were made by a tool specifically designed to pulverize the bone into powder. He describes the tool as “a particular type of trepan, with semi-lunar shaped blade or rounded bit; a tool of this type could not produce bone discs, but only bone powder.”

The skull specimen is significant. The unique evidence supports known texts and historical accounts of bone powder use in medicine. It is also of interest to the researchers due to its religious context.

The 813 ‘martyrs of Otranto’ are known as the patron saints of the Italian city of Otranto. They are said to have died on Aug. 14, 1480 after a 15-day assault on the city by an overwhelming Ottoman force. Thousands were slaughtered, and thousands more women and children were sold into slavery. Any soldiers or fighting men who lived through the siege were taken prisoner. The story goes that they were instructed to convert from Christianity to Islam. When they refused, it is said they were beheaded one by one in a mass execution, and their skulls and bones now reside in Otranto Cathedral.



Dr. John Clarke drilling a skull, ca. 1664 (Public Domain)

Fornaciari and colleagues theorize that as the remains were considered to be from martyrs and saints, the bones were likely regarded as having potent medicinal properties, a “powerful ingredient for pharmacological preparations.”

Valentina Giuffra, from Pisa University’s division of paleopathology and co-author of the study said, ***“The head was considered the most important part of the human body. It was believed that right there invisible spiritual forces remained active even after death.”***

French chemist Nicolas Lémery (1645 –1715) wrote in his work *Pharmacopée universelle*, that powdered skull, when combined with water and swallowed, was an effective treatment for “illness of the brain.”

Lémery continued, *“The skull of a person who died of violent and sudden death is better than that of a man who died of a long illness or who had been taken from a cemetery: the former has held almost all of his spirits, which in the latter they have been consumed, either by illness or by the earth.”*



Trepanation and bone drilling instruments, 18th century (CC BY 3.0)

It's not known why that particular skull was chosen out of the many to be drilled. The researchers can only suggest that the procedure took place when the skulls and bones were being carefully arranged within the glass cabinets, in 1711.

Much has been gleaned on the practice of trepanation and ancient surgery, with archaeological finds revealing trepanning surgeries performed in Siberia 2,000 years ago, leg drilling surgery in prehistoric Peru, and skull trepanation in skulls in Turkey dating back to 9000 BC.

This historically significant holy (and holey) skull gives a rare glimpse into the world of historical medicine, and the use of human remains in pharmacological treatments.

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Medical Mystery of Usermontu: Discovery of 2,600-Year-Old Knee Screw Left Experts Dumbfounded

SURGERY: Orthopedic pin in joint looks like modern-day procedure

[ANCIENT-ORIGINS](#) | [April Holloway](#)



The mummified remains of 'Usermontu'. (CC BY-SA 2.5)

In 1971, the Rosicrucian Museum in California acquired a sealed ancient Egyptian coffin containing the well-preserved mummy of a high status Egyptian male. More than two decades later, a team of scientists made a shocking discovery – the mummy displayed evidence of an advanced surgical procedure carried out nearly 2,600 years ago.

Inside the mummy's left knee was a nine inch metal orthopedic pin that had been inserted with such advanced biomechanical principles, that initially scientists could not distinguish it from a modern-day procedure.

Usermontu – a mummy of unknown origins

When the Rosicrucian Museum acquired a sealed ancient Egyptian coffin back in the 1970s, they were unaware that it still contained a mummy. In addition, investigations revealed that this mummy was not the original owner of the sarcophagus – it belonged to a priest named Usermontu ('the power of Montu') – and that long after death, the mummy had been placed in Usermontu's coffin. Nevertheless, the mummy of unknown origin has come to be known by the name of the original sarcophagus owner.

Analysis of the embalming procedure revealed that 'Usermontu' was an upper-class Egyptian male who lived during the New Kingdom of Egypt (between 16th–11th century BC). His mummified remains are five feet (1.5 meters) tall and display traces of red hair.



Usermontu Mummy: "Mummy of an upper-class Egyptian male" (CC BY-SA 4.0)

Shocking discovery

In August 1995, Professor C. Wilfred Griggs from Brigham Young University, Utah, and a team of experts, carried out x-rays on six mummies housed in the Rosicrucian San Jose Museum in advanced of a lecture he would be giving there, including the mummy of Usermontu. They were stunned when the x-rays revealed that one of the mummies had a nine-inch metal pin in its left knee.

Ancient or modern?

Brigham Young University (BYU) reports that it was impossible to see that the metal implant was ancient from the x-ray alone, leading Professor Griggs to believe that the pin had been placed there in more modern times to reattach the leg to the rest of the body.

"I assumed at the time that the pin was modern. I thought we might be able to determine how the pin had been inserted into the leg, and perhaps even guess how recently it had been implanted into the bones," Griggs says in a report released by BYU. "I just thought it would be an interesting footnote to say, 'Somebody got an ancient mummy and put a modern pin in it to hold the leg together.'"

Unraveling the mystery

In order to investigate the nature of the implant, Griggs, Dr. Richard T. Jackson, an orthopedic surgeon from Provo, and Dr. E. Bruce McIliff, chief of radiology for Utah Valley Regional Medical Center, carefully drilled into the bone to allow access for a tiny camera to examine the pin, and to extract samples of the bone and the metal.

The scientific team found traces of ancient organic resin, similar to modern bone cement, as well as traces of ancient fats and textiles still held firmly in place. Extensive investigations revealed that the advanced procedure had been carried out in ancient times, approximately 2,600 years ago.

Advanced orthopedic procedure

The research team were astounded that the pin had been created with the same designs used today to create bone stabilization.

"We are amazed at the ability to create a pin with biomechanical principles that we still use today—rigid fixation of the bone, for example," said Dr. Richard Jackson. "It is beyond anything we anticipated for that time."

BYU reports that the pin *"tapers into a corkscrew as it enters the femur, or thigh bone, similar to biomechanical methods currently used. The other end of the pin, which is positioned in the tibia, or shin bone, has three flanges extending outward from the core of the pin that prevent rotation of the pin inside the bone."*

Before or after death?

Following the remarkable discovery, the question left on everyone's lips was – had the surgery been carried out while Usermontu was alive, or after his death?

A full-scaled investigation of the exposed joint revealed that the pin had been implanted between the time of Usermontu's death and his burial. **The ancient Egyptians believed in a physical resurrection after death, in which the body was a vehicle for the soul in the afterlife. Thus, ensuring its integrity was of utmost importance. Griggs added that making sure the body was in a good condition was believed to be essential for the reunification of body and spirit.**

While this is the first case of a metal orthopedic implant, other examples of bodily care prior to mummification included the repair of wounds, work to teeth, and the construction of prosthetics.

"How fascinating that the technician took such considerable thought constructing the pin," Griggs says. "The technician could have just simply wired the leg together and assumed that in the resurrection it would knit back together."

"The story tells us how sophisticated ancient people really were," Griggs says. "Sometimes our cultural arrogance gets in the way of our being able to appreciate how people from other cultures and times were able to also think and act in quite amazing ways."



The Usermontu mummy mystery of advanced ancient surgery has been solved. (Will Scullin/CC BY 2.0)

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'The Extraction of the Stone of Madness', a painting by Hieronymus Bosch depicting trepanation. Drilling holes into the head was a procedure to remove 'evil spirits' and other mental illnesses. (Public Domain)

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