



Greek Fire, Poison Arrows, and Scorpion Bombs: Biological Chemical Warfare in the Ancient World

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Featuring a new introduction by the author.

Flamethrowers, poison gases, incendiary bombs, the large-scale spreading of disease... are these terrifying agents and implements of warfare modern inventions? Not by a long shot. Weapons of biological and chemical warfare have been in use for thousands of years, and Greek Fire, Poison Arrows Scorpion Bombs, Adrienne Mayor's fascinating exploration of the origins of biological and unethical warfare draws extraordinary connections between the mythical worlds of Hercules and the Trojan War, the accounts of Herodotus and Thucydides, and modern methods of war and terrorism.

Greek Fire, Poison Arrows Scorpion Bombs will catapult readers into the dark and fascinating realm of ancient war and mythic treachery-and their devastating consequences.

Greek Fire, Poison Arrows, and Scorpion Bombs: Biological Chemical Warfare in the Ancient World Details

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From Reader Review Greek Fire, Poison Arrows, and Scorpion Bombs: Biological Chemical Warfare in the Ancient World for online ebook

Paul Lee says

Reading very much like a thesis, this book is well organized, full of factual information, and paints an interesting perspective of biological and chemical warfare that has implications for the present day. The author is a folklorist and is more concerned about how culture and information is passed down and encoded in oral/written tradition rather than accurate historical record.

Diane says

This was a reread for me. This is an eye-opening and often shocking account of the use of biological and chemical weapons by the ancient people of Greece, Italy, India, and the Near East. To quote Mayor, "Although it is tempting to imagine an ancient era innocent of biochemical weaponry, in fact this Pandora's box of horrors was opened thousands of years ago."

There are accounts in Greek myths (Hercules, Philoctetes) of the use of poison, though the ancient Greek heroes were supposedly too noble to resort to such things. However, that did not stop Athena from suggesting poison arrows as a way to dispose of Penelope's unwanted suitors. Ironically, Odysseus was killed with a poisoned spear wielded by his son Telegonus. Black hellebore (Christmas rose) was used to poison arrows and water supplies. Of course, it helped to have an antidote since it was quite easy to accidentally poison oneself in the process.

The water supply for the town of Kirrha was supposedly poisoned with hellebore. Though there are various accounts of how this was accomplished, the result was the same - the destruction of the populace of Kirrha. Around 150 CE, Pausanias visited the area and wrote, "The plains around Kirrha are completely barren, and people there will not plant trees because the land is still under a curse and trees will not grow there." Harming noncombatants was supposedly against ancient Greek beliefs of "fair war," but Mayor states, "during sieges of cities, the entire population was considered the enemy."

Ancient Indians used similar tactics in their wars. In "Arthashastra" by Kautilya, there are actual recipes for poisonous mixtures to use on the enemy. These would cause blindness, disease, insanity or death. There was a special smoke to destroy "all animal life as far as it is carried off by the wind." Obviously, it's a form of poison gas.

There are also ancient accounts of plague being spread by arrows and various containers. When the Chaldeans sacked and burned Solomon's temple in Jerusalem, they are said to have opened copper vessels, which they assumed contained treasure. Instead, they were attacked by a plague. During the siege of Jerusalem in 70 CE by the future Roman emperor Titus, the second temple was destroyed. Once again, invaders broke open jars they assumed held treasure. Instead, Titus's reign saw "one of the worst outbreaks of plague ever known."

There's also the fascinating story of Colchis, the homeland of the infamous Medea. Greek soldiers unwisely

feasted on Colchian honey and soon began acting like intoxicated madmen. Xenophon found his troops spread around on the ground as if they were under a spell. They were totally incapacitated and some of them even died. The survivors could not stand for three or four days. The culprit? Naturally toxic honey, which was produced by bees from the nectar of the beautiful, but poisonous rhododendron. The powerful neurotoxin has no effect on bees, but people are a different matter. In very tiny doses, it is used as a tonic or mild intoxicant. It is still used today in a glass of milk as a pick-me-up, believe it or not, known as *deli bal* or *miel fou*.

Another novel odd weapon is the use of insects such as bees and hornets. There are accounts in the Bible of their use. For example, in *Joshua*, hornets were used to drive away the Amorites. In Nigeria, the Tiv people kept bees in large horns, which also contained a toxic powder. The powder may have been used to calm the bees and make them safer to use. During battle, the bees would be released towards the enemy. The Romans used catapults to launch hornets' nests at the enemy. This was a tactic that was still being used centuries later by the Germans in the Thirty Years' War and by Ethiopians against Italian invaders in the 1930s.

Of course, fire was also used as a weapon. Writing around 360 BCE, Aeneas the Tactician detailed how to supplement fires with chemicals. He recommended pouring pitch down on the enemy or their siege weapons, following by hemp and sulphur, which would stick to the coating of pitch. Then the pitch and sulphur mix was set afire. The Phoenicians used fire ships against enemy vessels. They would coat a ship with flammable mixtures, set the ship on fire, and send it towards the enemy with great effect. They also used a mixture of sand and tiny bits of metal, which they heated until it glowed red hot and then catapulted at the enemy. The sandy metal mix "sifted down under the soldiers' breastplates and seared their skin with the intense heat, inflicting unavoidable pain."

Mayor concludes soberly, "Once created, toxic weapons take on a life of their own, resistant to destruction and threatening harm over generations. Tons of still-active chemical weapons from World Wars I and II lurk in long-forgotten dumping areas, releasing toxins and posing grave risks to unwitting finders." She compares them to the plague demons in the jars in the temple in Jerusalem and the golden casket in Babylon. Amazingly, during excavations of the historic fort at the Presidio in San Francisco, archeologists discovered glass vials of still-toxic mustard gas that was buried by the US military during World War II, 60 years earlier. How are we to dispose of still deadly chemical and nuclear weapons?

This is the only second time I have read this book and it was definitely not easy. The subject is sobering, incredibly sad and terrifying. Thousands of years ago people were using horrific weapons against each other. Things have not changed. This is still going on.

"One can only hope that a deeper understanding of toxic warfare's mythic origins and earliest historic realities might help divert the drive to transform all nature into a deadly arsenal into the search for better ways to heal. Then Appian's sorrowful words about war, 'They left nothing untried that was within the compass of human energy,' could refer to human ingenuity striving to turn nature's forces to good."

Liz says

This was a pretty thorough look at the different types of biological and chemical weapons use in ancient warfare. It is broken down into sections, each detailing a different type of tactic. She describes how poisons, incendiaries, biological weapons (such as plague corpses), and even animals (such as hornet's nests) were used, and cites examples of battles in which these techniques were employed.

I thought this was very enlightening read. Many people assume that the use of biological and chemical weapons is an issue that is unique to our current society, but this book shows that this type of warfare is nothing new. The ancients knew how to fight dirty, and their battles weren't exactly as fair and honorable as some romantics would have us think. At the same time, these ancient civilizations battled with the same issues of conscience that our civilization is facing today as to the use of these highly effective, but often needlessly destructive, techniques. It's definitely food for thought. I enjoyed this author's style of writing. She was able to share this material in a way that was informative, but still interesting, and not at all dry as some historical narratives can be. I would recommend this book to anyone interested in ancient history and seeing how our own society mirrors these past events.

Michele says

Is biological and Chemical Warfare a modern invention or a thing of the past? Yes! It is a thing of the past and a very old idea.

Poisoned arrows, fouling water supplies, deadly scorpions used inside bombs and spreading disease as a weapon are ancient tactics used in the ancient world. Adrienne Mayor sheds light onto the use of "weapons of mass destruction" thousands of years before one would associate the term to warfare. In this book, she points out various civilizations that employed 'dishonorable' acts in early battles.

Greek fire? it was an early version of napalm!

Rindis says

Adrienne Mayor starts with, intelligently, expanding the normal contemporary definition of 'chemical and biological' weapons to include pretty much anything that causes biological harm, such as poisons, noxious chemicals, and beyond, to the use of animals, heated sand, and other unusual items. Her book then combs all the ancient sources for examples of these in the ancient world. There's a concentration on Greek and Roman sources, but there are repeated references to Indian and Chinese uses as well.

The problem is that the phrase 'unusual items' above does describe the book. While grouped into chapters for broad topics, it's really a bunch of mini-essays on what are often 'one-off' uses of poisons and disease, and shows little systematic use of any of these. On the other hand, it does very well with making the point that the concepts were not unknown, and that even where deliberately spreading a disease might be difficult to do reliably, people were *thinking* about how to do it.

Sadly, the first item in the title of the book (Greek Fire), is the last thing discussed, and it doesn't get much. It is shown that it is descended from earlier petroleum-based fire weapons. What was special about it was the delivery system, and that isn't even speculated on.

Overall, the book does well in showing that, despite generally being ignored in histories of the era, 'chemical and biological' weapons were very much on the minds of the ancients, and it shows that they were probably in regular use with peoples we don't have a lot of records from. It also shows that Western attitudes towards them match up with Greek and Roman thought, pointing out how the 'boomerang' effect of poisons and

different chapters, to be introduced anew every time. Do we really need to be reminded four times that Mithridates was a threat to the Romans, and himself was afraid of being poisoned?

- I have this on audio and was treated to extra annoyance from the US English mangling of Greek and other names, e.g. Kyzikos (probably spelled Cyzicus) pronounced 'Sissicus'. That is pretty standard, though, and not the fault of the author.
 - comparisons are made without much regard to chronology, over distances of centuries. This method can be useful in bringing new insights, but only so long as it is based on a firm grasp of the facts, avoiding superficial similarities.
 - words like $\delta\omicron\rho\upsilon\kappa\nu\iota\omicron\nu$ and $\pi\upsilon\rho\alpha\tau\mu\omicron\tau\omicron\nu$ being referred to as Latin words.
 - the author seems not to have grasped the concept of differential diagnosis: the dramatised effect of an envenomed garment (Herakles' tunic in Sophokles' tragedy) are compared to accounts of the effect of cobra venom and concluded to have been just that. Later, the symptoms of the Athenian 'plague' (whichever disease that may have been) in 430 BCE are described in much the same terms, though not claimed to be the same. One might conclude that widely differing causes can produce effects on the human body which are described by the sufferers using similar terms: a 'burning' can be caused by fever, acid, nerve toxin, actual fire, &c.
 - the same goes for literary echoes: Thucydides in describing the Athenian plague consciously echoes the homeric description of the plague afflicting the Greeks at Troy.
 - the Roman general Lucullus, while chasing the aforementioned Mithridates during the 70s and 60s BCE, is said to have found a statue of the dying Herakles and to have brought it back to Rome, placing it next to a statue of 'Divine Caesar'. That would have taken some foresight.
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Jon(athan) Nakapalau says

How little things change...before I read this book I never imagined that there were such weapons in the ancient world. The ethical questions still remain - but the pace of production is quicker than any meaningful answers.

Aramina says

In the ancient world, war was commonplace and appeared around the globe at various times. An assortment of weapons and strategies were used among these wars, but what was the most feared weapon of antiquity? The author of the historical non-fiction book, *Greek Fire, Poison Arrows, and Scorpion Bombs*, Adrienne Mayor, highly believes that biochemical weapons equipped with poison, disease, and other toxins terrorized civilizations in and out of combat. Mayor made many clear remarks of how these chemical and biological weapons and strategies were made or enhanced.

Many myths and legends are incorporated into her book, including the famous Hercules and Pandora's box. Old history and 19th century to modern day examples, such as the Scythian Persian War and the Winston Churchill Kurdistan bombings, are also integrated into the book, explaining where and how the weapons she mentions are used. Additionally, Adrienne goes over how toxic plants, venomous snakes, poison frogs, and other biological resources are used to create liquid poisons that were handled during war and hunting, and also the effects of these poisons.

Over the course of reading *Greek Fire*, I felt that the information was not so historically appealing. The parts

I did find interesting, though, were the sections discussing weaponry, mythology, and strategies of war. I believe the subject matter of Greek Fire is not of use of many people today. It might be compelling to those who wish to learn more about ancient warfare, such as history majors or military historians. Botanists, biochemists, and epidemiologists might also be interested in this book due to the mention of plants, biochemical aspects, and disease. The type of audience that would be appropriate to read this book would most likely be those of an older age, such as ages 17 and up because Mayor writes about rape, bloodshed, and other gruesome topics (like beheading) throughout the book.

Dana Stabenow says

What, you thought napalm was a new thing? This book will disabuse your mind of that notion pronto. According to Mayor, mankind has been thinking up new and more horrible ways to spread terror and kill more people faster since before Alexander. Beehive bombs. Snake bombs. Poisonous spider bombs. Naphtha bombs. Arrows poisoned with snake venom or tipped with burning pitch to set the besieged city on fire. Catapulting the plague dead over the castle walls. There is no end, and, evidently, a very early beginning to mankind's ingenuity and bloodthirstiness.

Did you know rhododendrons were poisonous? And did you know that if bees fed on rhododendron nectar, that if you ate the honey they produced that it would kill you? It's how Colchis defeated Xenophon in 401 BC.

That ancients' idea about getting the plague if you sacked a temple? Might very well have been based on fact. There are lots of stories about attacking troops breaking into sanctuaries and plundering what they found there, only to find that they were filled with the garments of those who had died from the plague. Suckers...

There is a legend that Pharaoh defeated Sennacherib with the help of the god Ptah, who sent thousands of mice into the Assyrian camp to eat the leather holding their weapons together. Mayor writes that a core of historical truth may lie behind the legend

Greek, Babylonian, and Assyrian evidence refers to a military campaign that was aborted after Sennacherib's army was beset by disease-carrying rodents who, incidentally, ate the leather parts of their weapons at Pelusium. The bad omen and the rumor of the approaching Ethiopian army caused the Assyrians to abandon their invasion of Egypt and retreat through Palestine while the rodent-borne disease (perhaps bubonic plague or typhus) incubated in the men. As they arrived at Jerusalem, the epidemic swept through the troops, killing tens of thousands.

All I want to know is who scattered all those bazillions of crumbs to attract the plague-carrying rodents.

A fascinating and pretty horrifying read.

Robert says

This is a very entertaining book about chemical and biological warfare in ancient civilization.
Death by beehive!

Jennn says

Honestly, I'm not that interested in biological and chemical warfare. Maybe because it scares me to the core due to humanity's immature nature (and I'm a natural worrier anyway). So, usually I avoid books about it. However, it's about ancient examples, or at least I thought so.

Despite my initial worry, Mayor does an excellent job at paralleling the ancient world and the present. She gives examples of how today's army is looking into strategies of the past, no matter how silly (e.g. the army looking into using bees as weapons for targets). It's eerie, surprising, and unsettling (like infrasound: see below in 'notes').

The book is packed with facts and examples well-researched and, thankfully, usually mentions key people repeatedly, so the slow students (ahem, me) can remember who they are and their history. It may be annoying to people who already know the history, but I was quite appreciative so I could get my facts right and it made a longer lasting impression.

The book is balanced wonderfully and I think it was better handled than her first book, although I liked the content better in "The First Fossil Hunters". She is a wonderful teacher and more importantly in this case, a good writer. I took notes and learned a lot.

Quotes:

"Over and over, the ancient historians repeated the refrain: the only hope of quelling such ghastly fire was to cover it with earth. That solution echoed Hercules' method of getting rid of the monstrous Hydra's head by burying it under the earth. Now, those desperate attempts to bury poison and fire weapons seem to foreshadow our own efforts to dispose of dangerous weapons underground, out of sight but never completely out of mind." pg 252-3

"A geologic solution on a massive scale was proposed in 2002, when plans were developed to bury a huge cache of radioactive material deep under the Yucca Mountain in Nevada, in the desert about one hundred miles northwest of Las Vegas. The seventy-seven thousand tons of nuclear material are expected to remain dangerously radioactive for one hundred thousand years. The government hopes to make the toxic sepulchre impregnable for at least ten thousand years, until the year AD 12,000." pg 254

"There are two bio-weapon recipes in the Arthashastra of the fourth century BC, however, that appear to be evidence of such an attempt in India. One describes how to make a poison arrow with a mixture of toxins and 'the blood of a muskrat'. Anyone pierced with this arrow will be compelled to bite ten companions, who will in turn bite others, wrote Kautilya." - pg 136 (reminds me of zombies O.o - but it was meant to try for rabies)

Random notes:

Deli bal (aka miel fou) is called 'mad honey' for a reason: the bees collect nectar from the poisonous rhododendron, which causes (even in small amounts) to get horribly ill and hallucinate. Some people in present day use a small amount to give their drinks a little kick.

Mithridates was interesting (why did I never learn about him in history?): So afraid of being poisoned (he had poisoned some family members himself, after all), he had 13 Sycythian shaman/doctors called The Agari at ALL TIMES. He also built up an immunity to poisons by taking small doses everyday. When he finally was on the verge of being capture (it took a while, he was good at giving the slip), he tried to poison himself...only to survive! (here's a great example of irony) He tried to kill himself, but couldn't, so had his bodyguard do it.

Andrea Cesalpino (a physician) reported during the Naples Campaign (1494-95), the Spanish abandoned a village to the French, leaving behind wine...mixed with blood from leprosy and syphilis patient from the Saint-Lazare Hospital.

The Hittites had a ritual of driving plague-infected women and dogs into enemy territory to infect them (this was before the black plague-infected bodies were tossed over Kaffa, which a lot of people believe was the first instance of awareness of diseases).

The army is doing experiments with infrasound, which they've successfully been able to make victims feel nauseous, hallucinate, and even die from internal injuries (makes me think of serenity and the "hands of blue").

Elephants hate pigs' squeals.

In approx. 270 BC, Antigonus Gonatus and his war-elephants were defeated...by flaming pigs.

Folk belief cited by Pliny was that it takes 27 hornet stings to kill a man.

Napalm burns at more than 5,000 degrees (F).

In 424 BC short-ranged, primitive flamethrowers were invented by the Boeotians.

It was believed the black mandrake was female, while the white was male. In most cases it was harvested according to rituals and pulled out by animals usually.

Ushan says

Warfare in the ancient world involved a panoply of weapons. There were flamethrowers using bellows for air pressure; ceramic bombs packed with burning substances (petroleum, pitch); unmanned burning wooden ships filled with combustible materials used as missiles against other wooden ships or moles. There were spears and arrows dipped in poisons of both animal and vegetable nature, including snake venom, as well as in bacteria-rich feces, or topped with stingray spines. Dropping beehives on the enemy was practiced both in antiquity, and as late as the 1935-1936 Italian invasion of Ethiopia, in response to the Italians' use of mustard gas. Armies retreated, leaving behind poisoned food and drink for their enemies. Both during the March of the Ten Thousand and during a war between Pompey and Mitridates, soldiers were poisoned by eating neurotoxin-rich rhododendron honey. The sight and sound of an elephant made horses panic; elephants in

their turn could be frightened by squealing pigs; a pig smeared with burning pitch would squeal at the top of its lungs.

Mayor is a folklorist, and she devotes a lot of space to mythology: Heracles's slaying of the Lernaean Hydra and using its venom on his arrows; accidentally slaying centaur Chiron and deliberately centaur Nessus, whose blood on a tunic in turn killed Heracles himself. After the death of Heracles, the ownership of the arrows went to Philoctetes, and they were used in the Trojan War. Mayor wonders, what background could have produced stories like that. There are several ancient stories of boxes containing a plague; in Greek mythology it is a box opened by Pandora; in the Hebrew Bible it is the Ark of the Covenant captured by the Philistines; Mayor wonders whether such boxes could contain infected clothes worn by plague victims. I found it strange to read about the Ten Plagues of Egypt in a book that does not mention that the Documentary Hypothesis thinks that this part of the Hebrew Bible is a compilation of several sources.

Dean Hamilton says

Hercules was probably one of the most famous early practitioners of biological weapons, and one of its most prominent victims...

Slayer of the Lernaean Hydra, Hercules dipped his deadly arrows in the Hydra's blood, creating a fatal weapon - one that echoed down through Greek history claiming myriad lives. Eventually the Fates drew him full-circle and Hercules is destroyed by the gift of a cloak from his wife. The garment, secretly poisoned with the blood of Nessus, a centaur that Hercules has shot with his envenomed arrows, "burns like fire" until Hercules, in agony, begs his own son to burn him in a bonfire.

The legendary story of the 12 Labors of Hercules serves as both metaphor and warning in Adrienne Mayor's fascinating and highly readable examination of the usage and prevalence of biological and chemical warfare in the Ancient World. *Greek Fire, Poison Arrows and Scorpion Bombs* is a timely and relevant eye-opener, touching on the practical usages of such tried and true weapons such as poisoned food, tainted water, bug bombs (scorpions and bees were apparently popular tools to loft onto besieging armies), snake bombs, burning oil, pestilence-ridden corpses, maddened cattle, pitch-covered pigs (ignited of course) and, of course, the precursor of modern napalm, greek fire. Of special note is the "mad honey" that Xenophon and the Ten Thousand encounter on their trek to the sea. Mixed from the rhododendron plant, the honey of Pontus is a famous and lethal toxin causing hallucinations and often death.

Mayor carefully outlines the often ambiguous nature of chemical and biological weapons, particularly the fact that the ancients recognized the double-edged sword that they wielded had terrifying implications for their own populations if used unchecked. Mixing the mythological roots of bio-war with historical examples, Mayor has written a highly readable, utterly absorbing piece of work that, at the end, leaves you grimly fascinated and nervously appalled.
