

Episode Eighty-Nine - Unusual Geological Phenomena - Springs That Change From Hot to Cold And Back Again

Post by "Cassius" of September 17, 2021 at 5:10 PM

Welcome to Episode Eighty-Nine of Lucretius Today.

I am your host Cassius, and together with my panelists from the EpicureanFriends.com forum, we'll walk you through the six books of Lucretius' poem, and discuss how Epicurean philosophy can apply to you today. We encourage you to study Epicurus for yourself, and we suggest the best place to start is the book, "Epicurus and His Philosophy" by Canadian professor Norman DeWitt.

For anyone who is not familiar with our podcast, please visit EpicureanFriends.com where you will find our goals and our ground rules. If you have any questions about those, please be sure to contact us at the forum for more information.

In this Episode 89 we will read approximately Latin lines 830-917 as we discuss the hot and cold springs and similar phenomena.

Now let's join Martin reading today's text.

Latin Lines 830-917

Munro Notes-

830-839 : sometimes this exhalation causes a partial void, so that the bird cannot support itself on the wing, but falls down and perishes.

840-847: the water of wells is colder in summer, because they let out their seeds of heat through the earth which is then rarefied by heat: the contrary is the case in winter for the contrary reason.

879-905: there is also a cold fountain which ignites tow or pine-wood put over it: it contains many seeds of latent fire, which rise up and set on fire this tow or wood, as flame will light a freshly extinguished wick, before actual contact.

906-916: to discuss now the magnet, a stone which has the power of attracting iron, and communicating this power to a series of pieces of iron.

917-920: but many points have to be cleared up, before we come to the actual question.

Browne 1743

[830] Or else, sometimes, the force and rising blasts of these Avernian dispel the air that lies between the birds and the earth, and the intermediate space becomes a void. Here, when birds are carried by their flight, they immediately flutter in the air, they clap their wings in vain, their pinions flag, and when they can no longer bear them up, nature must drive them down upon the earth with all their weight; and as they, helpless, in the vacuum lie, they breathe their soul abroad through every pore.

[840] The water in some wells, we find, is cold in summer, because the earth is rarefied by the sun's heat, and by that means the seeds of fire it contains within break freely out into the Air: And therefore the more the earth is affected by the heat, the colder the water will be that is enclosed within. But when the earth is contracted with the cold, when its surface grows close, and its pores are stopped, this restraint hinders the heat from flying out; it is then squeezed together into the wells, and the water becomes hot.

[848] There is a fountain, near the temple of Jupiter Ammon, that is cold in the day, and hot by night. Men strangely wonder at the quality of this spring, and imagine that when the night has spread her dreadful darkness over the world the water is warmed by the violent heat of the sun through the body of earth. But this reason is far from being true; for if the sun, striking upon the open body of water, is not able to warm even the surface of it, when it receives the force of his descending rays with all their heat, how can he warm the water, and infuse his heat through so thick a body as the Earth; especially since he is scarce able, with his scorching beams, to pierce through the walls of our houses?

[861] What then is the reason? Doubtless this: because the Earth, near this fountain, is more rare and spongy than it is in other places, and contains within it many seeds of fire near the body of the water itself. Here, when the night has spread the world with dewy shades, the earth below grows initially cold, and is contracted; by this means it is compressed, as with your hand, and squeezes out those seeds of fire into the spring, which make the water warm to feel and taste. But when the sun has driven away the night with his bright rays, and with his heat has rarefied the Earth, and made it loose, these seeds of fire return into their former place, and all the heat that warmed the spring retires within the earth again, and so the fountain in the day is cold.

[874] Besides, the water in the day is strongly moved by the sun's rays, and by his trembling streams of heat grows rare, and so lets out the seeds of fire it held by night; just as by the heat it shakes off seeds of cold, and melts the ice, and loosens all its bonds.

[879] There is likewise a cold spring over which if you place tow or flax it immediately takes fire and is all in a blaze. A torch, newly extinguished, in the same manner, gently drawn over the surface, is lighted by this water, and flames out at every breath of air. And no wonder, for there

are many seeds of fire in the water itself, and many must needs rise out of the earth, and ascend through all the fountain, and flow abroad, and make their way into the air, but yet they are not so hot as to set the spring on fire.

[890] Besides, the innate force of these seeds, dispersed through the water, compels them to move upwards, and to unite upon the surface; as we see sometimes a fountain of sweet water bubble up in the middle of the sea, and beat off the salt waves that are about it. The sea affords many of these springs that bring a seasonable relief to the thirsty mariners by throwing out streams of fresh water among the salt. The seeds of fire may in the same manner break through the water of this fountain, and flow out into the tow. Here, when they unite and stick to the body of the torch, they immediately fall into a flame; for flax and tow contain many seeds of fire within which make them easily disposed to burn.

[900] Have you not observed, when you hold a candle newly extinguished to another that is lighted it catches fire before it touches the flame? A torch likewise, by that same rule, will do the same; and many other things will take fire at a distance, before the flame reaches them. And this you may imagine is the case of the fountain above-mentioned.

[906] And now I shall begin to show by what power of nature it is that the stone (which the Greeks call a magnet, from the country that produces it, for it is found in the region of the Magnetes) has the virtue to attract iron. Men are amazed at the qualities of this stone, for it will make a chain of several little rings of iron, without a link between, to hang together entirely from itself. You may sometimes see five or more hanging straight down, and play in the gentle air, as they stick close and depend at the bottom one upon another; the ring that follows feels the attraction and power of the stone from that above it. So strongly is the virtue of the magnet communicated to the several rings; it acts with so great a force.

[917] In inquiries of this nature many things are to be first proved before we can fix upon the true cause; we must trace the subject through many long and intricate difficulties; and therefore I beg you will hear me with a willing mind, and with the closest attention.

Munro 1886

[830] Sometimes too this power and exhalation of Avernus dispels whatever air lies between the birds and earth, so that almost a void is left there. And when the birds have arrived in their flight just opposite this spot, at once the buoyant force of their pinions is crippled and rendered vain and all the sustaining efforts of their wings are lost on both sides. So when they are unable to buoy themselves up and lean upon their wings, nature, you know, compels them by their weight to tumble down to earth, and lying stark through what is now almost a void they disperse their soul through all the openings of their body.

[840] Again during summer the water in wells becomes colder, because the earth is rarefied by heat and rapidly sends out into the air whatever seeds of heat it happens to have. The more then the earth is drained of heat, the colder becomes the water which is hidden in the earth.

Again when all the earth is compressed by cold and contracts and so to say congeals, then, you are to know, while it contracts, it presses out into the wells whatever heat it contains itself.

[848] At the fane of Hammon there is said to be a fountain which is cold in the daylight and hot in the night-time. This fountain men marvel at exceedingly and suppose that it suddenly becomes hot by the influence of the fierce sun below the earth, when night has covered the earth with awful darkness. But this is far far removed from true reason. Why when the sun though in contact with the uncovered body of the water has not been able to make it hot on its upper side, though his light above possesses such great heat, how can he below the earth which is of so dense a body boil the water and glut it with heat? Above all, when he can scarcely with his burning rays force his heat through the walls of houses.

[861] What then is the cause? This sure enough: the earth is more porous and warmer round the fountain than the rest of the earth, and there are many seeds of fire near the body of water. For this reason when night has buried the earth in its dewy shadows, the earth at once becomes quite cold and contracts: in this way just as if it were squeezed by the hand it forces out into the fountain whatever seeds of fire it has; and these make the water hot to the touch and taste. Next when the sun has risen and with his rays has loosened the earth and has rarefied it as his heat waxes stronger, the first-beginnings of fire return back to their ancient seats and all the heat of the water withdraws into the earth: for this reason the fountain becomes cold in the daylight.

[874] Again the liquid of water is played upon by the sun's rays and in the daytime is rarefied by his throbbing heat; and therefore it gives up whatever seeds of fire it has; just as it often parts with the frost which it holds in itself, and thaws the ice and loosens its bonds.

[879] There is also a cold fountain of such a nature that tow, often when held over it, imbibes fire forthwith and emits flame; a pine torch in like manner is lighted and shines among the waters, in whatever direction it swims under the impulse of the winds. Because sure enough there are in the water very many seeds of heat, and from the earth itself at the bottom must rise up bodies of fire throughout the whole fountain and at the same time pass abroad in exhalations and go forth into the air, not in such numbers however that the fountain can become hot, for these reasons a force compels those seeds to burst out through the water and disperse abroad and to unite when they have mounted up.

[890] In the sea at Aradus is a fountain of this kind, which wells up with fresh water and keeps off the salt waters all round it; and in many other quarters the sea affords a seasonable help in need to thirsting sailors, vomiting forth fresh waters amid the salt. In this way then those seeds may burst forth through that fountain and well out; and when they are met together in the tow or cohere in the body of the pine-torch, they at once readily take fire, because the tow and pinewood contain in them likewise many seeds of latent fire.

[900] See you not too that, when you bring a newly extinguished wick near night-lamps it catches light before it has touched the flame; and the same with the pinewood? And many

things beside catch fire at some distance touched merely by the heat, before the fire in actual contact infects them. This therefore you must suppose to take place in that fountain as well.

[906] Next in order I will proceed to discuss by what law of nature it comes to pass that iron can be attracted by that stone which the Greeks call the Magnet from the name of its native place, because it has its origin within the bounds of the country of the Magnesians. This stone men wonder at; as it often produces a chain of rings hanging down from it. Thus you may see sometimes five and more suspended in succession and tossing about in the light airs, one always hanging down from one and attached to its lower side, and each in turn one from the other experiencing the binding power of the stone: with such a continued current its force flies through all.

[917] In things of this kind many points must be established before you can assign the true law of the thing in question, and it must be approached by a very circuitous road; wherefore all the more I call for an attentive ear and mind.

Bailey 1921

[830] It may happen, too, sometimes that this force and effluence of Avernus dispels all the air that is situate between the birds and the ground, so that there is left here an almost empty space. And when the birds in their flight have come straight over this place, on a sudden the lifting force of their pinions is crippled and useless, and all the effort of their wings fails on either side. And then, when they cannot support themselves or rest upon their wings, of course nature constrains them to sink by their weight to the ground, and lying in death in what is now almost empty void, they scatter abroad their soul through all the pores of their body

[840] Moreover, the water in wells becomes colder in summer, because the earth grows porous with the heat, and if by chance it has any seeds of heat of its own, it sends them abroad into the air. The more then earth is exhausted of its heat, the colder too becomes the moisture which is hidden in the earth. Moreover, when all the earth is hard pressed with cold, and contracts and, as it were, congeals, of course it comes to pass that, as it contracts, it squeezes out into the wells any heat it bears in itself.

[848] There is said to be near the shrine of Ammon a fountain, cold in the daylight and warm in the night time. At this fountain men marvel overmuch, and think that it is made to boil in haste by the fierceness of the sun beneath the earth, when night has shrouded earth in dreadful darkness. But this is exceeding far removed from true reasoning. For verily, when the sun, touching the uncovered body of the water, could not make it warm on the upper side, though its light in the upper air enjoys heat so great, how could it beneath the earth with its body so dense boil the water and fill it with warm heat? and that when it can scarcely with its blazing rays make its hot effluence pierce through the walls of houses.

[861] What then is the reason? We may be sure, because the ground is rarer and warmer around the fountain than the rest of the earth, and there are many seeds of fire near the body

of the water. Therefore, when night covers the earth with the shadows that bring the dew, straightway the earth grows cold deep within and contracts. By this means it comes to pass that, as though it were pressed by the hand, it squeezes out into the fountain all the seeds of fire it has, which make warm the touch and vapour of the water. Then when the rising sun has parted asunder the ground with his rays, and has made it rarer, as his warm heat grows stronger, the first-beginnings of fire pass back again into their old abode, and all the heat of the water retires into the earth. For this cause the fountain becomes cold in the light of day.

[874] Moreover, the moisture of the water is buffeted by the sun's rays, and in the light grows rarer through the throbbing heat; therefore it comes to pass that it loses all the seeds of fire that it has; just as often it gives out the frost that it contains in itself, and melts the ice and loosens its bindings.

[879] There is also a cold spring, over which if tow be held, it often straightway catches fire and casts out a flame, and a torch in like manner is kindled and shines over the waters, wherever, as it floats, it is driven by the breezes. Because, we may be sure, there are in the water very many seeds of heat, and it must needs be that from the very earth at the bottom bodies of fire rise up through the whole spring, and at the same time are breathed forth and issue into the air, yet not so many of them that the spring can be made hot. Moreover, a force constrains them suddenly to burst forth through the water scattered singly, and then to enter into union up above.

[890] Even as there is a spring within the sea at Aradus, which bubbles up with fresh water and parts the salt waters asunder all around it; and in many other spots too the level sea affords a welcome help to thirsty sailors, because amid the salt it vomits forth fresh water. So then those seeds are able to burst out through that spring, and to bubble out into the tow; and when they gather together or cling to the body of the torch, readily they blaze out all at once, because the tow and torches too have many seeds of hidden fire in themselves.

[900] Do you not see too, when you move a wick just extinguished near a night-lamp, that it is kindled before it has touched the flame, and a torch in like manner? And many other things as well are touched first by the mere heat and blaze out at a distance, before the fire soaks them close at hand. This then we must suppose comes to pass in that spring too.

[906] For what follows, I will essay to tell by what law of nature it comes to pass that iron can be attracted by the stone which the Greeks call the magnet, from the name of its native place, because it has its origin within the boundaries of its native country, the land of the Magnetes. At this stone men marvel; indeed, it often makes a chain of rings all hanging to itself. For sometimes you may see five or more in a hanging chain, and swaying in the light breezes, when one hangs on to the other, clinging to it beneath, and each from the next comes to feel the binding force of the stone: in such penetrating fashion does its force prevail.

[917] In things of this kind much must be made certain before you can give account of the thing itself, and you must approach by a circuit exceeding long: therefore all the more I ask for

attentive ears and mind.

Post by “Don” of September 19, 2021 at 11:12 PM

We discussed the spring/fountain of Jupiter Ammon with its hot and cold waters in this episode. We were all a little skeptical, but it turns out it was - and continues to be - an actual location.

It turns out that [Herodotus mentions this location in his Histories \(4.181.3-4\)](#):

Quote from Herodotus, The Histories

(2) The first on the journey from Thebes , ten days distant from there, are the Ammonians, who follow the worship of the Zeus of Thebes ; for, as I have said before, the image of Zeus at Thebes has the head of a ram. (3)They have another spring of water besides, which is warm at dawn, and colder at market-time, and very cold at noon; (4) and it is then that they water their gardens; as the day declines, the coldness abates, until at sunset the water grows warm. It becomes ever hotter and hotter until midnight, and then it boils and bubbles; after midnight it becomes ever cooler until dawn. This spring is called the Spring of the Sun.

Pliny the Elder also mentions this location in [The Natural History \(2.106\)](#):

Quote from Pliny the Elder, The Natural History

The pool of Jupiter Ammon, which is cold during the day, is warm during the night

The pool/fountain/spring is located in the Siwa Oasis: https://en.wikipedia.org/wiki/Siwa_Oasis which, in ancient times, was a temple to Ammon/Amun. Herodotus said it was a 10 day journey from Thebes (on the Nile) to Siwa in ancient times. Evidently, the "boiling" at midnight is [an exaggeration](#). Although maybe the geothermal activity was more pronounced in ancient times?

The settlement was established in the 700s BCE

Herodotus c. 484 - c. 425 BCE

Lucretius c. 99 - c. 55 BCE

Pliny the Elder 23/24 - 79 CE

That's a span from the mid-400s BCE to 79 CE

And we're still talking about and visiting the Oasis in 2021!

I find it fascinating that this location has maintained its fame for over 2,700 years and *continues* to be a tourist attraction.. even without an Oracle to consult.

Post by “Cassius” of September 25, 2021 at 11:05 AM

Episode Eighty-Nine of Lucretius Today is now available. Thanks to Martin for reading this week's text.

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