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5. The Geothermal History of Anatolia, Turkey

by
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Abstract: Anatolia has long been a bridge between the East and the West, a place of settlement for European and Asian invaders. It has been the home of empire builders, beginning with the Hittites around 1450 B.C. The Hittites were followed by a long procession of colonizers, including the Phrygians, the Persians, the Greeks, the Romans, the Byzantines, and the Turks. Many civilizations flourished under the influence of European and Asian cultures and a little part of each became the whole that created Anatolia.

Anatolia, an Asian part of Turkey, is located in a zone of intense volcanic and tectonic activity rich with geothermal manifestations such as hot springs, fumaroles, mud pools, and mineral resources. Since prehistoric times, the people of Anatolia have used these geothermal and volcanic resources. But archaeological findings indicate the use of geothermal resources started with the Romans, followed by the Turks, for bathing in geothermal waters was such an essential part of life in these civilizations. Today, the Turkish bath is very well known all over the world.

INTRODUCTION

Anatolia, an Asian part of Turkey, is an area of ancient settlements that has seen many changes throughout history. Many civilizations flourished in Anatolia under the influence of eastern and western cultures. Hot springs and volcanic products were used by Anatolian inhabitants from prehistoric times to the present. Radiocarbon dating indicates the earliest evidence of agriculture in Anatolia goes back to 7040 B.C. The following are dates for important civilizations in Anatolia (Akurgal, 1978):

- Prehistoric period, 7000-2000 B.C.
- Hattian culture, 2500-2000
- Old Hittite Kingdom, 1750-1450
- Hittite Empire, 1450-1200
- Anatolia's Dark Age, 1180-750
- Neo-Hittite civilization, 1200-700
- Urartian civilization, 900-600
- Phrygian civilization, 750-300
Due to its geological circumstances, Anatolia has been greatly influenced by geothermal resources, which it has used throughout time. Although Anatolia has many hot spring and volcanic areas with an historic past, only a few are mentioned in this chapter. Generally the hot springs, often considered a luxury, have been used for recreation and therapeutic treatments since the Hittite civilization. Over 700 hot spring areas and spas contain mineral components useful for curing rheumatic, sciatic, gynecological, kidney, and psychiatric problems (Izbirak, 1983). Archaeological findings reveal that the urbanization of an apparent sanctuary site tied to hot mineral springs occurred in the Roman period.

Map of Turkey.

USE OF VOLCANICS IN ANATOLIA

THE FIRST CONTACTS

The most ancient sign of contact between Anatolian peoples and geothermal resources dates back 12,000 years, to the footprints found in volcanic rocks at Kula. These emphasize the close relationship between people and volcanic phenomena (Tekkaya, 1976).
About 150 kilometers east of Kula is the city of Konya. Archaeological excavations conducted at Çatal Höyük (Çatal Mound), about 60 km south of Konya, revealed that an ancient town was built at the foot of a volcano called Hasan Dağı. The Çatal Höyük settlement that evolved here was one of the earliest civilizations. Twelve different periods of habitation, dating from about 6500 to 5650 B.C., have been distinguished in this unique prehistoric center of culture, where humans created some of the first great works of art. The most important cultural works displaying the relationship between the Anatolian people and geothermal phenomena are mural paintings and painted relief sculptures that adorned the walls of ancient houses, caves, and shrines. Some of these are on exhibit in the museum at Ankara.

One mural found at Çatal Höyük by Mellaart in 1967 represents the oldest archaeological artifact showing the interest of Anatolian people in geothermal phenomena. The painting depicts an erupting volcano in the vicinity of the Neolithic town and clearly illustrates the volcano Hasan Dağı (3253 m) because it shows the two distinctive peaks formed by the volcanic eruption. The painting also shows the particulars of the eruption: explosive plumes, flames, volcanic ashes and bombs shot from the vent, lava flows at the foot of the mountain, and volcanic fragments on the slopes. The mural shows that the painter, an eyewitness to the eruption, had a keen spirit of observation and a capacity for describing natural phenomena (Göncüoğlu, 1981). Radiocarbon testing indicates that this painting and Hasan Dağı volcanic activity date back to 6200 B.C.

In addition, the magnificent obsidian mirrors, monochrome pottery, and stone tools of Neolithic age discovered at Çatal Höyük prove that the inhabitants of the area knew and valued the importance of volcanic products, which added to the prosperity of the town of Çatal Höyük.
Land made fertile by the decomposition and disintegration of volcanic rocks was another feature that attracted Anatolian settlers to the volcanic area. Settlers also appreciated the many natural hot springs, freshwater springs, and mud pools.

**CAPPADOCIA, THE LAND OF FAIRY CHIMNEYS**

The province of Cappadocia, in central Turkey, is famous both for its natural beauty and as a good example of the use of volcanic products by ancient Anatolian inhabitants. The province includes the towns of Ürgüp, Avanos, and the Göreme Valley. According to a widespread myth in Anatolia, the fairy chimneys of Cappadocia are the corpses of invaders who, after attacking the unarmed and humble inhabitants of the area, were turned to stone by a mighty god to whom the inhabitants had offered prayers.

More scientifically, these stones are volcanic tuffs that assumed their chimney-like shapes after softer outer materials were eroded from all sides, particularly along the joints, leaving the harder core of the rocks to stand in an amazing variety of mysterious angular remnants. From dozens to 200 secret underground cities may have been excavated here, for the tuff is soft until exposed to air. Perhaps the first city was constructed by the Hittites when they came under attack by the Phrygians in the 14th century B.C.

Cappadocia became the refuge of persecuted Christians during the early days of the Roman Empire. Underground cities were cut with amazingly intricate systems of tunnels into the rocky mountains during this period (Toksoz, 1977). The Christian Anchorites and monks who settled in the Göreme Valley realized the possibilities offered by the soft volcanic tuff. Trying to make themselves as inconspicuous as possible to hide their religious zeal, they chose to live in houses and worship in churches dug from these soft tuffs. The ancient name for Göreme is Korama. Here Saint Hieronymus, a Christian vine grower, hid in a cave dug from the rock while trying to elude capture. His pursuers, however, found the unfortunate fellow, dragged him out, and he was martyred.

Cappadocia is also famous for about 3,000 rock churches dating from this same period, although many churches in the Göreme Valley were built in the 7th to 13th centuries. The most important churches carved out of the volcanic tuff and decorated with vivid frescoes are the Apple Church and the Dark, Çanklı, Barbara, Yilanlı, and Tokali Churches. Frescoes in the churches usually depict scenes from the life of Christ corresponding to the great religious feasts such as the Nativity, the Crucifixion, and the Resurrection.
Underground dwellings in Cappadocia were excavated from volcanic tuffs ejected from ancient Mount Argaeus. From these tuffs, which are soft until exposed to air, as many as 200 secret underground cities were carved, some for up to 50,000 residents. A 10th century history says the dwellers were called “troglodytes,” for they lived underground. The area has about 3,000 rock churches. Turkish Tourist Office

Other interesting sites in the region include the picturesque troglodyte village with family dwellings built right into the rock formations and the spectacular subterranean city of Kaymakli, which was cut out of the volcanic tuff between the 6th and 10th centuries A.D. Dwellings such as these are known to have existed in the region as early as the 5th century B.C. Another underground city, situated not far from Kaymakli, is found at
Derinkuyu. This one goes down to eight different living levels, with tunnels extending for several kilometers. This city could accommodate more dwellers than Kaymakli, perhaps as many as 50,000 people. The shelters were last used in 1839 by locals hiding from an invading Egyptian army.

**Olympus-Chimaera, The Eternal Flame**

Chimaera was thought to live in Lykia, a monster who was part lion, goat, and serpent, who issued flames from the mouth and nose. The site of Chimaera is located a few kilometers northwest of the picturesque ruins of the ancient city of Olympus. Here flames issue eternally, burning gas escaping from fractures and fissures in the volcanic ophiolitic rocks of harzburgite, dunite, and pyroclastics. Chemical analyses indicate that the gas is 82.96 percent methane, 14.5 percent nitrogen, and 1.00 percent carbon dioxide. Originally, the flames emerged from seven places, but three have been extinguished by torrents, soil cover, and similar processes, although gas still issues from the vents. The sight of this miraculous natural phenomenon is very impressive at night.

The famous ancient city of Olympus was built near this eternal flame. The most attractive structure at Olympus is the cella-door of a temple that has recently been discovered by Ümit Serdaroğlu. The inside dimensions of the door are 2.90 by 7.85 m. From the inscription of a statue base at the door’s foot, we learn that a statue of Marcus Aurelius stood somewhere in the temple. Thus the sanctuary may have been erected during the reign of this Roman emperor (161-180).

**Use of Hot Springs in Anatolia**

**Roman and Turkish Baths**

The antique ruins found around most of the hot springs in Anatolia indicate that they were constructed during the Roman, Seljukian, and Ottoman Empires. The widespread use of thermal springs in Turkey started with the Romans because public baths were an essential part of their life. Men and women bathed at established times, women in the morning and men in the mid- to late afternoon. Both could participate in light exercise or games in the palaestra.
Roman vs. Turkish Baths

“I am often asked whether the traditional Turkish baths are a continuation of the Roman baths of antiquity: the answer is yes. Turkish baths are the direct and only descendant of this long line of baths and bathing culture which started with Classical prototypes (Japanese baths and the Finnish sauna come from different roots). Of course, there are also important differences.

“The avenues through which the baths and the bathing culture of Classical antiquity passed on to the historical Turkish-Islamic communities were numerous. Between the 11th and 15th centuries, the Turkish conquerors of Asia Minor came in direct contact with the vestigial representatives of small public baths in Byzantine cities. The contact through Constantinople during the centuries preceding and the decades following the conquest of that city in 1453 must have been particularly important. Even more important as an effective and vital source, however, were the Arabic-Islamic baths throughout Syria and Egypt with which the Turks became closely acquainted. In either case, large cultural centers, such as Damascus and Cairo, acted as sources of diffusion. In both regions and in both cities, the Arabic bath had already taken root through contact with the Classical, Byzantine, and late Ptolemaic models and had achieved centuries of internal development. As Turkish society patterned much of its urban life after the models provided by high Arabic culture, the assimilation of baths was only a natural process.

“Like the Byzantine and early Islamic baths, Turkish baths do not have palaestrae. The notion of exercise connected with bathing is entirely absent (in fact, the suggestion to a conservative Turk of exercise in connection with bathing would be nothing short of absurd). Also absent is the conventional frigidarium. With the exception of thermonuclear baths and spas, communal pools of hot or cold water are outside the traditions of the Turkish bath. Following the development already started in late antiquity, bathing is done in individual basins, using plenty of water, but without total immersion.

“The functions of the frigidarium were assumed by a lounge-apodyterium combination in which the patrons could spend considerable time after their hot baths resting, sitting up and enjoying a cold drink, chatting with friends, or lying all wrapped up in towels. Often, in the center of the tall, well-illuminated lounge (really, the “bath hall” of the ancient and late antique baths) is a small, ornamental pool with a fiskiye (that is, a jet of water),... perhaps a vestige of the great pools in the Roman frigidaria.

“The heating technology of Turkish baths closely follows their Byzantine and Roman prototypes, employing a fully developed hypocaust system with wood-burning furnaces serviced from exterior courts. Bathing attendants and masseurs available in Turkish baths can also be compared with those of Roman baths, although the oil massage and perfume treatment of the latter has given place to soapsud massage and a thorough rubdown with goat-hair mittens. The massage usually takes place in the middle of a large, domed space, the main hot bathing hall (the equivalent of the ancient caldarium), over a pleasantly heated marble platform. Small sweat chambers that open into the main bathing hall are comparable to the Classical laconicum. Rambunctious behavior is hardly a problem in Turkish baths although the patrons may occasionally be treated to an unsolicited concert under the well-echoing dome.... Finally, eating and nonalcoholic drinking in the baths are perfectly in order. This is particularly true for women, who bathe in a separate section. The preparation of a rich variety of delectables for a women’s traditional bathing party can start several days in advance.

“Unlike the Roman tradition, bathing never became a daily routine in Turkish culture. Although it varies from person to person and from season to season, visiting the baths anywhere between once a week to once a fortnight is considered quite normal. Once there, however, cleansing is thorough. Although the advance of modern plumbing and the convenience of taking a quick, hot shower at home have rendered the use of public baths unnecessary for a large section of the population in today’s Turkey, and although the ancient vie aux basins can hardly be considered the ‘focus of civilized existence’ anymore, the hamam, as an urban amenity and as a social and civic institution, is essentially but precariously alive in Turkey, and still offers a pleasant alternative to mechanized and modernized bathing.”

From Baths and Bathing in Classical Antiquity, by F. K. Yegül, published by The MIT Press
(exercise yard) before bathing. The bathers would pass from the unheated areas into rooms with more heat, proceeding gradually toward the *caldarium*, the main hot water room. After the *caldarium* they would move into the *frigidarium*, where the main cold pools awaited them. While this was the normal progression, the bathers also enjoyed diversions. At any time during the circuit, a bather might take a sweat bath in the *laconium* (a hot dry-steam sweat chamber), enjoy a massage, or stop to chat with friends. People mingled while washing, wading, exercising vigorously, swimming in the unheated *natitio* in the *frigidarium*, enjoying a professional massage or a simple back rub, and eating and drinking in small groups.

Around many hot spring areas, the ruins of thermal baths remain, with hemispherical domes characteristic of the Roman period. This structure was developed further by architects in the Seljukian and Ottoman Empires, who enlarged the spheres of the domes to accommodate more people (Aslanapa, 1986). This occurred after the Turks entered the cities and towns of Anatolia and found baths ruined by wars, earthquakes, and negligence through the centuries. The first thing they did was to restore and modernize them, not modifying the essentials of the healing springs and spas, just reconstructing and developing them with typical Turkish architecture.

A Turkish bath is not limited to an *apodyterium* (“changing room”), *frigidarium*, and *caldarium*; unlike the Roman baths, it has higher ceilings with larger hemispherical domes and running fresh-water fountains beside the pools. An impressive example of Ottoman baths can be seen in Northwestern Anatolia at the Çekirge hot spring area in Bursa.

Bathing is an old and important Turkish tradition. Even today, every city or town in Turkey has several public baths with all sorts of comforts, warmed either by hot springs or by central heating. In fact, the Turkish bath is common all over the world (Özbey, 1979; Başar, 1973).

**Pamukkale-Hierapolis, The Cottoncastle**

The Hierapolis hot spring area is called Pamukkale today because the site is covered by cottonlike white travertine, formed by the precipitation of calcium carbonate from the lime-charged hot springs and streams in the region. Pamukkale means “cottoncastle,” whereas the ancient name Hierapolis means “Holy City,” chosen for the many temples in the city. The name Hierapolis appeared officially on ancient coins (*Hierapolis Di Frigia*, 1987).
16th century Ottoman miniature of women walking to a public bath, following an escort. Their escort glances back at them, making sure all is well. Women with faces carefully covered would go the baths in groups, staying from early morning until the midday meal. Those who went later stayed until nightfall. Women of distinguished families with baths at home did not visit public baths. The woman on the far right may carry a towel, clothing, or food in the bundle on her head. A small boy holding a toy sits on the shoulder of the fourth woman from the right.

The bath itself is in the background. The entrance hall is on the right and the hot-water area is on the left, under the dome elaborately studded with colored glass balls. Perhaps the rather intricate shading behind the dome is rising steam. *Printed with permission of the Österreichische Nationalbibliothek, Vienna*
View of the hot spring terraces at Pamukkale, near the ruins of Hierapolis, founded in 190 B.C. by Eumenes II, King of Pergamon, and bequeathed by Attalus II to Rome. The city was leveled by an earthquake in 17 A.D. but was soon rebuilt, reaching its height as a Roman thermal bathing center in the 2nd and 3rd centuries. Turkish Tourist Office

The site where Pamukkale stands is composed of a solid calcareous mass deposited over the ages. The deposition of travertine continues today and has buried the lower parts of many ancient buildings to a depth of several meters.

The spring that feeds the sacred pool of the hot spring area has never been located, but it lies, presumably, somewhere upslope, toward the ancient theater. Water issuing from the ground has a temperature a little below blood heat, making the pool comfortable for bathing. By the time the water reaches the plain, it has lost nearly all its heat and is used freely for drinking and irrigation.

Water passes from the sacred pool in numerous rills, mostly a foot or so wide. At this point, precipitation of lime forms a rim on either side of the rill, allowing the water to run in self-built limestone channels. Some of these rills are still flowing, but many others have been abandoned and are now dry. Where the water falls over the edge of the plateau, lime deposits form clusters of stalactites, making the whole cliff appear like a vast, slowly-changing petrified cascade. Some researchers claim that the rate of travertine precipitation has been fairly consistent and that the whole mass of the plateau may have taken about 14,000 years to accumulate.
At the beginning of the 2nd century, a monumental Roman bath was erected in the southwestern part of Hierapolis at the edge of the travertine terrace during a great reconstruction project after an earthquake that may have occurred in the year 60. The plan of the bath was typical of *thermae* in Anatolia. There was a large courtyard, a second closed-rectangular area with large halls on both sides, and the bath proper, which was made up of pools enclosed in rooms located side by side. These rooms had large window openings facing the heliothermic axis. The exact outline of the courtyard is unknown. The closed rectangular area, which faces south with a large rectangular niche, most likely was the hall of the Imperial Cult. Two side corridors led into the *palaestra*.

Heat was supplied by furnaces. The central hall was heated by two furnaces located in a little barrel-vaulted room that still exists. The walls are covered by large rectangular pipes fastened vertically with metal clamps. Hot air was conducted up the pipes, eventually reaching the open air through appropriate chimney pots. The rooms and pools also were heated by the sun, which streamed in through very large windows. The windows once held glass panes mounted in marble grates or wooden frames.

It was the god Pluto who gave Hierapolis its chief claim to fame in antiquity, namely the Plutonium that was described by several ancient authors, including the Greek historian, Strabo. Writing as an eyewitness about the turn of the first millennium, Strabo said,

> "Plutonium is an orifice under a slight ridge of the hill which rises above, large enough to admit a man, and very deep. In front of it is a fenced enclosure some 50 feet square, filled with a thick mist so that the floor is barely visible. Outside of the enclosure, the air is free of the mist so long as no wind is blowing, and a man may approach safely. But for any living creature that enters inside death is instantaneous. Bulls, for example, that are taken in collapse and are brought out dead; we ourselves sent in small birds which at once fell lifeless. The eunuchs of Cyble, who practiced stopping their breath outside for awhile, were able to approach the orifice and look in and even penetrate for some distance, through not normally without holding their breath. They used this event as a propaganda for their religion. But ancient sources claim that the priests of the great mother alone are immune and could go down into the cave without being overpowered by the poisonous underground steams [of carbon dioxide]."

The Roman historian Dio Cassius visited the spot in the 2nd century and also observed how the vapor destroyed all living creatures except the eunuchs. He tested this phenomenon by sending in birds. He bent over and saw the vapor enclosed in a sort of cistern and noted that an auditorium had been built over it.
Later in the 5th century, a visit by the physician Asclepidotus is reported; he took the precaution of wrapping his cloak two or three times round his face so as to breathe in the pure air taken in with him. He was able to follow the course of the hot water for most of the way in but could not reach the end because the ground had been cut away by a stream of water too deep for a man to pass. The orifice was described as lying under the Temple of Apollo.

At the present time some people, especially tourists, try to approach the orifice and even penetrate inside. So far, anyone who has penetrated inside for quite a long distance has fallen from the poisonous steam.

Hierapolis was not merely a resort for tourists and theater-goers, and the hot springs were not used solely for bathing. Most of the area’s prosperity came from industries, which were numerous and varied. Commercial companies recorded by inscriptions included guilds associated with the woolen industry and guild members, such as dyers, wool washers, and carpet weavers, who used the hot spring waters to make colors permanent.

**THE ASCLEPIEION (ASCLEPIEUM)**

The Asclepieion at Pergamon is one of the important therapeutic centers in Anatolia. According to Pausanias, a 2nd century Greek geographer and travel writer, the first temple of Asclepius was set up during the first half of the 4th century B.C. Recent excavations have confirmed that the sacred precinct, developed during the Hellenistic period, has existed since the 4th century. The center included statues of the gods of health and associated deities. The Temple of Asclepius, god of medicine, was Roman in form and style, but Pergamene in expression and spirit. The Asclepieion at Pergamon attained its most glorious heights in the 2nd century.

In Roman times, the Asclepieion was approached by a road called "The Sacred Way" that was 820 m long. It began in the Roman city as a narrow road lined with columns, then passed by the Roman theater and, continuing on as a wide and magnificent road, finally reached the Asclepieion. The latter sector, flanked by colonnades, is 140 m long and 8.34 m wide.

The buildings in the Asclepieion were used for religious worship and medical treatments. The methods of treatment at the Pergamon health center were noted in various inscriptions.
The Asclepieion of Pergamon: (1) end of colonnaded street; (2) courtyard of propylon; (3) propylon (138-161); (4) place for religious festivities; (5) niche for worship; (6) Temple of Asclepius; (7) cistern; (8) pristyle building; (9) building probably reserved for medical treatments; (10) niche for worship; (11) emperor's room; (12) northern colonnade; (13) Roman theater; (14) eastern stoa; (15) central door of the stoa; (16, 17) rooms, probably; (18, 19) lavatories for ladies and gentlemen; (20) southern stoa; (21) Roman tunnel leading to the treatment building; (22) pool; (23) fountain built in Roman times for bathing and drinking (the patients sat on the lower steps inside the pool and washed themselves with radioactive water coming from the sacred spring); (24) the crack seen in the rock today is very probably the site of the sacred spring; (25, 26) rectangular outlines in the rock probably show traces of the temples of Apollo Kalliteknos, Asclepius Soter, and the goddess Hygieia; (27, 28) sleeping rooms for incubation and autosuggestion, which were two important methods of psychiatric treatment in Pergamon; (29) pool, probably used for mud baths; (30, 31) remains of colonnades. *Drawing and caption reprinted by permission of Professor Dr. Ekrem Akurgal*

and most especially in the writings of the orator Aelius Aristeides, who stayed there for 13 years around the middle of the 2nd century. Famous physicians such as Satyros and Galen (130?-200?) lived there and gave lessons. Methods used for physiotherapy at the Asclepieion are still applicable today. The most important of these were water and mud baths, massage, the use of medicinal herbs, and the application of ointments. Also
prescribed were drinking sacred cool spring water, courses of abstention from food and
drink, colonic irrigation, and running barefoot in cold weather. Autosuggestion and
incubation played important roles in treatment. According to the orator Aelius Aristeides,
the type of treatment was determined by a patient’s dreams, and for this purpose, spe-
cially constructed sleeping rooms were provided. Rites were held in the theater within the
facilities, and the patients underwent treatment involving therapy accompanied by music.

The patients believed that the god Asclepius would restore them to good health and
regarded everything in the area as sacred. There were three pools or fountains at the
Asclepieion designed for bathing and drinking. The patients sat on the lower steps inside
the marble bath and washed themselves in water from the sacred spring. Very likely the
crack in the rock was the site of the sacred spring. In ancient times, the water issuing
from this spring was considered to have healing properties, like all the other geothermal
springs within the vicinity, such as Beauty Baths, Kaynarca, and Dikili Kocaoba hot
springs, which are still very popular. Chemical analysis has shown water at the
Asclepieion to have radioactive properties and a geothermal origin.

**BΑΛϹΟΒΑ (AΓΑΜΕΜΝΟΝ)**
**HΟΤ ΣΡΙΝΓS**

The BALÇOVA HOT SPRINGS area, in İzmir, is one of the
most spectacular
balneological centers in
Western Anatolia. Its an-
cient name of Agamemnon is
that of the Greek king of
Mycenae (or Argos), leader
of the Greek forces in the
Trojan War. According to
legend, King Agamemnon
expanded the Trojan War
and tried to invade the
country of Mysia (Pergamon
and vicinity), where he faced

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**ΗΟΤ ΑΝD ΚΟΛΔ ΣΡΙΝΓS ΙΝ ΤΗΕ ΙLIΑD AS ΛΙΤΕΡΑΤΥΡ DEVICES**

In The Iliad by Homer, the City of Troy in Western Anatolia is under siege
by the forces of the Grecian king, Agamemnon. While the Greek warrior,
Achilles, is chasing the Trojan warrior, Hector, around the walls of Troy,
the men run past a hot and a cold spring. Homer may describe the springs
in the following passage as a way to foreshadow the fates of the two
warriors: soon Achilles, in the heat of victory, will bring Hector to icy
death.

“They raced along by the watching point and the windy fig tree
always away from under the wall and along the wagon-way
and came to the two sweet-running well springs. There there are double
springs of water that jet up, the springs of whirling Skamandros.*

One of these runs hot water and the steam on all sides
of it rises as if from a fire that was burning inside it.
But the other in the summer-time runs water that is like hail
or chill snow or ice that forms from water.”

* Chief river of the Trojans.

The Iliad of Homer, xxii, 700-600 B.C.
Richard Lattimore, translator
Published by the University of Chicago Press.
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severe resistance and eventually lost. He was advised by a fortune teller to send his wounded soldiers for relaxation and treatment to curing houses at today’s Agamemnon hot springs (in Turkish, Balçova Kaplıcaları). Thus this health resort area was named for an historic event.

Agamemnon hot springs was also mentioned by the writer Philostratos, who lived in the 3rd century B.C. Philostratos mentioned in his work Heroika (Work on Valiant People) that Ionia hot springs were called Agamemnon hot springs by the native peoples of İzmir.

Aelius Aristeides, writer and famous master of oratory who lived in the İzmir-Balikesir region, mentioned Agamemnon in his “sacred speeches,” which included information about Western Anatolia during his time. He wrote that he came to these health resorts on his return from Rome to rid himself of a disease.

According to another legend, the name of Agamemnon hot springs comes from a different Agamemnon. It is believed that this Agamemnon, an offspring of the great Agamemnon, was the king of the Kyme (Aliağa) region. While waging war against his northeastern neighbor, Mysia, he sent his wounded soldiers to these hot springs for cures.

**SOME ANCIENT LEGENDS ABOUT THE ORIGIN OF HOT SPRINGS**

Legends and myths about the origin of hot springs have been transmitted orally from generation to generation. In ancient times, it was believed that hot springs formed from burning alum, sulfur, and asphaltite, which in turn heated the overlying soil and water circulating in it. This water would boil and rise to the surface in the form of a hot spring. It was also believed that when cold ground water came in contact with fire under the Earth’s surface, a large explosion occurred, causing the water to take in many violent currents of air. Water loaded with such air would rise up with bubbles and noise. If such water were trapped within the cracks of a rock, it could be forced up high hills by the energy of the compressed air.

It was believed that just as boiling hot springs are formed under different conditions in different types of soil, so each hot spring has special curing properties. For instance, a sulfur-bearing hot spring heats harmful secretions on the human body, burns them, and
stops muscle pains. On the other hand, an alum hot spring protects a human being from cold, supplying heat to the pores of the body.

The water in each hot spring has a different taste because each spring forms under unique conditions. Some hot spring waters with a good taste are able to dissolve stones that have developed in the human body. According to belief, this is natural because the shell of an egg put in vinegar becomes soft. Thus hot spring waters with a good taste can be drunk for good health. Hot spring waters with a bad taste can decay teeth and even cause paralysis, and people must avoid drinking them.

Waters from hot springs like Tarsus in Magnesia can make a human voice sound good. Waters from the hot springs of Hierapolis (Pamukkale) and Cappadocia deposit travertine on the surfaces of objects placed in them. This occurs because in Hierapolis there is a type of water like liquid cheese, which hardens on exposure to sun and air.

CONCLUSION

THERE IS MUCH WE HAVEN’T MENTIONED ABOUT THE ANCIENT USES OF GEOTHERMAL RESOURCES in Turkey because every acre of Turkish land is full of ancient history. Many civilizations have flourished here since (and before) the beginning of recorded history. Although relatively few archaeological excavations have been made, such studies continue, uncovering more of our past every day.
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Painting depicting the nymphs of the thermal waters at the entrance to the Loutraki Spa, a modern establishment near Corinth, Greece. Photo courtesy of Dr. Z. Angelidis, printed with permission.