

## Experience trail

with the Knight Hugo on the traces of the volcano –  
a barrier-free trail for families

**Dear children and visitors,  
We warmly welcome you to discover our volcanic region  
of Kaiserstuhl by taking the experience trail.**



Hi, I am the Knight Hugo.  
800 years ago, I lived with my family  
in the castle situated on the  
"Schlossberg" (castle hill) in Altvogtsburg.  
In those days I explored the volcanic region  
around the castle and discovered many  
interesting things. If you are curious  
about these things, follow me  
on the experience trail!



**Have you already known,**

- that Kaiserstuhl was formed by volcanic eruptions between 21–15 millions of years ago?
- that the humans have lived in the Kaiserstuhl region since the Stone Age (8000 years ago)?
- that there was a medieval fort in Oberbergen where the Knight Hugo lived with his wife Adelheid?
- that there are warm mineral springs in the Kaiserstuhl region which already offered perfect bathing opportunities in the Middle Age?
- that a bird lives here being as colourful as a parrot?

**While taking this trail, please bear in mind:**

This volcanic experience trail runs along the nature reserve Badberg and crosses the bird reserve of Kaiserstuhl. These areas are the habitat of numerous endangered plants and animals. To ensure their existence we kindly ask the visitors:

- Please do not leave paths.
- To avoid waste, please take your litter and empty bottles home.
- Please do not gather flowers and plants.
- Please do not camp or make a fire.
- Please do not disturb animals.

Thank you for support!

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### Station 1a: Kaiserstuhl – an extinct volcano

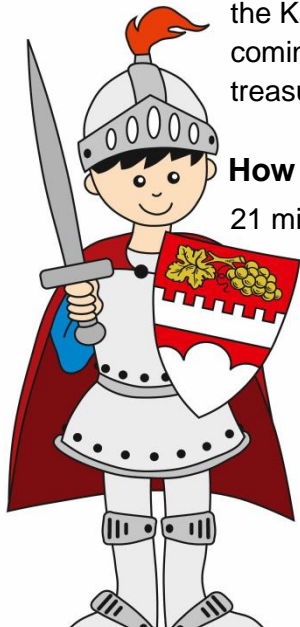
*But where does the name come from? I asked my mother because no emperor lived in this region. Then she told me the tale of the small King Otto III. who held at the age of 14 years, a judgment day in Sasbach on 22<sup>nd</sup> December 994 and then, he signed public documents. After his coronation in May 996 the tale says that the name was changed from "Königsstuhl" [King's throne] to "Kaiserstuhl" [Emperor's throne]. You wonder how it could be, that Otto III. reigns as a king at the age of 14 years? Then you should know that, at that time, boys descending from an aristocratic family, as I do, were considered as adults, got their sword and had been knighted.*

### How had Kaiserstuhl been formed?

From 21 to 14 million years ago several volcanos had been erupting here in the Upper Rhine Valley on the crossing of two fracture zones, in the crust of the earth. These volcanos erupted from the up to 100 km deep earth's mantle magma consisting of liquid rocks with more than 1,000 degrees Celsius. Lava, the name of magma when it comes on the earth's surface, and ash formed then the volcanos. The peaks of the volcanos were several hundred meters high. Higher than today. Due to the erosion working during millions of years, only a small part of the volcanic mountains stayed over. Therefore, you cannot find any caldera in the Kaiserstuhl region. 15,000 years ago, Kaiserstuhl was covered by loess, flue dust coming from the Alps (for more information kindly see station No. 4). It remained a treasure chamber with wonderful minerals and rocks.

### How had the region looked like when the volcano went erupting?

21 million years ago the climate in the Upper Rhine Valley was similar to the tropics and even palm trees could grow here. Dinosaurs were extinct after a meteorite impact 66 million years earlier. Smaller mammal species such as elephants, rhinos, deer, and primeval horses lived here.





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### Station 1b: Volcanic rocks in Kaiserstuhl

*If new stones were required for repairing the castle, the Knight Hugo went to the stone quarry. During his work he found stones with beautiful crystals. Using a magnifying glass you can discover many different crystals in the "Gallery of volcanic rocks". By the way, The Knight Hugo did not know that Kaiserstuhl was a volcano. It was not earlier than in 1783 that geologists made this discovery.*



### Volcanic rocks in Kaiserstuhl

The Kaiserstuhl rocks were built of liquid lava arising as magma from the liquid earth's mantle during the eruption of a volcano. Totally different rocks were formed depending on the depth where the liquid magma came from.

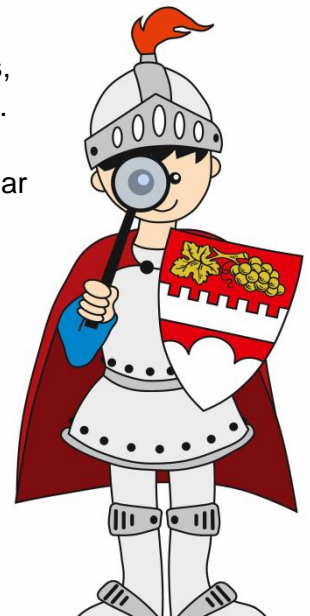
The most frequent rocks are Tephrite, Essexite and Limburgite. Due to the black Augite crystals, they are well recognizable. Here in this stone quarry, you can even find the rare Carbonatite being seldom in Europe. It was melted in the depth and is chalk similar. The Phonolite can rarely be found in the Kaiserstuhl region, but especially around the Badberg and near Bötzingen.

### Use of the volcanic rocks

More than 4,000 years ago, in the Bronze Age, volcanic sand was added to clay for the production of ceramic pots that the pots became more heat-resistant. In the Roman era, more than 2,000 years ago, the Roman forts on the Münsterberg of Breisach and near castle Sponeck in Jechtingen were built from volcanic rocks.

In the Middle Age volcanic rocks were used for the construction of forts, churches, and ramparts such as the castles on the Schlossberg in Achkarren and Burkheim. More than 40 old stone quarries are known in the Kaiserstuhl region where you can discover these kinds of stones. Currently, only one Phonolite stone quarry near Bötzingen is run.

Keep of the stone quarry!  
It is part of the natural reserve Badberg.



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### Station 1c: Lithophone

The Knight *Hugo* did not want to learn how to play the lute, but he had discovered that several stones lying near the fort, had a beautiful sound. Therefore, he used these stones to build an instrument consisting of these sounding stones (*Lithophone*). Please try the special sound of these stones.

#### Phonolithe

Phonolithe (sounding stone) was formed when liquid magma erupted in the volcano and cooled down in the volcano chimney. In the Kaiserstuhl region there are several of these Phonolite chimneys. One of them can be found in Bötzingen. Phonolithe is mined there in a stone quarry of the company Hauri.

Phonolithe rocks are used for street gravel, for the manufacturing of glass and cement. Furthermore, it is a perfect mineral rich additive for the manufacturing of animal feed in the agriculture as well as for mud packs used in the health industry.

Striking this rock, you get a good sound therefore you can build an instrument (Lithophone) with it. The human beings living in the Stone Age already used this sounding stone for the creation of music instruments. In Vietnam archaeologists found a lithophone that is more than 4,000 years old.

At this point we would like to say thank you to the company HANS G. HAURI KG MINERALSTOFFWERKE in Bötzingen that has made this lithophone available for us.



Vu 1c
Das Lithophon
Vulkanerlebnispfad Station 1c

Ritter Hugo wollte nicht Laute spielen lernen. Er hatte aber entdeckt, dass einige Steine in der Nähe der Burg einen schönen Klang haben und baute sich daraus ein Instrument aus Klangsteinen (Lithophon).

Probiert mal aus, wie besonders die Klangsteine klingen.

#### Der Phonolith

Der Phonolith (Klangstein) ist entstanden, als flüssiges Magma im Vulkan aufstieg und dann noch im Schlot erkaltet ist. Im Kaiserstuhl gibt es mehrere solcher Phonolith-Schöte. Zwei davon sind in Bötzingen. Dort wird Phonolith in einem Steinbruch von der Firma Hauri abgebaut.

Wie schon bei den Römern wird Phonolith auch heute noch zur Herstellung von Glas verwendet, als Zementersatz dient er heute dazu klimafreundlichen Beton herzustellen, Hühner baden in Phonolithmehl um sich vor Milben zu schützen. Phonolith ist auch zugelassen als Futtermittelzusatzstoff. Hauptsächlich Rinder und Schweine erhalten Phonolithmehl in das Futter. Aus Phonolith wird das Medizinprodukt VULKANIT Fango produziert. Für Erdwärme und Geothermie wird Thermomörtel gebraucht, dieser wird aus Phonolith als Hauptbestandteil hergestellt.

Weil er einen guten Klang erzeugt, wenn er angeschlagen wird, kann er auch zum Bau von Musikinstrumenten wie dem Lithophon verwendet werden. Schon die Menschen in der Steinzeit nutzten den Klangstein für Musikinstrumente. Archäologen haben in Vietnam ein 4000 Jahre altes Lithophon ausgegraben.

Der Phonolith-Steinbruch der Firma Hauri in Bötzingen.

Das Lithophon wurde uns dankenswerterweise von der Firma HANS G. HAURI KG MINERALSTOFFWERKE in Bötzingen zur Verfügung gestellt.

**HAURI** [www.hauri.de](http://www.hauri.de)

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**VOGTSBURG**  
verbindet

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### Station 2: Volcanic springs

*Have you already known that there are two warm springs at the foot of Badberg? One of them is located at a public pool where you can tread water and the other one springs here in the volcanic rocks. The water arises through fissures. Since we are here in the Kaiserstuhl region very close to the hot earth's core, the water is still warm reaching the surface. Take the chance and feel with your fingers how warm the thermal water is. In the Middle Age we have already used the warm springs for bathing and built a spa because we did not dispose of a bathroom neither in our castle, nor in the farmer's houses. By the way, the name of this hill comes from the German word for bathroom ("Bad").*



### The spa in Altvogtsburg

Since there are several warm mineral springs in the Kaiserstuhl region, many spas have been opened since the Middle Age. One spa is handed down in Achkarren at the foot of the Schlossberg (castle's hill) and one in Schelingen on Badberg. Further spas were in Bötzingen und Bahlingen.

The spa in Altvogtsburg is firstly mentioned in 1300. In the 16<sup>th</sup> century it is reported that the springs are drained and very popular with the common people living in the Kaiserstuhl region and in Breisgau. The spa disposed of a restaurant, too, where fish and meat from Burkheim were offered. Thus, life was pleasant there.

During the Thirty Years' War (1618–1648) the spa was destroyed. In 1660 they built a new spa. The water was drained through a short channel to the spa. It is supposed that the spa was finally destroyed in the 18<sup>th</sup> century and not reconstructed.

In these days it is not known where the spa was exactly located.

Today, the spring has a temperature between 21 and 24 °C.







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### Station 4: How does loess come on the volcano?

#### The “weatherman” from the Kaiserstuhl

*In the Kaiserstuhl region the weatherman is not a frog, but a snail. At the bottom of the vineyards there lives the typical snail from the Kaiserstuhl region. In summer at hot temperatures the snail hangs on the grasses to be protected against the heat on the loess soil. My mother told me that the snail comes back and creeps down before it rains.*

*Search game: Go on a search for the small Kaiserstuhl snail. Are they hanging on the grasses or lying on the ground?*

**Vu 4 Wie kommt der Löss auf den Vulkan?**

**Die „Wetterschnecke“ von Kaiserstuhl**  
Am Rande der Weinberge weht die Kaiserstuhlschnecke, die bei Hitze im Sommer oben an den Gräsern hängt, um sich vor der Hitze am Lössboden zu schützen. Meine Mutter erzählte mir, dass diese Schnecke, wenn der Regen kommt, wieder auf den Boden kriecht. Deshalb ist die Kaiserstuhlschnecke ein guter Wetteranzeiger.

**Suchspiel:**  
Schaut mal, ob ihr die kleinen Kaiserstuhlschnecken entdeckt. Sind sie gerade am Boden oder hängen sie oben an den Gräsern?

**Ein ganz schön bunter Vogel**  
Bei meinen Touren um die Burg habe ich einen schönen bunten Vogel an den sonnigen Lösswänden in den Weinbergen entdeckt, der dort seine Nisthöhlen baut. Der wird „Bienenfresser“ genannt, erklärte mir mein Vater, weil er gerne Bienen verspeist, denen er aber vorher den giftigen Stachel zieht.

**Löss auf dem Vulkan**  
Löss ist ein sehr feines Gesteinsmehl aus den eiszeitlichen Gletschern der Kaltzeiten, das vor etwa 15000 Jahren am Kaiserstuhl abgelagert wurde. In der Eiszeit zermahlten die Gletscher und Flüsse grobe Felsen und Kieselsteine zu feinem Gesteinsmehl. Als die breiten vegetationslosen Flusstäler nach der Eiszeit trocken gefallen waren, wirbelte der Wind den sehr feinen Staub auf und lagerte ihn an höheren Hindernissen wie dem Kaiserstuhlvulkan wieder ab. Zu dieser Zeit lebten am Kaiserstuhl noch Mammuts, deren Stoßzähne und Knochen manchmal im Löss zu finden sind, wie in Oberbergen und Bischoffingen.

**Tiere und Pflanzen dürfen beobachtet, aber nicht aus der Natur entnommen werden!**

**Löss – Lebensraum für Tiere und Pflanzen**  
Diese kalkhaltigen Lössböden gehören zu den besonders fruchtbaren Böden. Sie sind locker und gut durchlüftet, können Wasser gut speichern und enthalten viele Nährstoffe durch die vielen Mineralien aus dem Gestein. Für zahlreiche Pflanzen und Tiere ist Löss von großer Bedeutung. Beispielsweise findet sich eine große Anzahl von Bienen- und Wespenarten, die in Lösswänden ihre Nester anlegen. Daneben baut ein auffallend bunter Vogel – der Bienenfresser – Nisthöhlen in die Lösswände, um die Jungen aufziehen. Damit hat er seine Lieblingspeise direkt „vor der Haustür“. Er frisst aber nicht nur Bienen, sondern eigentlich alle Insekten.

**Ein Bienenfresser baut sein Nest in den Lösswänden.**  
Der Bienenfresser ist ein sehr seltener Vogel, der in Lösswänden seine Nester baut. Er frisst Bienen und andere Insekten.

**Ein Mammut hat seinen Lebensraum im Löss gefunden.**  
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#### What a colourful bird!

*In the surrounding area of the castle, I have discovered a beautiful and colourful bird sticking on the sunny loess walls in the vineyards and building its nesting holes. My father told me that this bird is called a bee-eater because it prefers eating bees. But at first, it draws the thorn.*

#### Loess on the volcano

Loess is a very fine rock flour coming from the glaciers of the Ice Age and deposited in the Kaiserstuhl region about 15,000 years ago. In the Ice Age the glaciers and rivers ground big rocks and pebble stones to fine rock flour. After the Ice Age, when the wide and vegetation-free river valleys were dried up, the wind carried this fine dust away and deposited it on the higher barriers like the volcano of the Kaiserstuhl. At that time mammoths lived in the Kaiserstuhl region and tusks as well as bones of them can be found in the loess sometimes; for example, in Oberbergen and Bischoffingen.

#### Loess – habitat for animals and plants

The limy loess soil is very fertile. It is loose and well-aerated and it can store water and is rich in nutrients thanks to the minerals in the rocks. For numerous plants and animals, loess is very important. A great number of bees and wasps have their nests in the loess walls. Just beside a particularly colourful bird, the European Bee-Eater, builds nests in the loess walls to feed its young birds. That means the bird has its famous meal directly before the front door. However, this bird does not only eat bees, but all kinds of insects, too. Kindly bear in mind, that it is allowed to observe the animals and plants, but not to take them away!





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### Station 5: Work in the vineyard

*Our castle has got several vineyards, too. It was my grandfather who had planted them. I often help in the vineyard because there is always work to be done. The biggest fun for us is the time of the grape harvesting in autumn. Then, I am allowed to tread down the grapes with bare feet in a large tub. At the bottom of the tub the fresh and sweet grape juice that I like drinking, flows out. Look around you: Which kind of work are the winegrowers doing in their vineyards? If you turn the time panel well, you can see which work the winegrowers do in their vineyard over the course of the year.*



### Viticulture in the Middle Age

It is supposed that already the Romans had started with the viticulture in this region. In the Kaiserstuhl region viticulture was firstly mentioned in documents in the 8th century. Even The Knight Hugo from Oberbergen disposed of vineyards. In a deed of 1271, it is written that Adelheid, the widow of The Knight Hugo, gave vineyards to the monastery of Freiburg.

### The winegrower's year

Since the Middle Age, when the Knight Hugo lived, the winegrower's work in the vineyard has extremely changed. Nevertheless, still today many works need to be done by hand. In one calendar year, the winegrower visits every vine up to 17 times.

- January/February – Pruning of the vines: The old superfluous wood is removed and only one or two fruit rods remain.
- March/April – Tying up of the grapevines, to get an equal allocation of the shoots.
- April – Preparation of the soil. The soil is loosened mechanically to support the natural life in the soil.
- April/May – Protection of the plants: Now the grapevines start growing. To protect the plants against fungal diseases pesticides are sprayed.
- End of June – Blossom of the vines: Now you can smell the perfume of the blossoms in the vineyard.
- June/August – Foliage works: The shoots are fixed and tied up, leaves are removed to support the ventilation of the grapevines.
- September/October – Vintage:
- November/December – Dormant season in the vineyard.



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Tip: Are you interested in more information about wine and its history? Then take the chance and follow the educational trail “Oberbergener Baßgeigenweg“. Departure is at the winegrower's cooperative in Oberbergen.

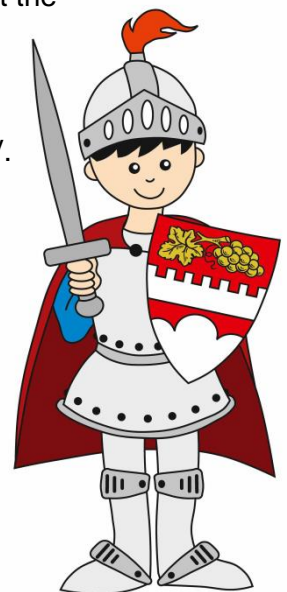
## Station 6: The Knight Hugo's castle

*Search game: Look through the monitoring well. Can you see the silhouette of the castle located on the Schlossberg? It is exactly there where our small castle was built and where I lived with my parents. In winter it was very cold because we only had two heatable rooms. On cold days I preferred staying in the castle kitchen with the open fire and the fine meals. In my mother's chamber it was warm, too, because she had a tiled stove. There we liked playing chess, a board game brought by the Knight Templars from the Orient. As a knight you need to know how to fight with the sword, ride a horse and play chess.*



## The castle on the Schlossberg

The exact place of the castle on the Schlossberg above the village Altvogtsburg and how it had looked like is not known. A deed written in the Middle Age in 1271 says that the widow Adelheid of the Knight Hugo of Oberbergen gave the Teutonic Knights of Freiburg vineyards located in (Ober-)Bergen and (Ober-)Schaffhausen. Furthermore, in 1329, Johannes von Oberbergen (John of Oberbergen) is mentioned as witness in the certification ceremony. Possibly, he was a grandson of The Knight Hugo of Oberbergen. It is supposed that the castle on the Schlossberg was small. The nobles of Üsenberger reigned over the castle as well as the village of Oberbergen. Their seat was the castle Üsenburg near Breisach. In 1255 the citizens of Breisach destroyed the castle Üsenburg. Then the nobles moved to the castle Hühningen near Achkarren. Probably, Hesso IV. of Üsenberg assigned the administration of the castle in Oberbergen to The Knight Hugo of Oberbergen and his wife Adelheid. Due to its strategic traffic-favorable situation directly on the Vogelsangpass (which was the most important mountain pass road through Kaiserstuhl from Breisach to Freiburg even in the Middle Age), the castle served to protect and to control the road.



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### Station 7: Archaeology in the Kaiserstuhl region

*Planting new grapes in the vineyard I have found in  
a hole that I had dug before, a smoothly ground  
stone looking like an axe. I showed my parents the  
stone, but they could not explain me what it is. In a  
further hole in the vineyards, I have found a green  
needle made of metal. My mother was truly happy  
when I gave her this needle. She said that she  
could use this needle to fix her hood. After  
polishing this needle with horsetail, it was nearly as  
shiny as gold.*

*In the Middle Age people have not yet known that  
7,000 years ago Stone Age men lived here and  
used stone axes to fell a tree.*



### Archaeological discoveries

There were essential earth movements in the 1970s when the steep slopes of Kaiserstuhl were converted to large terraces to make viticulture possible. In these days the small terraces existing on the steep slopes since the Middle Age were enlarged. The loess soil on the volcano brought by wind during the Ice Age, was restored by diggers and used to build these artificial terraces. Ancient graves and settlements were discovered with numerous finds from the Stone Age, the Celts, the Romans, and the Middle Age. Archaeologists of the Landesdenkmalamtes carefully excavated and documented them. Today, you can see some of these finds (ceramic pots, axes, and jewellery) in the archaeological museum Colombischlössle in Freiburg. They demonstrate us how people lived in the Kaiserstuhl region 7,000 years ago.







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### Station 8b: Bee hotels

*In summer often I go to a farmer below the castle to buy sweet honey for the cake. In straw baskets the farmer holds honeybees, delivering the honey directly to the front door. It is far more tiresome and dangerous to search wild colonies of bees and to steal the honey. Mostly they live in the woods in hollow tree trunks.*



### Wild bees

Today there are only few colonies of bees living in the woods in comparison to the era when the Knight Hugo lived. However, today there are more than 500 different species of wild bees living as loners and not in colonies like honeybees. These bees hatch in spring or in summer and after the mating they build nest chambers. For this purpose, the female animals look for an appropriate hollow space firstly. Secondly, they bear pollen and nectar as feed in the chamber and add an egg there. Thirdly, they close that chamber with sand or clay, this depends on the species of the wild bees, and look for the next chamber. After some days, the larva slips out of the egg. Over some weeks the larva grows and gets a cocoon overwintering in the chamber. Most of the wild bees have a life cycle of one year and die before progenies hatch. Bee nests can be found, it depends on the species of wild bees, in dead wood, in hollow plant stems or in loess walls. However, nearly three quarter of wild bees have their nest in the soil. Since wild bees do not have to defend their stocks, they are more tranquil than the honeybees.

### A hotel for bees (bee-hotel)

Wild bees are as important for the pollination of trees, flowers, and crop plants as honeybees. In Germany, more than half of the different species of wild bees are currently endangered, therefore, our hotel for bees is intended to assist the bees in finding an appropriate nesting place. At the same time, our bee-hotel is a good nesting site and place to overwinter for further insects. By the way, instead of hotel for bees we should say “house of bees” or do you really want to stay in a hotel for one year?

