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für Bildung, Wissenschaft  
und Kultur



• Harz - Braunschweiger  
• Land - Ostfalen  
• UNESCO  
• Global Geopark

Landmark **16**

# Sachsenstein



 **GEO PARK**®  
Harz . Braunschweiger Land . Ostfalen

**Harz**



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Harz - Braunschweiger  
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UNESCO  
Global Geopark

On the 17<sup>th</sup> of November, 2015, during the 38<sup>th</sup> UNESCO General Assembly, the 195 member states of the United Nations resolved to introduce a new title. As a result, Geoparks can be

distinguished as UNESCO Global Geoparks. Among the first 120 UNESCO Global Geoparks, spread throughout 33 countries around the world, is Geopark Harz · Braunschweiger Land · Ostfalen.

UNESCO-Geoparks are clearly defined, unique areas, in which locations and landscapes of international geological importance are found. They are operated by organisations which, with the involvement of the local population, campaign for the protection of geological heritage, for environmental education and for sustainable regional development.



As early as 2004, 25 Geoparks in Europe and China had founded the Global Geoparks Network (GGN). In autumn of that year Geopark Harz · Braunschweiger Land · Ostfalen became part of the network. In addition, there are various regional networks, among them the European Geoparks Network (EGN). These coordinate international cooperation.

In the above overview map you can see the locations of all UNESCO Global Geoparks in Europe, including UNESCO Global Geopark Harz · Braunschweiger Land · Ostfalen and the borders of its parts.

## 1

Anhydrite

## Sachsenstein near Neuhof

The Sachsenstein has enjoyed protection as part of the 315 ha Priorteich/Sachsenstein Nature Reserve since 1949. It is a distinctive spur of Werra anhydrite and belongs, at an age of ca. 260 million years, to the oldest series of the Zechstein. The Zechstein, together with the earlier Rotliegend deposits, comprise the Permian Era. The Sachsenstein massif presents cliff-faces to the north, west and southwest in the Uffe Valley. The Uffe has its source at ca. 600 m ASL on Grossen Boxtalkopf Mountain – one of Ravensberg Mountains' neighbouring peaks – and flows initially through Sachsa. The course of the stream before it reaches the Sachsenstein massif formed a segment of the border between the Prussian province of Saxony (including the village of Sachsa) and the Duchy of Braunschweig (including the village of Neuhof).



At the village boundary, Neuhof



Detail view

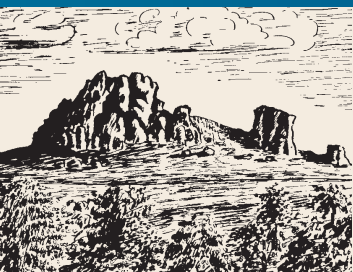
At Sachsenstein the Uffe comes in constant contact with the readily soluble Werra anhydrite. The gypsum scree that falls from the cliff-face is rapidly broken down, ensuring that the cliff remains steep. Underground channels through the karst carry water from the Uffe beneath the Sachsenstein massif and contribute to the erosion and undercutting of the cliff-faces. The starting point of the climb up the Sachsenstein (Checkpoint Nr. 166, Harz Hiking Badge System) is on the edge of Neuhof as you come from the direction of Sachsa. At the village boundary of Neuhof we find information about a mine-car cableway which connected the Kranichstein Quarry (Geopoint 8) with the Kutzhütte Gypsum Works between 1938 and 1962. From here we head northeastward on a hiking trail called 'Along the Historical Border: Through Nature and History', part of the Karst Hiking Trail. Today, the waters of the Uffe flow from Neuhof in the direction of Branderode in Thuringia, where the stream is known as the Sachsengraben.

## 2

Dolomite

### Römerstein near Nüxei

The Römerstein (345 m ASL) is best reached from the parking area of the restaurant 'Alter Grenzkrug' in Nüxei (on the B243 between Mackenrode and Osternhagen). The towering cliffs of the Römerstein are comprised of dolomite. The dolomite was a reef, from the Zechstein period, which probably formed on a small volcano dating to the Rotliegend after the volcano was covered by sea ca. 257 mya. It contains many fossils of bryozoans, bivalves and brachiopods. The cone-shaped reef could have originally been as large as 100 m. The land to the south of the Römerstein contains a great deal of evidence of the presence of Stone Age people. The name Römerstein probably has its roots with Romar, a legendary figure from a Germanic saga. The Römerstein is surrounded by the 73 ha Weissen-Lake and Steina Valley Nature Reserve in the FFH (Flora, Fauna, Habitat) Preservation Area 'Gypsum Karst Region near Bad Sachsa'.



Historical picture of the Römerstein



The Römerstein today



### South Harz Karst Hiking Trail

On the 100 km long southern border of the Harz Mountains are many sights that demonstrate the power of water to dissolve stone. These include caves, sinkholes and dolines, karst springs, stream and river sinks, karst cones, hollows, galls, cliffs and white rock faces. The Sachsenstein and Römerstein are among them. The Karst Hiking Trail takes in the unique gypsum karst landscape stretching from the municipalities of Osterode am Harz and Nordhausen to as far away as the village of Pölsfeld in the district of Mansfeld-Südharz. In the district of Osterode am Harz two sections of the Karst Hiking Trail run parallel to each other. These parallel sections can be connected, as here in the area around Bad Sachsa, to create loop trails. The group 'Friends of the German Gypsum Museum and Karst Hiking Trail' host events here.



Förderverein Gipsmuseum und Karstwanderweg e. V.  
(Friends of the German Gypsum Museum and Karst  
Hiking Trail)  
[www.karstwanderweg.de](http://www.karstwanderweg.de)

## 3

## Rhyolite

## Ravensberg Mountain near Bad Sachsa

Ravensberg rhyolite, like Staufenburg rhyolite from near Steina, is a dense, pink-coloured volcanic rock, with relatively few inclusions. Chemical and x-ray examinations have shown that both these rhyolites, along with Ilfeld rhyolite, were formed from silica-rich magma. Further south this material merges with porphyry tuff. Stratigraphically all three of these volcanic rocks, dated to between 290 and 298 million years, belong to the Rotliegend. As we follow Katzentalsstrasse from Bad Sachsa toward the peak of Ravensberg Mountain, we pass a turn-off to the Harz Bird of Prey Park (Harzfalkenhof). Not far from here we find the Märchengrund, one of the oldest fairytale-themed parks in Germany (est. 1910). We can park here and hike along the Liethweg path to the 660m ASL peak. The path branches off from the road at the Kreuzeckhütte shelter. The path is lined with numerous border-stones



*The view from Ravensberg Mountain*



*'W' stands for the Walkenried Monastery*

which marked the historical border between Prussia (KP) and the Duchy of Braunschweig (HB). Older border-stones are also to be found. The administrative area of Sachsa (S) in the county of Klettenberg belonged to the Earldom of Hohnstein from the 13<sup>th</sup> century. In 1636 the county came under the control of the Bishopric of Halberstadt. In 1648, under the terms of the Peace of Westphalia, Hohnstein and Halberstadt were transferred to the control of the Margraviate of Brandenburg as compensation for the loss of Pomerania to Sweden. Crossing Guntram's Meadow we reach the Dreiherrenstein (Three Rulers Stone). The stone marks the point where, in 1866, the borders of three sovereign states met – Braunschweig, Prussia and the, then independent, Kingdom of Hanover. On the Hanoverian side are the letters FG, standing for the Principality of Grubenhagen and L, standing for the Lauterberg Forest. On the Braunschweig side is the letter W, for the Walkenried Monastery.

## 4

Copper Shale

## Schwiebach Valley near Bad Sachsa

Not far from the Youth Hostel, the Schwiebach Trail leads south away from Bad Sachsa, along the L 604 (Walkenriederstrasse), into the Schwiebach Valley. Here, at numerous locations, there are copper shale deposits close to the surface. The importance of these deposits is due to their metal content – up to 4% copper. At one of the information points on the nature discovery trail, the copper shale layers are exposed. Copper shale was deposited 260 mya as the sedimentary floor of a tropical sea. The black, ca. 40 cm thick layer was laid down over roughly 50,000 years. Of special interest is its rich fossil content. Distinctive is the abundance of fish fossils, including fossils of Mansfeld herring, *Palaeoniscus freieslebeni*. The modern fish species that can be found today in the fishing ponds in the valley are detailed on one of the information boards along the trail.



To Schwiebach Valley



Steina streambed

## 5

Karst

## Steina Creek Infiltration

Near the church in Steina, Steina Creek disappears. Flowing out of the Harz, the Steina reaches karstified Upper Permian deposits here and, at times of low water levels, infiltrates the ground completely. The dry streambed can be followed for 4 km further southward to where it meets the Ichte south of Nüxei. At middling water levels some of the water flows past the infiltration point, but barely flows as far as the nearby train line. Only at times of high water does water flow southward past Nüxei. In the past, at times of high-water, the Steina flowed into the Nussteich Pond basin near Nüxei and infiltrated in a sink there. Gravel from the Steina on the bed of the Nussteich Pond is evidence of this. As is typical of karst areas, the water then flows underground through clefts and fissures in the gypsum and dolomite, before it re-emerges on the surface not far from Nordhausen.



Harzklub e. V.  
www.harzklub.de

## 6

## Forest Glass

## Steina Glass Museum

In 1991 the former glassworks of Kronshagen were discovered. This discovery was the catalyst for the establishment of the Steina Glass Museum. Further discoveries of historical glassworks demonstrate the importance of glass production along the southwest edge of the Harz Mountains in the 16<sup>th</sup> and 17<sup>th</sup> centuries. Excavations of the Weinglashütte site near Wieda have produced especially beautiful finds. Forest glass is produced from quartz, lime, potash and metals. Quartz is the basis of the glass. Lime provides for durability and potash serves as a fluxing agent, as well as lowering the melting point of the quartz. Green colouration is characteristic of forest glass and is the result of iron impurities in the raw materials. The green colour perfectly matched the prevailing taste of the time. A variety of glass items were produced in the glassworks: from roundel window panes, to bottles



Steina Church



Steina Glass Museum

and glasses, to buttons. The forest-glassworks from this area comprise a distinctive epoch in the history of glass production. Master glaziers came from the forest-glassworks of Bohemia, the Bavarian Forest and the Spessart Mountains. They lived in the forest and formed a strictly organised guild. The most important basic requirement for glass production was a plentiful supply of wood. Hardwood was used to fire the kilns and was required for the production of potash. A glassworks used 2,000 to 3,000 m<sup>3</sup> of wood per year and competition with the mining and metallurgy industries for this resource rapidly led to its exhaustion. The last smelter fires were extinguished early in the 18<sup>th</sup> century. At that time Steina belonged to the Electorate of Braunschweig-Lüneburg (also called the Electorate of Hanover). The Steina Glass Museum preserves the memory of what was, for the South Harz area, an important historical industrial art. It illustrates the variety of objects that could be produced from glass over 300 years ago.



# Glossary

**Landmarks** are points in the landscape or actual localities which are highly visible and well-known. They serve as an initial orientation in one of the largest Geoparks worldwide and give the specific areas their names. Every landmark area is represented in a special leaflet.

**Geopoints** are points of particular interest. At these points, the geological history of the area or the evolution of the cultural landscape are evident and can be conveyed to visitors. Geopoints are numbered in sequence within the region of a Landmark. They can be combined to constitute an individual Geo-Route. The Geopoint No. ① is always the place which has given its name to the Landmark.

The accompanying map will help you plan your personal Geo-Route through the area around Bad Sachsa. Part of the 1,393 km long green corridor along the former border between East and West Germany can be explored from here. Following the signposted paths we can also reach the Borderland Museum at Tettenborn.

Order more leaflets  
Information en français  
[www.harzregion.de](http://www.harzregion.de)





## 7

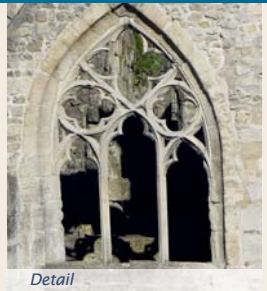
Gypsum Mortar

## Walkenried Monastery

For around 400 years Cistercian monks were active in this once very famous location. This left behind many traces beyond the impressive constructions here. The cultural landscape which lay before the monks' "front door" preserves a significant cultural monument: the ponds and lakes which the monks created with their own hands. Today the monastery is a museum – the Cistercian Museum-Walkenried Monastery – whose visitors are taken on a journey through time to learn about praying and working behind monastery walls. Audio and visual presentations, along with the museum's focus on the wide-scale economic activities of the monks – comparable to a modern-day corporate enterprise – serve to increase the fascination that this place exerts. The monastery was founded in 1129 and the church was consecrated in 1137. By 1200 the monastery's economic success had already brought



Walkenried Monastery



Detail

about huge growth in the number of monks. The Romanesque church had to make way, but the new Gothic church couldn't be consecrated until 1290. Its size and architectural complexity were testament to the monastery's importance. Today the extent of the ruins bears witness to the vast dimensions of the buildings in their heyday. Cut stone from Upper Permian dolomite and mortar produced from local gypsum were the construction materials. The finely worked stone of the tracery and decorative elements was quarried from the thickly-layered dolomite on Wolfskuhle Hill. This finely-stratified, lagoonal formation is located between Nüxei and Osterhagen. In contrast to the Gothic church, the cloister itself is almost completely intact. The cloister exhibits a very distinctive feature: its double-naved arcade. This architectural rarity, flooded with light and made more distinctive by its spacious, hall-like character, has long been the hallmark of Walkenried Monastery.

## 8

## Renaturation

## Kranichstein near Neuhof

In the Kranichstein Quarry near Neuhof, operated by Saint-Gobain Formula LLC – Walkenried, raw gypsum has been produced since the beginning of the 20<sup>th</sup> century. The gypsum found in the area around Bad Sachsa and Walkenried is stratigraphically part of the Werra anhydrite. In comparison to gypsum quarried elsewhere, the stone extracted here exhibits an extraordinarily high purity and whiteness. For this reason it is used as a raw material in the production of specialist materials (e. g. dental and orthopaedic plaster; moulding plaster for porcelain and sanitary ware). The rehabilitation of the quarry land was based on the principles of renaturation and revegetation. In the course of the succession process, some sections of the land were left to naturally develop. Early stages of the succession process are notable for species diversity of plants and animals and for the incidence of particularly rare and



*Kranichstein gypsum quarry*



*Gypsum kiln*

non-dominant species. The aim of the rehabilitation process is to create an environmental morphology well-suited to the karst landscape here. Accordingly, a steep-sided artificial basin was created, modelled on natural sinkholes and dolines. As part of the revegetation process a wide area around the edge of the basin was left untouched and it remains to be seen what kind of floral and faunal communities will colonise this space in the future. In the immediate vicinity of the quarry we can find a reconstruction of a historical gypsum kiln – part of the Kranichteich Nature Discovery Trail. Gypsum is fired here twice a year. The valuable, high-quality plaster produced can be used as screed mortar in restoration work. Its potential applications were tested on the wall surrounding Walkenried Monastery.

## 9

## Industrial History

## Wieda Glass and Smelting Museum

The haematite deposits found in the Kasten Valley area between Wieda and Zorge, along with the abundant wood and water supplies there, allowed Wieda and its smelting industry to flourish in the second half of the 16<sup>th</sup> century. Numerous iron working facilities stood side-by-side in the valley. Diverted into channels, water from Wieda Creek powered the waterwheels of stamp mills, blast furnace blowers, bellows, trip hammers and mills. The cinnabar deposits in Silberbach Valley caused quite a stir. The mercury-bearing mineral was utilised in the production of red pigment. The economic network that grew around the ironworks brought work and income for miners, charcoal burners, blast furnace operators, form moulders, ore sorters, forge workers, carters and donkey drivers. As late as the 1970s, the ironworks in Wieda produced the wood-burning stoves for which they were famous. Around 1600, to the west



*View towards the Lutheran Church*



*Clock tower*

and north of Wieda, glassworks were established which were in operation for over a century. The population grew and, as a result, the first church in the Wieda Valley was built in 1610. The separate bell-tower standing above the valley on Ruhme Hill was already calling people to Sunday prayers from 1582. The foundation stone for the Lutheran church was laid by Duke CARL I OF BRAUNSCHWEIG AND LÜNEBURG (1713 – 1780), who ruled the Principality of Wolfenbüttel from 1735. His laying of the foundation stone is commemorated by the letter 'C' beneath the ducal crown above the main entrance of the church. In the former town hall of Wieda we can find the Glass and Smelting Museum. The museum contains displays about mining, ironworking and the art of glassmaking. Beautiful artefacts have been found during various excavations, most notably of the Weinglashütte site. The section entitled 'Life in the Glassmakers Settlement' tells us about the living conditions in the households of the glaziers. Another section is about the origin and history of the church.

**Opening times: April – October**  
**Wednesday and Friday 1.30 – 3 pm, Sunday 3 – 5 pm**  
**and by arrangement: ☎0049 5586 - 1248**

10

Geopark Information centre

## NatUrzeit Museum, Bad Sachsa

The NatUrzeit Museum is located in the Kurhaus (Spa House) building next to the Spa Park. Here we can immerse ourselves in a wide variety of 'worlds' as we take a trip through 290 million years of the natural history of the South Harz region. In 'Fire Worlds' the volcanism of the South Harz region is explained. The stone that forms Ravensberg Mountain is detailed and its formation explained. 'Geo Worlds' gives insights into the genesis of the landscapes of the region. In 'Desert Worlds' we can learn which plant and animal species existed on the shores of the Permian sea 258 mya. There are exhibits about the fossilisation of the first conifers and of the dinosaurs. 'Sea Worlds' provides a glimpse into life in the Permian sea, including reconstructions of fossil fish and their living environments.



NatUrzeit Museum



Sachsenstein Castle ruin

11

Regional History

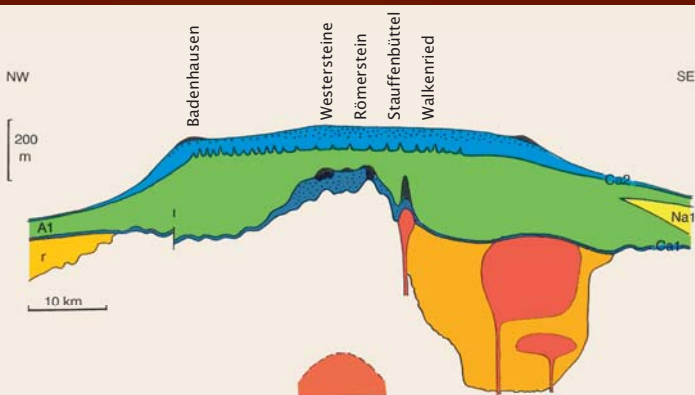
## Sachsenstein Castle

Separated from the Sachsenstein (Geopoint **1**) by a railway cutting (South Harz Line, Northeim – Nordhausen), the ruins of Sachsenstein Castle can be found on the Blumenbergsköpfe spur. HEINRICH IV (1050 – 1106) had the castle built to secure his control of the Harz foreland. It was one of eight castles recorded in 1073 by the 11<sup>th</sup> century historian LAMPERT VON HERSFELD. Still easily recognisable is a masonry technique typical of mid-11<sup>th</sup> century castles of the Salian dynasty. The fishbone pattern in the stonework has been restored to its original state. The castle, which was probably never completed, was where the king's ministry, which levied taxes on his behalf, met. Under the terms of the Treaty of Gerstungen the castle's fortifications were demolished after OTTO VON NORTHEIM (ca. 1020 – 1083) had led a Saxon revolt against HEINRICH IV.



# Geological Development of the Area

In the South Harz region, between the villages of Barbis and Nüxei, is a small hill where the well-known Brantweinseiche (Brandy Oak) stands. It is part of a low range of hills extending southwest from west of Steina in the Harz Mountains to the Eichsfeld area in Thuringia. Geologists know this range as the Eichsfeld Rise (Eichsfeldschwelle). The Eichsfeld Rise borders the area covered by Landmark 16 to the west and is the drainage divide of the Elbe and Weser catchment areas. The area is geologically shaped by the transition southeastward from the Eichsfeld Rise to the South Harz basin and contains huge deposits of gypsum as well as ice-age fluvial gravel deposits at lower levels. Geologists can demonstrate that the South Harz area has been influenced by this 20 km wide range of hills, which once towered hundreds of metres over the surrounding terrain, for more than 250 million years. When large areas of central Europe, including the Harz region, were covered by sea at the beginning of the Zechstein period (260 mya), the Eichsfeld Rise formed an elongated shallow zone containing many islands. In the marine basins to the east and west the sediments that would later form copper shale and thick gypsum deposits were laid down. The diagram shows a cross-section through these marine sediment deposits in the South Harz area. The Rise was rapidly flooded creating islands and zones of shallow water – conditions that made the growth of coral reefs possible. At that time the South Harz area was geographically located where Cairo now stands. The climatic conditions were similar to those of the Red Sea area today. Earlier, in the Lower Permian, over 250 mya, there was volcanic activity in the South Harz area – Ravensberg and Stauffenbüttel Mountains are evidence of this.



**Legend:** Black – Zechstein reefs; Red – volcanic formations; Green – Werra anhydrite; Yellow – Werra halite; Orange – Rotliegend; Royal Blue – Stassfurt dolomite/black shale; Dotted Blue – shallow-water deposits; Dark Blue – Zechstein limestone · By J. PAUL, Göttingen



Selected Points of Information

## Restaurants and Accommodations



Hotel garni „Sonnenhof“  
Bad Sachsa  
[www.sonnenhof-bad-sachsa.de](http://www.sonnenhof-bad-sachsa.de)  
☎ **0049 5523 - 94370**



Hotel Pension Ursula  
Bad Sachsa  
[www.pensionursula.com](http://www.pensionursula.com)  
☎ **0049 5523 - 932164**



Jugend- und Bildungshaus  
Tettenborn e.V. Bad Sachsa  
[www.jubi-haus.de](http://www.jubi-haus.de)  
☎ **0049 5523 - 8995**



Salztal Paradies  
Bad Sachsa  
[www.salztal-paradies.de](http://www.salztal-paradies.de)  
☎ **0049 5523 - 950902**



## REGIONALVERBAND HARZ E.V.



The Regionalverband Harz is a non-profit association incorporating the counties of Goslar, Göttingen, Harz, Mansfeld-Südharz and Nordhausen. It supports the protection of nature and environment as well as the cultural heritage of the Harz through the assistance of its sponsoring members. Its aims are achieved in part through the patronage of Nature Parks in the Harz region. As a partner in the Geopark Harz · Braunschweiger Land · Ostfalen GbR, newly founded in the year 2016, the Regionalverband is responsible for the southern portion of the UNESCO Global Geopark Harz · Braunschweiger Land · Ostfalen. Its partner association located in Königslutter is responsible for the northern portion. Since the year 2004, the Geopark Harz · Braunschweiger Land · Ostfalen has been a member of the European Geoparks Network.

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