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Rochlitz porphyry tuff (“Rochlitzer Porphyrtuff”): A candidate for “Global Heritage Stone Resource” designation from Germany

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Rochlitz porphyry tuff (“Rochlitzer Porphyrtuff”), a slightly welded ignimbrite from the North Saxon Volcanic Complex – a Permian supervolcano in East Germany – was used for millstones already in Neolithic age. The first use as building and sculpturing stone dates back to the early 12th century, when quarries at the Rochlitz Mountain (“Rochlitzer Berg”) provided stone blocks for ashlars, sculptures and other purposes in the region between Leipzig and Chemnitz. In the first half of the 20th century, the material was used for buildings in many other German cities, like Berlin, Dresden, Frankfurt, Hamburg, and Munich. Moreover, it was applied in Kaliningrad (Russia), Vienna (Austria) as well as in some places in the Czech Republic, Poland and Denmark. The stone is presented with its petrographic and technical properties. Furthermore, the use in ancient and modern buildings, the quarrying techniques and heritage issues are discussed. The old quarry area of the Rochlitz Mountain is part of the German National Geopark “Porphyryland”, and two quarries are still producing stone for construction and restoration purposes as well as for sculptures.

Introduction

The establishment of a “Heritage Stone Task Group” in the frame of IUGS (Cooper et al., 2013) offers the opportunity to designate important decorative and building stones of the world as “Global Heritage Stone Resource” (GHSR). The first nominee for this title was Portland Stone from the UK (Hughes et al., 2013), followed by a number of other candidates from all over the world (Pereira et al., 2015), of which 15 are designated as GHSR so far. This paper aims at presenting the red Rochlitz porphyry tuff from Saxony (Germany) as a valuable building and sculptural stone for more than 900 years and proposing it as a candidate for GHSR. Due to its strong colour and interesting structure it is a unique building stone in Germany, which has not only left its mark on the built heritage of the region since the

early days of its use, but has also been widely distributed in Germany and abroad, especially since the late 19th century. The history of quarrying and use of the Rochlitz porphyry tuff is strongly connected with the development of a mason’s lodge (established in Rochlitz since 1462). There is even a popular German stonemasons’ song from that time, dealing with the quarries of Rochlitz. Despite of the strong competition with international stone material from overseas especially in modern construction, the small occurrence of the valuable stone has been able to survive against its competitors. Today it is not only an important stone material for replacement and restoration works on historic buildings and monuments, but also an interesting option for modern construction.

Geology and Petrography

The Rochlitz porphyry tuff belongs to the rocks of the North Saxon Volcanic Complex of Permian (Rotliegend) age, which covers an area of about 2,000 square kilometres in north-western Saxony (Fig. 1). It is part of the late to post-Variscan magmatic activity in Central Europe. Sedimentary intercalations can be assigned to late Variscan molasses (Schneider and Romer 2010) and support a lithostratigraphic column with four formations (Walter 2012). The *Kohren Formation* with a thickness of 150–200 m at the base of the complex is composed of coarse-grained, debris-flow sediments with fluvial and rarely lacustrine intercalations as well as of acid, intermediate and basic volcanics and pyroclastics. The Rochlitz ignimbrite with a radiometric age of 294.4 ± 1.8 Ma (Hoffman et al., 2013) has formed the *Rochlitz Formation* with up to 400 m thickness, which nowadays is considered as the caldera filling of a supervolcano (Repstock et al., 2018). According to Walter (2012) and older authors, the Rochlitz porphyry tuff belongs to the younger *Oschatz Formation* with alluvial, fluvial and lacustrine sediments and acid pyroclastics and volcanics. However, the authors of recent investigations discuss it as part of the Rochlitz Formation, which is composed of ignimbrites with varying phenocryst content and composition (Hoffmann et al., 2013). The *Wurzen Formation*, another huge ignimbrite sheet with a radiometric age of 287 ± 3 Ma

Figure 1. Sketch map of Saxony showing the outcropping parts of the North Saxon Volcanic complex within the borders of the Geopark Porphyryland (left) and detail map with the occurrence of Rochlitz porphyry tuff and situation of historic quarries (right). The numbers indicate the position of important active and closed quarries on the Rochlitz Mountain: 1) Mühlsteinbruch, 2) Schillingbruch (active), 3) Mokorellenbruch, 4) Haberkornscher Bruch, 5) Seidelbruch, 6) Oberer Bruch (active), and 7) Gleisbergbruch.

(Wendt et al., 1995) and younger intrusive rocks, is the uppermost part of the series and evidence of a second supervolcano event which in turn lead to the formation of the Wurzen caldera (Repstock et al., 2018).

The outcrop of Rochlitz porphyry tuff is mainly limited to the geomorphological structure of the Rochlitz Mountain ("Rochlitzer Berg"), a small area of about 3 km² with maximum height of 353 m (Fig. 1).

According to the classification scheme of pyroclastic rocks (Fisher and Schmincke 1984, Le Maitre 2004), Rochlitz porphyry tuff can be assigned to the group of lapilli tuffs with regard to the grain size of its components (ash with embedded lapilli). After Fisher and Schmincke (1984), tuff is the consolidated equivalent of volcanic ash, which may contain some amount of lapilli (lapilli tuff). However, the fabric with "fiamme" and slightly welded structure in the Rochlitz tuff indicates its ignimbritic nature, i.e. it gives hints towards an origin from a pyroclastic flow. Latest research prefer the classification as an ignimbrite (Hoffmann et al., 2013; Repstock et al., 2018). The geochemical composition reveals SiO₂ contents between 70 and 75 wt%, Al₂O₃ 13–18 wt% and low alkalis (Na₂O + K₂O 0.1–0.25 wt%, Lange and Steiner

1974), corresponding to rhyolitic composition of the respective magma. Since the 19th century, it is often named "Rochlitz porphyry tuff" ("Rochlitzer Porphyrtuff") or even falsely "Rochlitz porphyry" ("Rochlitzer Porphyr", which is wrong in terms of modern petrology) by stonemasons and other practitioners working with it as a dimension or sculptural stone. The term "Rochlitz porphyry" is also used as commercial name by the producer today (Vereinigte Porphyrbüche auf dem Rochlitzer Berge 2018). In the European standard for natural stones (DIN-EN 12240 2018), it is called (more exactly) Rochlitz rhyolite tuff with regard to the geochemical type of the melt. Although the traditional term "Rochlitz porphyry tuff" does neither consider the ignimbritic nature of the rock nor the modern geochemical terminology, it is often used in historic and modern literature. Moreover, it is well known to all people working with it for construction or restoration purposes. Therefore, it is suggested to keep this name for the building and sculptural stone.

Macroscopically, the rock shows red to pale red colour caused by the groundmass and violet lapilli inclusions up to centimeter size, the

Figure 2. Macroscopic image of Rochlitz porphyry tuff with light yellowish veins of chert crossing the matrix (right figure margin 17 cm).

latter often elongated and flattened. In many parts of the rock small veins of light color (chert) cross through the matrix, giving the building stone a characteristic appearance (Fig. 2). Under the microscope, the groundmass mainly consists of quartz, heavily corroded morphological shapes of feldspar, rare biotite and clay minerals as well as very small-grained, disseminated hematite. Quartz and shapes of cor-

Figure 3. Thin section petrographic image of Rochlitz porphyry tuff, + Nicols. Phenocrysts of quartz (qtz) within a fine-grained matrix containing mainly quartz, kaolinite and some hematite.

roded feldspar can also be found as phenocrysts in the groundmass (Fig. 3). The high amount of kaolinite and quartz as well as traces of hematite were confirmed by X-ray diffraction, whereas feldspar could not be detected by this method. The material shows a porous texture with most of the coarse pores (mm size) filled with kaolinite in fresh

Table 1. Technical properties of Rochlitz porphyry tuff

	Source	Range / mean
Compressive strength [MPa]	Lange and Steiner 1974	13.5 ... 48.9
	Siedel 2006	23.6
	Wedekind et al., 2013	56
	Siegesmund and Dürrast 2014	23.6
Flexural strength [MPa]	Lange and Steiner 1974	6.8 ... 9.2
	Siedel 2006	5.1
	Siegesmund and Dürrast 2014	2.7
Tensile strength [MPa]	Wedekind et al., 2013	1.9 ... 2.8
	Siegesmund and Dürrast 2014	3.8
Young's modulus (statically measured) [GPa]	Lange and Steiner 1974	9.1 ... 14
	Siegesmund and Dürrast 2014	16.7
Young's modulus (dynamically measured) [GPa]	Lange and Steiner 1974	17
Apparent density [g/cm ³]	Lange and Steiner 1974	1.77 ... 2.17
	Wedekind et al., 2013	1.92
Real density [g/cm ³]	Lange and Steiner 1974	2.63 ... 2.72
	Wedekind et al., 2013	2.64
Effective porosity [vol%]	Wedekind et al., 2013	27.1
Total porosity [vol%]	Siedel 2006	30.0
Total water uptake (atmospheric pressure) [wt%]	Lange and Steiner 1974	6.9 ... 11.1
	Siedel 2006	11.0
Capillary water absorption coefficient w [kg/m ² √h]	Wedekind et al., 2013	3.4
	Siedel 2006	4.8
Hydric dilatation (water saturated) [mm/m]	Wedekind et al., 2013	0.360 ... 0.420
	Siedel 2006	0.670
Water vapour diffusion resistance μ [-]	Lange and Steiner 1974	13.3
	Siedel 2006	8.8 ... 18.2
	Wedekind et al., 2013	13.6

state, which can be easily washed out by running water after quarrying and during exposure on building façades.

Technical Properties and Weathering Behaviour

Technical properties of the Rochlitz porphyry tuff were presented in several papers (e.g. Lange and Steiner 1974; Siedel 2006; Wedekind et al., 2013; Siegesmund and Dürrast 2014) and unpublished reports and are compiled in Table 1. More or less scattering values for the technical properties from different measurements / samples reflect the formation by a natural process (pyroclastic flow with more or less siliceous parts, see above) which leads to inhomogeneity of the deposit. The presentation of the range of values from different sources given in Table 1 allows a more realistic assessment of the possible stone properties than single values. Further data for the currently quarried material can be obtained from results of standard tests provided by the producer (Vereinigte Porphyrbüche auf dem Rochlitzer Berge 2018).

Normally the Rochlitz porphyry tuff shows a good weathering resistance on buildings. In many cases, the stone has been exposed for centuries without remarkable damages. A statement with respect to its good weathering behaviour by Albinus (1590) displays the early knowledge about the material's quality gained by observation and the esteem as construction material. However, extreme salt load and moisture attack, e.g. in the zone of rising damp at the bases of buildings and walls, may cause deterioration and decay (Fig. 4), mainly resulting in weathering out of components, alveolar weathering, crumbling, or scaling (Siedel 1998, 2008).

Use for Construction and Other Purposes

Although the first use of Rochlitz porphyry tuff for gravestones and building stones was mentioned for the 9th and 10th century in some older sources (e.g. Herrmann 1899), the truth of this assertion can be hardly proved. Early uses as dimension stone on buildings can be found since the beginning of the 12th century, e.g. on the church St

Figure 4. Deterioration of Rochlitz porphyry tuff at the base of a late 19th century school building in Zwickau caused by rising damp and salt attack.

Kilian in Bad Lausick (erected after 1105) or on a tower of the castle in Rochlitz, dated 1115 (Siedel 2016). Long before, in the Neolithic, the Bronze Age, and the early Middle Ages Rochlitz porphyry tuff had already been used for the production of millstones (Beeger 1983), but this material might have come from boulders found in the forest rather than from quarries. At the early 12th century, the beginning of regular quarrying at Rochlitz Mountain is likely to get bigger volumes of stone for a wider use (Pfau 1898). This is reflected by the appearance of the Rochlitz stone on a greater number of buildings in the adjacent region at the same time.

In the first centuries of use, the Rochlitz porphyry tuff was mainly spread in the region around the quarries, not more than 100 km away from Rochlitz (Fig. 5a), and became widely distributed only since the late 19th century (Fig. 5b). In the region of quarrying, the building stone has been used on numerous churches as well as in secular buildings, like castles, town halls, or living houses, giving them their typical local appearance with the red colour. Beside the Cretaceous Elbe sandstone, it is the most important building and sculpturing material in the German federal state of Saxony, where it has been continuously utilized in different architectural styles over centuries.

Important *Romanesque* buildings are the above-mentioned church St Kilian in Bad Lausick (Fig. 6) and especially the collegiate church in Wechselburg near Rochlitz (built since 1160, Fig. 7). The latter covers a tomb and a rod screen (Fig. 8) with remarkable sculptures made of Rochlitz stone in the 12th and 13th century. Remnants of the older Romanesque parts (e.g. of a portal) are also preserved in the Rochlitz castle. Romanesque gravestones of Rochlitz porphyry tuff are present in several smaller churches of the region (Siedel 2016). On *Gothic* churches in Rochlitz (St Kunigunde, 14th/15th century) and Mittweida (St Maria, around 1476) Rochlitz porphyry tuff was utilized for ashlar in massive walls (Fig. 9), whereas in many other Gothic churches of the region the walls were erected with rendered local quarry stone. There, the precious Rochlitz porphyry tuff was preferably used for pillars and vaults, portals, window jambs, corner blocks and ornaments on façade faces (Fig. 10). Since the *Renaissance* time, the stone was widely used also in secular buildings in the cities. Good examples are the town halls of the cities of Leipzig (built 1556/57), Eilenburg (1544-1545) and Plauen (after 1548). In the wealthy city of Leipzig, in that time already a centre of international trade and place of trade fairs, Rochlitz stone left its mark not only on churches and on the town hall (Fig. 11), but also on the façades of living houses (Siedel 2013, 2016). In 1570/71, Renaissance galleries made of Rochlitz porphyry tuff were built in the church of St Thomas in Leipzig, where 150 years later J.S. Bach conducted his world-famous passions and cantatas. Most of the *Baroque* façades were rendered and painted, but Rochlitz porphyry tuff was also applied as ornamental stone in the region in this period (Fig. 12). Moreover, it was a frequently used material for the Saxon post milestones, a countrywide system of columns guiding stagecoaches on the main roads, which was established in the territory of Saxony since 1721 (Fig. 13). Furthermore, the material was applied for the construction of fountains, bridges and even for weights and cannon balls.

Since the middle of the 19th century, the rapid development of infrastructure with roads and railways facilitated the distribution of Rochlitz porphyry tuff, at the end of the century also far beyond the borders of Saxony. On the other hand, railway constructions like bridges and

Figure 5. Sketch maps showing the location of selected examples for the distribution of Rochlitz porphyry tuff on buildings and monuments: a) until 1850 in Saxony (the circle marks a distance of 100 km from the quarry district), and b) since the late 19th century in Germany and Europe.

Figure 6. Romanesque portal of the church St Kilian in Bad Lausick (first half of the 12th century), situated 15 km northwest of Rochlitz.

Figure 7. Romanesque collegiate church in Wechselburg (Zschillen) near Rochlitz.

station buildings needed large amounts of building stone. According to a reference list of the producer “Vereinigte Porphyrbüche auf dem Rochlitzer Berge GmbH”, Rochlitz porphyry tuff was used for the construction of viaducts and buildings for the railway line Leipzig-Chemnitz (1869-1872), the Muldental line (1874) and the line Leipzig-Eilenburg (1874), for the entrance hall of the Anhalter Bahnhof station in Berlin (1878), and others. Since the Rochlitz stone is of good technical and aesthetical quality, the high demand for building stones in Germany and the developing means of transport offered new economical chances for the quarry owners. There had been only five quarries around 1548 and ten at the beginning of the 19th century (Pfau 1898).

Figure 8. Rod screen inside the collegiate church in Wechselburg with sculptures made of Rochlitz porphyry tuff from the early 13th century.

Figure 9. Massive Gothic stonework with ashlars of Rochlitz porphyry tuff at the church St Maria in Mittweida (15th century).

In the early 1870's, Hermann (1899) reported 10-12 quarries with 250-300 workers and still nine working quarries with 130 workers in 1896. At the end of the 19th century (1896 and 1897), the volume of stone transported by railway from the new-built station nearby the quarries to northern Germany reached 3,000 tons, i.e. about 1,500 m³, per year (Hermann 1899). As a result, the attractive stone material now appeared on buildings and monuments in the northern parts of Germany, far away from the quarry region. Printed lists with reference projects published by the producer “Vereinigte Porphyrbüche auf dem Rochlitzer Berge GmbH” in 1911, 1921, and 1941 quote many examples from Saxony, but also buildings in other parts of Germany (Fig. 5b), like in

Figure 10. Early Gothic window (13th century) made of Rochlitz porphyry tuff in a wall made of quarry stones and bricks at the castle in Grimma (state in 2011).

Figure 12. Rochlitz porphyry tuff utilized on the façade of the district court building in Altenburg (Thuringia) in 1725. The Viennese sculptor Georg Blume made the decorative elements.

Figure 11. Town hall of the city of Leipzig from the 16th century with window jambs, arcades (renovated 1906-09) and ornaments of Rochlitz porphyry tuff.

Figure 13. Post milestone from the 18th century in Rochlitz.

the cities Berlin, Brandenburg, Bremen, Brunswick, Cologne, Cottbus, Detmold, Essen, Frankfurt/Main, Gera, Greifswald, Greiz, Guben, Halle, Hamburg, Hannover, Hildesheim, Hof, Leverkusen, Mainz, Munich,

Figure 14. Entrance of the Villa Esche in Chemnitz with decoration of Rochlitz porphyry tuff, designed by the architect Henry van de Velde (1911).

Potsdam, Quedlinburg, Weißenfels, and Wernigerode. Among them are churches, castles, schools, museums, town halls, courthouses, barracks, office blocks, hotels, living houses and villas, towers, factories, railway stations, bridges, and fountains. An outstanding example for the use of the decorative Rochlitz porphyry tuff from this period is the villa Esche in Chemnitz (1902-03 /1911, Fig. 14), a living house for the factory owner Herbert Esche. It was designed and built by the Belgian architect Henry van de Velde (1863–1957), a famous representative of the Art Nouveau, and is today part of the European Henry van de Velde Route. There are also some examples for the use of Rochlitz porphyry tuff in other European countries at the beginning of the 20th century. They are mentioned in the reference lists of the producer “Vereinigte Porphyrbüche auf dem Rochlitzer Berge GmbH” from

Figure 15. Inscription in the mausoleum for the philosopher Kant in Kaliningrad (Russia). Source: kyselak, CC BY-SA 3.0 (https://commons.wikimedia.org/wiki/File:Kant_kaliningrad.png).

1911, 1921, and 1941: buildings in Gdansk, Bydgoszcz and Lwówek (Poland), Chabařovice (Czech Republic), Vienna (Austria), Faaborg (Denmark), and an altar of a chapel in Belgium. Furthermore, Rochlitz porphyry tuff was used for the construction of a mausoleum for Immanuel Kant erected in 1924 in Königsberg (today Kaliningrad, Russia), commemorating the 200th birthday of the German philosopher (Fig. 15). Beside buildings, Rochlitz porphyry tuff has been used for numerous gravestones, monuments and even for sculptures. A beautiful example for gravestones from the early 20th century is the one for the Danish writer Karl Adolph Gjellerup (1857-1919, Nobel Prize laureate 1917) at the old cemetery in Dresden-Klotzsche (Fig. 16), but there are many more in cemeteries all over Germany. Still today, the material is carved for this purpose. With respect to buildings, Rochlitz porphyry tuff today is mainly applied for cladding on modern buildings and for replacement of weathered material on historic ones. The Catholic Church St Trinitatis in Leipzig (finished 2015, Fig. 17) is an excellent recent example for modern construction with the Rochlitz material, for which the Rochlitz quarry delivered 4,700 m³ of building stone. The building designed by Schulz and Schulz Architects, Leipzig, was honored with the Balthasar Neumann Award (European Prize for Architecture and Engineering) in 2016.

Figure 16. Gravestone of the Nobel Prize laureate of the year 1917, the Danish writer Karl Adolph Gjellerup, at the old cemetery in Dresden-Klotzsche.

Figure 17. The church St Trinitatis in Leipzig (finished in 2015), clad with Rochlitz porphyry tuff.

Quarries, Quarrying Techniques and the Rochlitz Mason's Lodge

In the small area of the Rochlitz Mountain (see Fig. 1) there are many abandoned quarries. Some of them are deep pit quarries (up to 60 m deep, Fig. 18), often with tool marks of the old quarrying techniques on their walls and at the bottom. Since the smooth stone shows nearly no bedding planes and wide spacing of joints, slabs were split off the bedrock by carving channels around them with the pick and subsequently loosening them along the base with the help of wedges. In the 20th century, machines were used to carve the channels, whereas today stone blocks are extracted in a larger, but shallower quarry by drilling and gently blasting (Fig. 19).

Quarrying, carving and using stone for construction purposes was organized in a mason's lodge as early as in 1462, when local craftsmen from Saxony gave themselves the respective rules known as Rochlitz rules ("Rochlitzer Hüttenordnung", Stieglitz 1829). Formally dependent on the Strasbourg main lodge, the Rochlitz lodge soon developed into an important regional institution, temporarily involving stonemasons from different other regions for the work on certain buildings. Still today, stonemasons in Germany know and sing the traditional stonemasons' song "Zu Rochlitz in dem Wald, wo unser Knüpfel schallt ..." ("At Rochlitz in the forest, where our hammer sounds ..."). It reflects the long tradition of artisanship that reaches back to the Middle Ages. Although the character of the lodge with

Figure 18. Abandoned, deep historic quarry on the Rochlitz Mountain (Gleisbergbruch).

Figure 19. Active quarry (Schillingbruch) on the Rochlitz Mountain, where blocks for dimension stones are produced (2010).

Figure 20. The historic machine for quarrying porphyry tuff blocks is part of the educational trail on the Rochlitz Mountain.

"mobile" stonemasons working with the Rochlitz porphyry tuff in the region around the city of Rochlitz changed in the 17th century when local resident stonemasons owned quarries and took over the older rules in a kind of guild, the tradition of the lodge was present until the 19th century (Pfau 1898). In 1897, most of the private quarry owners, some of them with family traditions reaching back to the 16th century, joined together in the factory "Vereinigte Porphyrbüche auf dem Rochlitzer Berge GmbH" (Hermann 1899). Also in respect to the planned application of the still existing European mason's lodges from Austria, France, Germany, Norway, and Switzerland for the UNESCO Intangible World Cultural Heritage List the close connection of Rochlitz and the Rochlitz porphyry tuff with the European tradition of mason's lodges is remarkable.

Heritage Issues

After Bavaria, Saxony is the federal state with the second highest "monument density" in Germany (1 monument per 39 inhabitants). Among the local building stones used in Saxony over centuries, the red Rochlitz porphyry tuff is the most conspicuous one with its typi-

cal color and texture. Especially in the northwestern part of the country (cf. Fig. 5), the Rochlitz porphyry tuff is a characteristic feature of historic buildings and monuments from all periods. Moreover, in the industrial period the Rochlitz stone was widely used all over Germany and abroad. Since the Rochlitz porphyry tuff is unique with respect to its color and structure, the availability of the original material is crucial for appropriate restoration measures (replacement of decayed parts) on historic buildings and monuments. Nowadays the utilization of Rochlitz porphyry tuff for construction combines local material tradition and modern architecture.

The Rochlitz Mountain is one of the 77 officially designated national geologic sites of special importance (“Nationale Geotope”) in Germany (Goth and Suhr 2007). Today it is part of the German National Geopark “Porphyryland. Steinreich in Sachsen” (short form: Geopark Porphyryland; established in 2007; certified in 2014; Fiedler et al., 2016), which covers large parts of the North Saxon Volcanic Complex (Fig. 1). Tourism to visit the Rochlitz Mountain with its beautiful panorama view has a long tradition and is reported already for the early 19th century (Krüger et al., 2014). A lookout (27 m high) was built of Rochlitz porphyry tuff on top of the mountain in 1857. Today, more than 30,000 visitors per year visit the Rochlitz Mountain and learn about the geology and the quarrying of the Rochlitz porphyry tuff (Krüger et al., 2014). The respective educational trail with stations showing the old quarries with their buildings and technical equipment (Goth et al., 2016) was established in 2006 (Fig. 20). Moreover, the geopark management offers route suggestions in the surroundings of the Rochlitz Mountain to visit historical buildings made of Rochlitz porphyry tuff.

Conclusion

The designation of Rochlitz porphyry tuff as GHSR would appreciate a stone material that is unique in color and structure in Germany. As demonstrated above, it tells the story of more than 900 years of continuous quarrying, building and sculpturing in a region in the middle of Europe with a high density of monuments made of this construction material. Until the 19th century, the use of Rochlitz stone had been closely connected with the rules and traditions of the Rochlitz mason’s lodge. A more industrial production started before the turn of the 19th century. Since the beginning of the 20th century, Rochlitz porphyry tuff for construction purposes has been brought also to other German regions like the cities of Hamburg, Berlin, Frankfurt, and Munich. In some cases applications of the Rochlitz porphyry tuff in other countries are mentioned, e.g. in Denmark, Poland, Austria, and Russia. The traditional company “Vereinigte Porphybrüche auf dem Rochlitzer Berge GmbH” (founded in 1897) still produces Rochlitz porphyry tuff for building and sculpturing purposes, which is essential for the appropriate restoration of numerous buildings and monuments in the region and above. Recent examples of modern constructions demonstrate that the material is also attractive for contemporary architects. The abandoned historic quarries on the Rochlitz Mountain with their equipment and buildings are presented today along an educational trail, which was established in the frame of the National Geopark “Porphyryland”. The official designation of the Rochlitz Mountain as national geologic site of special importance (“Nationales Geotop”) is due to the excellent outcrop situation in the quarries as well as to the

long tradition of the quarried material as a building stone. The long period of historic use of the Rochlitz porphyry tuff, its wide-ranging geographic application in significant public and industrial projects as well as the ongoing availability for construction purposes and the importance of the Rochlitz lodge for German mason’s tradition encourage the authors to propose the Rochlitz porphyry tuff for designation as GSHR. This designation would foster the further continuous production and the use of the traditional material for modern construction as well as for the appropriate restoration of buildings and monuments made of Rochlitz porphyry tuff with the original stone material. Moreover, it shall help to promote the activities in the German National Geopark “Porphyryland”. They aim at making natural heritage aspects of the Rochlitz Mountain as a geological site of special importance (including super-volcanism) as well as cultural heritage aspects of the Rochlitz porphyry tuff as a building and sculpturing stone more popular to the public.

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