



# Paul Geipel's palaeobotanical collection – one of the largest and most important former private collections of the Petrified Forest of Chemnitz

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## Abstract

Recently, the forgotten fossil wood collection of Dresden's pathologist and patron Paul Geipel was rediscovered. Today, the collection is stored at the Museum and Art Collections Schloss Hinterglauchau, Germany, as part of the Prof. Dr. Paul Geipel Foundation. The collection may be one of the largest and most important former private collections of the Chemnitz Fossil Lagerstätte. The well-preserved specimens include major fossil-genera of the tree-shaped plants from the central European early Permian and several specimens from other sites. In addition, this investigation provided an insight into a historical period of collection research at the beginning of the 20<sup>th</sup> century, as well as onto an international network of collectors, such as Max Güldner, Richard Baldauf and Adolf Theodor Zacharias, and scientific writers, such as the palaeobotanist Karl Rudolph, the mineralogist Richard Beck and the geologist Leo Wehrli.

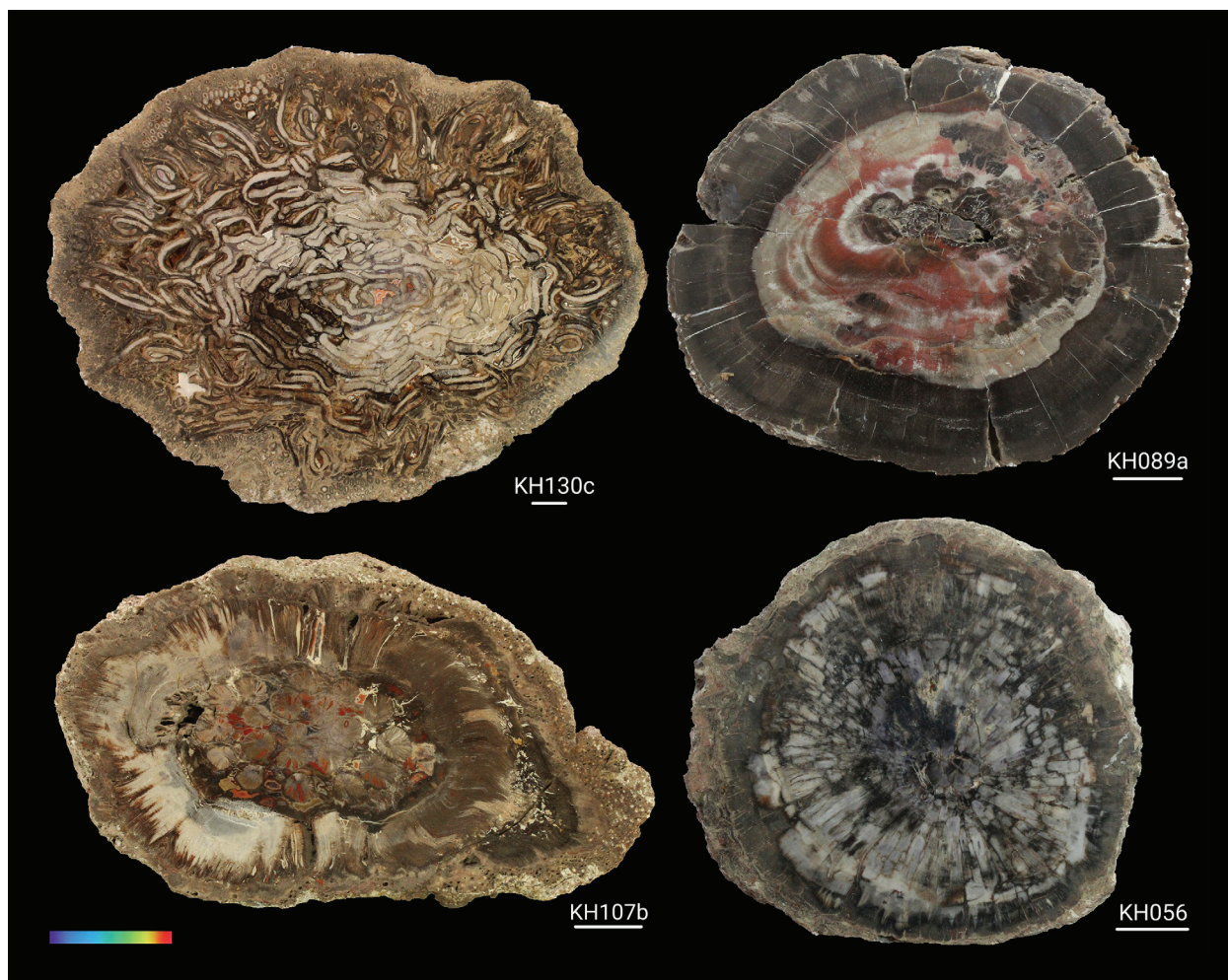
## Keywords

Calamitaleans, Chemnitz Fossil Lagerstätte, collection, history, Medullosales, palaeobotany, Psaroniales

## Paul Geipel's palaeobotanical collection and the Chemnitz Fossil Lagerstätte

Fossil woods are among the most valuable fossil witnesses of the history of Earth and life. They attract attention because of their often gem-like appearance and colour, but they also reveal their anatomical details and offer an essential insight for reconstructing ecosystems back in deep time. Preserved with mineral substances for millions of years, they intriguingly document their growth, environmental and climatic conditions of their habitat, and even their interaction with other plants, animals and microorganisms. One of the world's most important localities of fossil wood is the Chemnitz Fossil Lagerstätte

(Petrified Forest of Chemnitz), where parts of an entire Permian ecosystem (about 291 Ma ago) were preserved in situ (Rößler et al. 2012; Rößler 2021). Especially in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, fossil woods from Chemnitz (Fig. 1) were distributed by purchase and exchange among different collections worldwide, quite a common practice in the 19<sup>th</sup> and early 20<sup>th</sup> centuries (Löcse et al. 2017, 2019). Today, the former practice of distributing fossil wood represents a severe research obstacle. Moreover, several historical collections have been torn apart during the instability created in Europe by the First World War (1914–18) and World War II (1939–1945). For further paleobotanical research, it is crucial that historical collections be found and registered to make them available for further investigations. Recently, at the Museum of Natural History in Chemnitz, through the analysis of



**Figure 1.** Selected fossil woods from the well-known Petrified Forest of Chemnitz. Among Geipel's collection are *Psaronius* tree ferns (KH130c), *Arthropitys* tree-sized horsetails (KH089a), Medullosan seed ferns (KH107b), and coniferous gymnosperms (KH056).

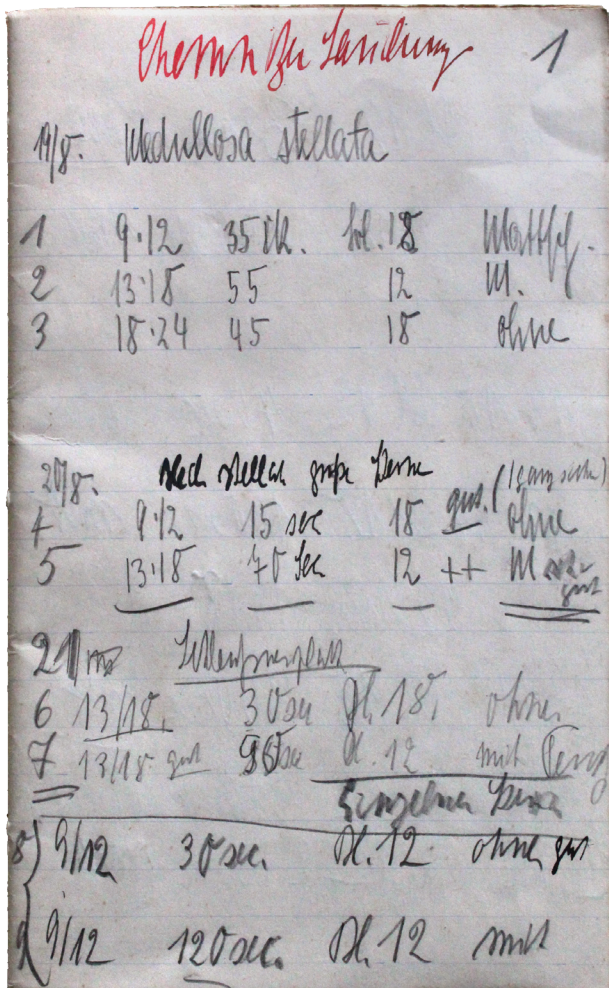
an extensive network of local and professional collectors that has existed for about 200 years, we were able to reconstruct the long-term collection history of the Late Carboniferous tree fern *Tubicaulis solenites* (Löcse et al. 2017). The study contributed to the history of European natural sciences in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries and provided new, directly relevant palaeontological insights. During this research, the Museum and Art Collections Schloss Hinterglauchau (MACSH) became the focus of interest. An older essay on the collectors of the Petrified Forest of Chemnitz told that a collector donated his entire fossil wood collection there:

*Zur Geipel-Sammlung gehören etwa 120 Kieselhölzer, die alle in bestem Zustand und einwandfrei angeschliffen sind. Der Sammler hat offensichtlich nur besonders dekorative Exemplare gesammelt und anschleifen lassen.* (Nötzold 1966: 527)

Detailed enquiry revealed that the palaeontological collection in the MACSH contains 181 fossil woods, which are assigned to the estate of Rudolph Paul Geipel. Unfortunately, written documents regarding this extensive and high-quality collection of predominantly fossil woods

from Chemnitz are no longer findable. However, Geipel's estate revealed a notebook with initially quite cryptic records (Fig. 2). As it soon became evident, Geipel noted times and apertures to a series of recordings with meticulous exposure. He had made the recordings himself and called them '*Chemnitzer Sammlung*' (Chemnitz collection) and '*Englische Sammlung*' (English collection). It turned out that the MACSH has an extensive collection of contemporary glass photographic plates (positives and negatives) and contact prints which previously were believed to exhibit tissue preparations made by the pathologist during his Dresden years. In fact, these photographic glass plates exhibit thin sections of Permian petrified woods and Late Carboniferous fossil plants, which can be assigned to the entries in Geipel's notebook. The photographs date back to the years 1918–1925 (Fig. 3). Whereas the '*Chemnitzer Sammlung*' referred to petrified woods of Chemnitz, the '*Englische Sammlung*' documented fossiliferous coal-ball thin sections, which were initially made by James Lomax and bought by Johann Traugott Sterzel from the Chemnitz Natural History Collections in 1900.

A total of 169 fossil-wood specimens from Geipel's collection are unambiguously assigned to the Chemnitz



**Figure 2.** In his notebook, Geipel documented times and apertures to a series of recordings with meticulous exposure, which he made by himself and called them ‘Chemnitzer Sammlung’ and ‘Englische Sammlung’.

Fossil Lagerstätte (Löcse and Rößler 2018). Among them are *Psaronius* tree ferns, *Medullosa* seed ferns, *Arthropitys* tree-sized horsetails, cordaitaleans and conifers. One fossil wood most likely comes from the Petrified Forest of Arizona, USA. The origins and stratigraphic positions of the remaining 11 fossil wood fragments are currently unknown. Most of the specimens were elaborately prepared for scientific purposes. In addition to numerous cuts, the surfaces revealing that they were ground and polished on a sand wheel, Geipel was apparently also making thin-section preparations.

Furthermore, the numerous glass photographic plates and photographs show various historical thin sections from the Natural Science Collections Chemnitz, which Geipel recorded in an elaborate photo series in the 1920s. Among them are photographs of the thin sections of the crucial palaeontological work on the medullosan seed-fern stems of Otto Weber (1858–1910) and Johann Traugott Sterzel (1841–1914) from Chemnitz (Weber and Sterzel 1896) and the original photographs of the publications by Richard Beck (1858–1919) from Freiberg/Germany (Beck 1920) and Karl Rudolph from Prague (Rudolph 1922).

## Rudolph Paul Geipel (1869–1956) – Pathologist, collector and patron

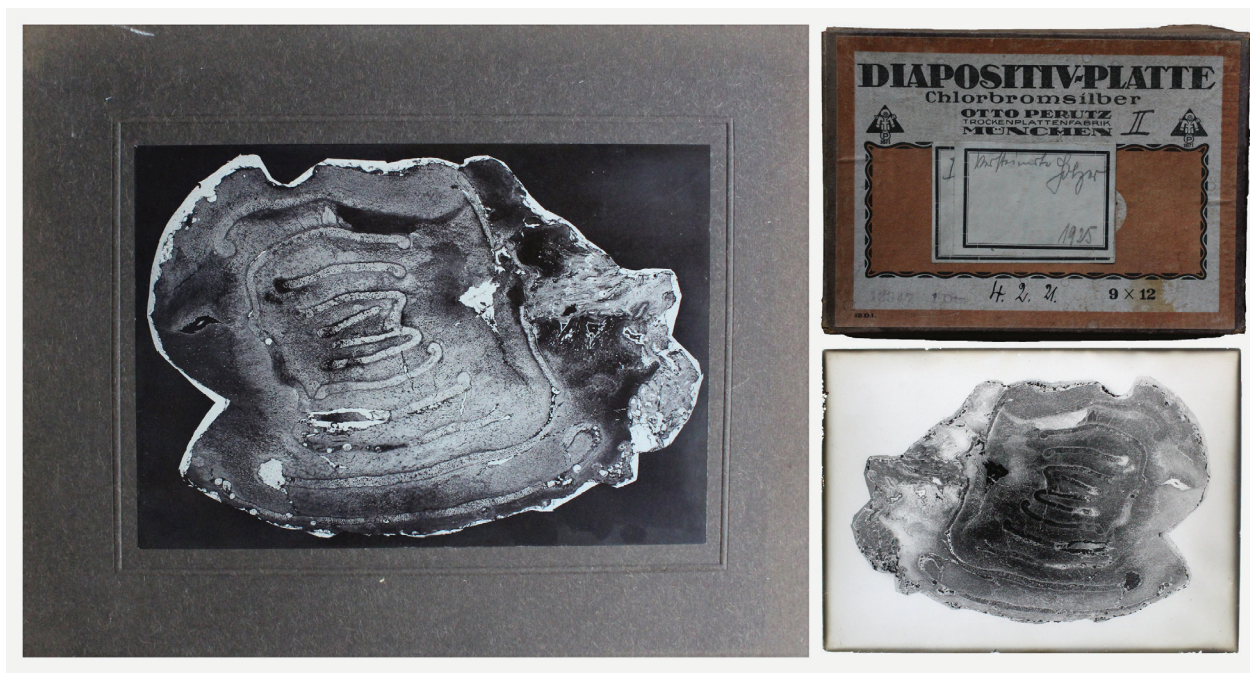
Geipel was born on the 6<sup>th</sup> of February, 1896 in Zwickau. He was the second of four children of Johanna Fanny Geipel (1842–1886), born Schüffner, and Leander Geipel (1841–1905). His father worked as a general medical practitioner in Zwickau, while his mother cared for the children and did the housekeeping. Together with his older sister Helene Geipel (1867–1945), and his two younger siblings Therese Sophie Geipel (1870–1929) and Max Philipp Geipel (1871–1925), he spent a carefree childhood and adolescent years in a well-to-do middle-class parental home. Yet, his mother’s death marked a cut when she succumbed to meningitis in 1886. Only a few years later, his father married again. From this marriage, Lina Louise Geipel (1892–1963) emerged.

Geipel’s high school graduation took place in Zwickau. Like his father, Geipel studied medicine after graduation. He enrolled at the University of Leipzig in 1889–1895 and received his doctorate in 1896. After various stations in Strasbourg, Hamburg and Giessen, Geipel joined the newly built Dresden-Johannstadt Hospital in 1901 as Prosector, a position he held until the hospital’s closure in 1932. For another three years until his retirement in 1935, Geipel, who had been appointed a professor by the Saxon State Government in 1911, succeeded as Prosector the German pathologist Georg Schmorl (1861–1932) at the Dresden-Friedrichstadt Hospital (Fig. 4). During the post-war years from 1948, Geipel acted as head of the histological department at the Saxon Serum Works, Dresden.

Overall, Geipel achieved international recognition through his works on rheumatic myocarditis, in which he proved and reproduced histiocytic nodules. These rheumatic granulomas, previously described by the pathologist Ludwig Aschoff (1866–1942) of Freiburg, are today known as Aschoff-Geipel Nodules (Aschoff 1904; Geipel 1905).

In addition, Geipel used his financial resources to indulge in his extensive, intense collecting passion, which covered mainly graphics of old and new masters but also paintings and sculptures. With his purchases, he supported Dresden artists, mainly. Over the years, he acquired hundreds of artworks. In several stages, starting in June 1943, the patron Geipel donated his collections to the City of Glauchau. He donated around 300 sculptures to the Museum of Fine Arts in Leipzig. Geipel died on 14 October 1956. For further biographical information on Paul Geipel, see Winkler (1990), Justus (2007), Götze and Teumer (2016) and Götze (2019).

It has been unknown for many years that the art collector Geipel also developed special palaeontological and mineralogical interests (Löcse and Rößler 2019a; Brandt and Löcse 2019; Thalheim 2019). Only the rediscovery of his palaeobotanical collection, based on a hint of Tilo Nötzold (Nötzold 1966), bears witness to the combination of his passion for collecting and his scientific interest in the Chemnitz Fossil Lagerstätte.



**Figure 3.** Part of Geipel's estate is an extensive collection of contemporary glass photographic plates (positives and negatives) and contact prints which exhibit thin sections of fossil woods such as *Psaronius simplex*. The photographs date back to 1918–1925.

### Tilo Nötzold (1926–1985) and his study on the collectors of the Petrified Forest of Chemnitz

More than 50 years ago, a short essay made it possible to rediscover Geipel's palaeobotanical collection by including a brief reference to the forgotten collection. Among other things, it was told that a collector, called Geipel, had left his entire collection of fossil wood at the 'Städtisches Museum Glauchau, Sa., Schloss Hinterglauchau' (Nötzold 1966: 527).

The author of the study, Tilo Nötzold, was born on the 19<sup>th</sup> of August 1926 in Neuschönburg in the Erzgebirge (Saxony) and grew up in Chemnitz where he also attended school. Due to World War II, he left school in 1942 with an emergency exam to be drafted into the Wehrmacht. In July 1944, seriously wounded, he finished his regular high school diploma after the war and studied chemistry and biology in Heidelberg and geosciences in Freiburg. He received his doctorate in 1955 on Miocene plants (Nötzold 1957). In the following years, Nötzold devoted himself exclusively to palaeobotany. In 1956, he returned to the GDR, where he started working in the Geological Commission and later at the German Academy of Sciences in Berlin (Sauer 1986).

As a local citizen, Nötzold knew the Chemnitz Fossil Lagerstätte and the collections in Glauchau. His motivation for writing about the collectors of the Chemnitz Fossil Lagerstätte is provided in his essay himself:

*Die alten Sammler sind ... verstorben und, sofern nicht Sterzel genaue Fundortsangaben veröffentlicht hat, werden bald auch keine weiteren Fund- und Bearbeitungsunterlagen mehr in Erfahrung zu bringen sein. Daher galt*

*es nunmehr, die wenigen noch auffindbaren Unterlagen zusammenzutragen, die Verwandten der alten Sammler zu befragen und eventuell noch vorhandenen Briefwechsel zu sichten.* (Nötzold 1966: 521)

Nötzold wrote this when active palaeobotany was not represented in Chemnitz. The Chemnitz Natural Science Collections had been affected by World War II. The rebuilding in the postwar years focused on general geological, but especially biological issues, with which the Sterzeleanum with its precious petrified wood had to compete for attention. Only in 1971, the opening of the newly designed Sterzeleanum heralded a new era (Kogan 2016). At this time, Nötzold's health had already deteriorated severely. He died on 1<sup>st</sup> of July 1985 in Berlin, just a few days before his 59<sup>th</sup> birthday (Sauer 1986).

### Paul Geipel and the collectors of the Chemnitz Fossil Lagerstätte Max Güldner (1872–1947) and Otto Weber (1858–1910)

Little was known about the origin of Geipel's palaeobotanical collection. One reference was provided by Nötzold, who quoted a report written by Max Güldner shortly before his death about the circumstances and the whereabouts of fossil wood collections from Chemnitz:

*Später besuchte er [Zacharias] mich mit Herrn Prof. Geipel. Herr Zacharias war als Privatmann nach Dresden gezogen. Beide Herren brachten es fertig, mir immer*



**Figure 4.** Left: the art collector Geipel in his Dresden apartment; right: the pathologist Geipel at the Dresden-Friedrichstadt Hospital. (Reproduced by permission of the MACSH, Glauchau)

*wieder einige Stücke abzuhandeln. Da sie genau wie das Museum die Schleifkosten trugen und mir einen geschliffenen Stein von jeder Versteinerung überließen, war es mir gleich.* (Nötzold 1966: 524)

With the beginning of industrialization in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries in Saxony, a brisk building activity began in Hilbersdorf, which, from 1904 onwards, became part of the City of Chemnitz. Güldner, who had been a member of the Chemnitz Society of Natural Sciences (Naturwissenschaftliche Gesellschaft zu Chemnitz) since 1919, was entrusted as an entrepreneur with the execution of numerous construction contracts. He used his construction business to keep all the fossil wood he found safely. He gave many of the findings to the Municipal Natural Science Collections Chemnitz. For a cut and polished specimen that he kept himself (Fig. 5) he gave a short account before his death:

*Aber ich habe es vorgezogen, diese Funde meiner Heimatstadt zu überlassen, und so habe ich nach Rücksprache mit Prof. Sterzel einige der wertvollsten Steine zur Erhaltung an das Museum übergeben.* (Nötzold 1966: 524)

Over the years, Güldner's collection has become one of the largest private fossil wood collections from the Petrified Forest of Chemnitz. Regarding his collection, Güldner died testate in favour of his three grandchildren, as long as the heirs would keep the collection closed. Yet, the collection did not remain closed. Today, we are aware of only one-third of Güldner's collection. The fossil wood collection of the Museum of Natural History in Chemnitz owes Güldner numerous valuable specimens (Rößler and Zierold 2017). For example, the unique *Grammatopteris baldaufi* tree fern found its way

into palaeontology through Güldner's business. It was discovered by Bruno Winkler, a foreman in Güldner's construction company.

Geipel apparently received at least some of his fossil woods from Güldner. However, this cannot explain the palaeobotanically motivated processing of the fossil woods in Geipel's collection and their extensive photographic documentation.

Part of Geipel's photographic works show thin section preparations of medullosan seed ferns, which are also located in the Museum of Natural History in Chemnitz (Fig. 6). Otto Weber, a private scholar in Chemnitz, ordered them in the years 1880 to 1885 as a student at the Botanical Institute of the University of Leipzig at his own expense. The thin sections were prepared in a huge format which was certainly very expensive. Weber's friend and fellow student at Leipzig University, Franz Etzold, meticulously drew fossil tissues shown by the thin sections. The drawings served as the basis for engravings. Finally, Sterzel published these illustrations in the context of his monograph on the Medullosans (Weber and Sterzel 1896). Geipel photographed the thin sections between 1918 and 1920 in a great photo series. Therefore, we searched in the biography of Geipel for more hints of a connection between Geipel and Weber. The beginning of Geipel's study time in Leipzig (1889–1895) coincided with the last years of Weber's studies, who had given up his study for health reasons in 1885. Unfortunately, it is neither excluded nor proven that Geipel and Weber knew each other. But it is to be assumed.

Although he has been one of the most zealous collectors of the Petrified Forest of Chemnitz, not much is known about Weber. He grew up in Hilbersdorf, the quarries with valuable fossils outside the front door. It was Weber who introduced the contractor Güldner to the palaeontologist Sterzel:



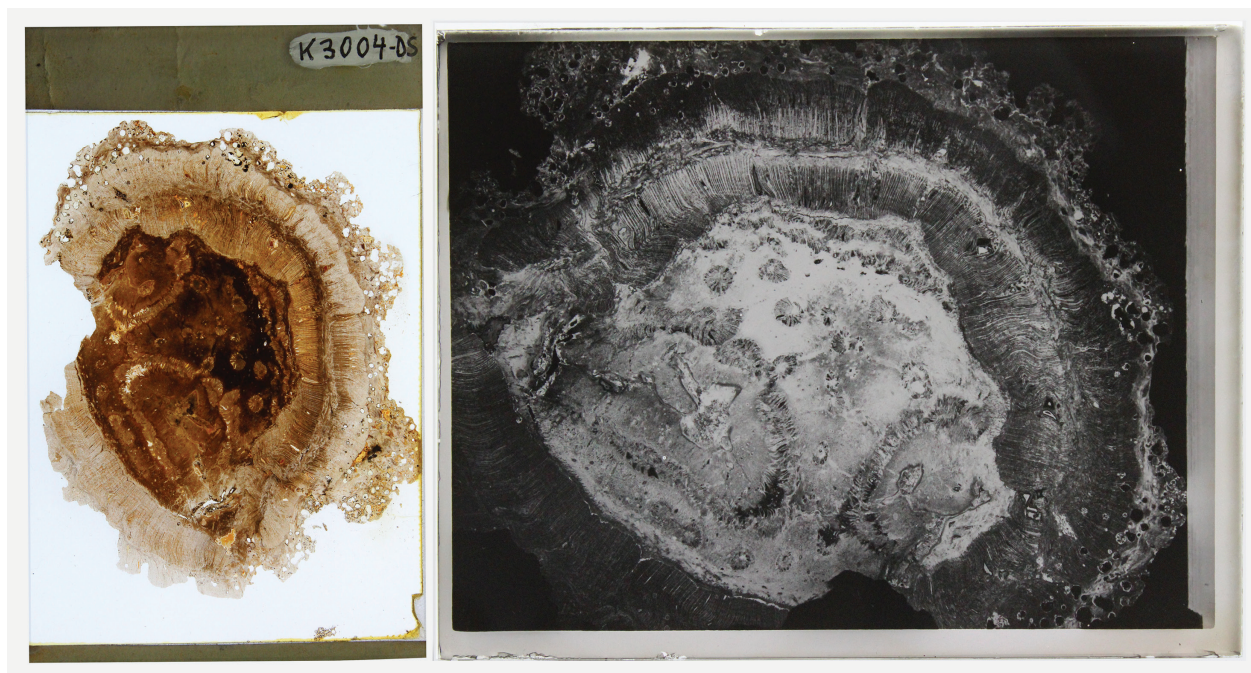
**Figure 5.** Specimens from Geipel's collection (KH numbers) proved to be counterparts to specimens from the Museum of Natural History in Chemnitz (K and red numbers). *Arthropitys bistriata* (KH023b, fits to K3271a, 289c [red]), and *Calamitea striata* (KH025a, b fit to K314). Scale bar: 2 cm.

Er [Weber] scheute keine Mühe, meinen Polier Winkler und mich [Güldner] auf die Versteinerungen aufmerksam zu machen. So trat bei uns der Sammeleifer ein, der sich bis zu einer Leidenschaft steigerte. ... Herr Weber ist bei jeder Ausschachtung dabeigewesen und hat die Baustelle den ganzen Tag über nicht verlassen, damit ja keine Funde verloren gingen. ... Das meiste jedoch erwarb Prof. Sterzel, mit dem uns Herr Weber bekannt machte. (Nötzold 1966: 523)

The collection of petrified wood at the Museum of Natural History in Chemnitz owes Weber numerous striking specimens, such as the famous 'Great Psaronius', that Sterzel named *Psaronius weberi* in honour of Weber. Above all, in addition to the fossil woods, there are other fossils like imprints of fern fronds and casts of calamitaleans, which Weber saved after years of painstaking work and assigned to the Chemnitz collection (Rößler 2001).

## Paul Geipel and the Czech palaeobotanist Karl Rudolph (1881–1937)

An inconspicuous entry in Geipel's photo notebook provided another important hint. The last entry in this notebook tells: 'Medull. Stellata (Dünnschliff) von Dr. Rudolph'. The entry is undated, but the note immediately above bears the date of 17 June 1920. Who was 'Dr. Rudolph'? On the backside of three of his Passepartouts Geipel noted: 'Dünnschliff Dr. Rudolph Prag, Dec. 1920'. Once again, a reference to 'Dr. Rudolph' is in addition connected with a vague connection to Prague. Our inquiry to colleagues at Charles University revealed that Prof. Dr. Karl Rudolph at the former German University of Prague had taught palaeobotany and plant geography. Their answer contained the crucial clue:



**Figure 6.** Geipel's thin section photograph (right) of a Medullosan seed fern (K3004 DS) made from one of the precious originals of Weber (left), Museum of Natural History Chemnitz.

*Unfortunately, we do not have any estate of Karl Rudolph. He died in 1937 in Prague, and a lot of material from the German University in Prague was lost during and after the Second World War. ... [We have only] some biographic articles in German. (Čermakova L, private communication, Prague, 2017)*

Among the works sent were biographical notes on Rudolph, as well as an extensive bibliography (Firbas and Pascher 1937; Schmeidl 1993). He grew up in his birthplace Teplice in the Czech Republic. His father Carl Herrmann Eduard Rudolph (1846–1924), a German architect, was a friend of Dr. Richard Julius Baldauf, the well-known mining engineer, entrepreneur, patron and mineral collector from Dresden (Czekalla 2011). After graduating from high school in 1900 in Teplice, Rudolph moved to Vienna where he obtained his doctorate in 1905 with a thesis on *Psaronius* tree ferns (Rudolph 1906). After research stays at the universities of Jena and Чернівці (Tscherniwzi, Western Ukraine), Rudolph researched and taught from 1913 at the German University in Prague. Morphology of recent and fossil plants were his main research areas. He intensively dealt with the postglacial development of the moors of Bohemia and the Ore Mountains. In the 1920s, Rudolph again turned to fossil woods (Rudolph 1921, 1922). In one of his remarkable publications, he wrote at the beginning:

*Durch die Liebenswürdigkeit des Herrn Prof. Dr. Geipel in Dresden kam ich in den Besitz eines Stammstückes von Medullosa stellata aus dem Rotliegenden von Chemnitz in Sachsen, das er mir aus seiner schönen Sammlung verkieselter Hölzer freundlichst zur Bearbeitung überließ. (Rudolph 1922: 196)*

And further, it said:

*Von dem erwähnten Exemplar – ich werde es weiterhin mit Rücksicht auf seine Herkunft aus der Sammlung Geipel kurz mit MG bezeichnen – lagen zwei durch Zerschneiden gewonnene Hälften vor. Die untere Hälfte MG1 verblieb in der Sammlung Geipel in Dresden, die obere Hälfte ist in meinen Besitz übergegangen. Beide Stammstücke sind ungefähr 7 cm hoch. Meine Hälfte wurde dann weiter durch Herstellung eines Querschliffes aus der Mitte in zwei Hälften MG2 und MG3 geteilt. ... MG3 wurde dann weiter der Länge nach gespalten und ein medianer Längsschliff entnommen. (Rudolph 1922: 197)*

Rudolph figured this cross-section on plate III. One of the pictures which Geipel made so careful can be seen. Rudolph concluded his essay with the following acknowledgement:

*Herrn Professor Dr. Geipel, dem ich das untersuchte Stück und damit auch den Anstoß zu der Arbeit verdanke, der mir auch durch Anfertigung von Photographien desselben und anderweitig freundlichst half, ferner der Direktion der naturwissenschaftlichen Sammlung des Chemnitzer Museums und der paläontologischen Abteilung des böhmischen Landesmuseums, spreche ich auch hier meinen verbindlichsten Dank aus. (Rudolph 1922: 197)*

The designated piece MG1 is now found under KH092 in the Geipel Collection. Geipel prepared selected fossil woods, particularly *Medullosans*, for Passepartoutsbotanical studies by Rudolph and maintained close cooperation with him. Accordingly, Geipel started with systematic photographic work in the Museum of Natural History in Chemnitz.

## A unique fossil tree fern – a connection between Geipel, the mineralogist Richard Beck (1858–1919) and the entrepreneur Richard Julius Baldauf (1848–1931)

The provenance of Geipel's photographs of the *Grammatopteris baldaufi* tree fern was also possible to be elucidated. An in-depth comparison of the well-known original thin sections of *G. baldaufi* with Geipel's pictures revealed that the thin section, which had been photographically processed by Geipel, is one of the sections stored in Freiberg. Geipel performed a series of additional detail shots from this thin section that was provided by the Freiberg mineralogist Richard Beck. Beck wrote:

*Am Schlusse spreche ich Herrn Dr. K. Rudolph (Prag) für seine freundlichst erteilten Ratschläge in bezug auf den Bau der Wurzeln des vorliegenden Restes und Herrn Prof. Dr. Geipel (Dresden) für die liebenswürdige Herstellung guter Dünnschliffphotographien meinen ergebensten Dank aus.* (Beck 1920: 522)

It was Beck himself who turned to Rudolph for the interpretation of individual tissue structures: *‘Einem vorzüglichen Kenner der Histologie fossiler Farne, Herrn Dozent Dr. Karl Rudolph von der deutschen Universität in Prag, dem ich den Fall brieflich vortrug.’* (Beck 1920: 519). Beck died before his work on the newly discovered fern appeared. Twelve years later, the Indian palaeobotanist Birbal Sahni (1891–1949), working on Paleozoic ferns, commented on Geipel's photographs and summarized the work as follows: *‘Beck published several good photographs, but his description is incomplete and inaccurate.’* (Sahni 1932: 866)

Geipel's palaeobotanical exhibits most likely came with parts of his brother Max' mineral collection from Dresden to Glauchau in 1945/46. A connection to the city of Glauchau arose for Geipel by his sister Lina Louise. On 8<sup>th</sup> February 1917, she married Ernst Otto Schimmel (1889–1930), who became Mayor of Glauchau in 1929. Lina Louise played a key role in Geipel's bequest of his collections to the City of Glauchau (Götze and Teumer 2016). In 1946, Geipel wrote to Arthur Neuberger (1866–1961), a mineralogically interested theologian in Dresden:

*Meine Mineraliensammlung ist nicht mehr in meinem Hause, sie ist nach dem Terrorangriff in das Museum der Stadt Glauchau, zu dem ich vielfache Beziehungen unterhalte, überführt worden um nicht wieder hierher zurückzukehren. Sie geht in den Besitz des Museums über; es war nicht leicht davon mich zu trennen, aber sie kommt in gute Hände und soll einst der Allgemeinheit nützen.* (A letter Geipel's to Oberkirchenrat Neuberger in the inventory of the Sächsische Landes- und Universitätsbibliothek, Signatur Mscr. Dresd. App. 1201, A, 186.)

Geipel's palaeobotanical collection was partly presented in the Knight's Hall of the castle Hinterglauchau. The latter is suggested by a note from Nürnberger: *‘Der sich an den Gang anschließende Rittersaal mit der Geipelschen Mineraliensammlung sowie der Agricola-Ehrenraum wurden ebenfalls dem Besucher wieder erschlossen.’* (Nürnberger 1980). Presumably, these are the 120 specimens mentioned by Nötzold (Nötzold 1966). The remaining materials may have been kept in the non-public area of the museum. When redesigning the Knights' Hall and the Mineral Exhibition at castle Hinterglauchau in the 1970s, the fossil woods were cleared away and fell into oblivion during the following decades.

## The Swiss geologist Leo Wehrli (1870–1954) and Adolf Theodor Zacharias (1861–1931), City Council and petrified wood collector in Chemnitz

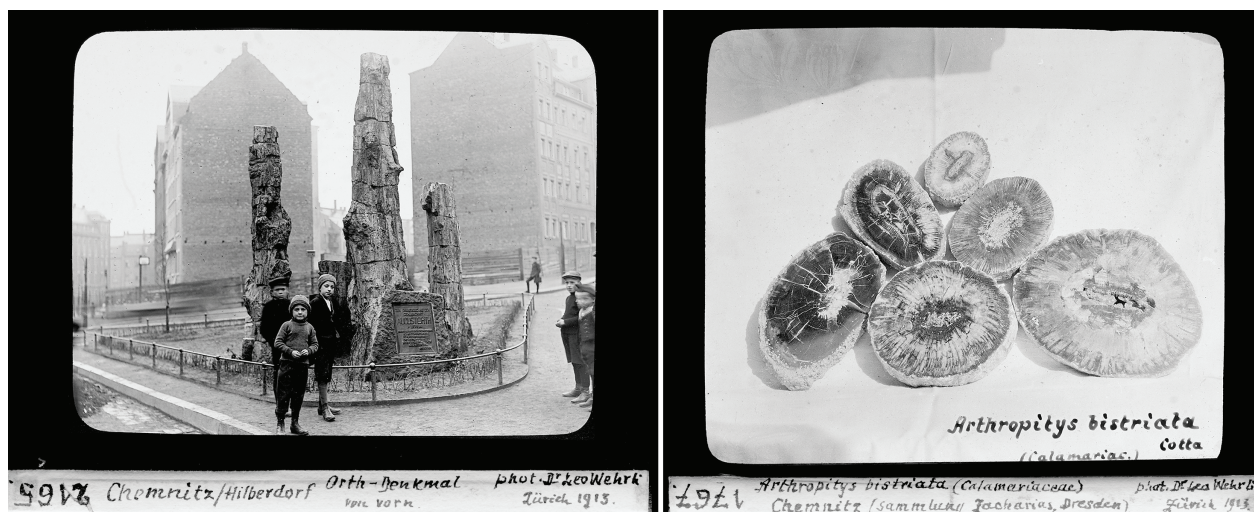
Leo Wehrli, a Swiss geologist, taught chemistry and geology as a high school teacher in Zurich from 1900 until his retirement in 1935. After seeing the coal mines of Upper Silesia (Poland), he visited the Chemnitz Fossil Lagerstätte (Löcse and Rößler 2019b). Wehrli wrote a report on the latter (Wehrli 1915). On the attached plates I–II, Wehrli showed photographs of petrified trees in front of the King Albert Museum in Chemnitz, at the Orth Monument in Chemnitz-Hilbersdorf and near the city library in Chemnitz (Fig. 7). The photographs on plates I–III were taken on 17<sup>th</sup> April and 18<sup>th</sup> October 1913. On plate IV, Wehrli arranged several fossil woods from Zacharias' collection, photographed 22<sup>nd</sup> October 1913. Wehrli wrote:

*Ein liebenswürdiger Zufall machte mich auch mit der Privatsammlung des Herrn Th. Zacharias in Dresden bekannt. Früher in Hilbersdorf wohnhaft, besitzt er von dort ein reiches, sorgfältig geschliffenes Fundmaterial, dessen vornehmste Stücke zu photographieren mir in dankenswerter Weise gestattet wurde.* (Wehrli 1915: 8)

Nowadays, some of the pieces reproduced by Wehrli are in the Geipel collection. That Geipel and Zacharias knew each other, we can see from Güldner's memories (Nötzold 1966). A second document mentioning Zacharias' collection is provided by Zacharias himself with a letter to J.T. Sterzel.

Adolf Theodor Zacharias was born on the 20<sup>th</sup> of February 1862 in Schmalzgrube near Jöhstadt. He is referred to as a timber dealer and ran an agency business in Chemnitz, later a construction business from March 1889 to May 1906. From 1898 to 1903, Zacharias was part of the Chemnitz City Council. In 1913, he moved to Dresden, where he settled near Geipel's apartment.





**Figure 7.** Left: One of Wehrli's contemporary photographs showing petrified trees of the Orth Monument in Chemnitz-Hilbersdorf taken on the 17<sup>th</sup> of April 1913. (Reproduced by permission of the ETH Zurich, Wehrli, Leo / Dia\_247-01766 / CC BY-SA 4.0). Right: Wehrli's photographs of fossil woods from the Zacharias Collection on 22<sup>nd</sup> October 1913. The slide glass plates of Wehrli's photographs have been preserved until today at the ETH Zurich (Reproduced by permission of the ETH Zurich, Wehrli, Leo / Dia\_247-02165 / CC BY-SA 4.0).

Since some fossil woods of Geipel's collection are reproduced by Wehrli (1915: pl. IV) and designated there as part of Zacharias' collection, Geipel must have come into possession of at least some specimens of Zacharias' collection. That must have happened before the latter's collection was damaged during the bombing of Dresden in World War II. He, fortunately, preserved specimens from the Zacharias Collection in his apartment in Dresden-Lochwitz for posterity. Geipel gave his mineralogical-palaeontological collection to Glauchau shortly after the war.

The slide glass plates for Wehrli's photographs were elaborately hand-coloured by his wife. They have been preserved until today at the ETH Zurich. Only these coloured glass plates unequivocally confirm the origin of fossil woods in the Geipel collection from the collection of Zacharias. So, the Zacharias collection is probably not fully lost but has been a part of Geipel's 'Chemnitz collection' for several decades in Glauchau.

## Conclusions

Our research has brought to light a forgotten fossil wood collection of Dresden's pathologist and patron Paul Geipel. The collection may be one of the largest and most important former private collections of the Petrified Forest of Chemnitz. As part of the Prof. Dr. Paul Geipel Foundation, the collection is curated at the MACSH, Germany, today. Additionally, in the investigation, it was ascertained that Geipel made the photographic images of parts of the palaeobotanical works for the mineralogist Richard Beck and the palaeobotanist Karl Rudolph. Geipel photographed numerous thin sections from the palaeobotanical collections of the Bergakademie Frei-

berg and the Museum of Natural History in Chemnitz in a lavish series. Some of the fossil woods from Geipel's collection are shown in a work of the Swiss geologist Wehrli about the Chemnitz Fossil Lagerstätte. Wehrli's coloured glass plates unequivocally confirm the origin of fossil woods in the Geipel collection from the collection of Zacharias. So the Zacharias collection is probably not wholly lost but part of Geipel's collection.

Our study contributes to the history of European natural science in the early 20<sup>th</sup> century by elucidating a Europe-wide network of local collectors like Zacharias, Güldner and Geipel and geologists/palaeobotanists, such as Rudolph, Beck, Nötzold, Sterzel and Wehrli.

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