

Post-Taphonomic Human Influence on Fossil Plant Assemblages

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Introduction

The Austrian Geological Survey and its collections have moved from an old traditional building, the Rasumofsky Palace in the Rasumofskygasse in Vienna, to another modern building in 2004/ 2005. Many plant fossils from different localities and ages which have been partly forgotten or thought to have been lost brought to light again.

History of the collection in the Rasumofsky Palace 1851-2004

The main part of the collection was assembled in the 19th century from different countries of the former Austro-Hungarian monarchy. The incoming material was regularly reported in one of the journals and many labels originate from this time.

The first half of the 20th century was the worst time for the entire collection. The two world wars led to repeated moving of the material and some parts of the collection were destroyed and many other specimens lost their labels. After the last war, the employees of the survey tried to reorganize the collection and new labels have been written to some extent. In the 70's and 80's of the last century, some efforts were made to inventory published material. In the 90's, the survey took part in the project "Catalogue of the Austrian Palaeontological Types" by the Austrian Academy of Science. (<http://www.oeaw.ac.at/oetyp/palhome.htm>).



Rasumofsky Palace



the Geological Survey today



former mineral collection room in the cellar of the Palais



Zlatko KVACEK working in the new rooms of the palaeobotanical collection

The collection of the Geological Survey in 2005

Currently, nearly all the fossil plant remains are available for studies:

700 drawers of studied and published material with type specimens, mainly listed in the OETYP-database.

2600 drawers of probably unpublished fossil plant specimens. 750 drawers contain fossils from the Palaeogene and Neogene (e.g. Austria, Croatia, Czech Republic, Slovenia), 450 drawers with fossil plants from Mesozoic localities (e.g. Austria, Czech Republic, Italy, Poland, Rumania), and 1350 drawers with specimens from Palaeozoic localities (mainly Silesia and Bohemia). Some of these specimens might have been published also, but without a note on the label or without any label they will be recognized more accidentally.

Before the recent moving started, the fossil plant material was distributed in different parts of Rasumofsky Palace: cellar, first floor, and loft. Not all material was stored in closed cupboards and layers of dust and sometimes also fungi and spores had covered the plant fossils. Before packing this dirt was removed by vacuum cleaning and a modern synthetic duster. Damage to the plant surfaces was not always avoidable, but a varnish layer protected many of the old fossils. It was also tried to assemble fossils from the same locality and age (e.g. the fossils plants collected during the polar expedition 1872-1874 have been discovered in different places) and to put information about the fossils in a database. It was not always possible during this short time-span to check and complete the labels, because of unreadable handwriting or the lack of information on the labels.



part of a drawer with plant fossils from polar expeditions 1868, 1872, 1873

In the case of the material with the old labels „Polar Expedition“ it is certain, that the material from Cap Lyell or Cap Boheman was collected during the Austrian-Hungarian Polar Expedition between 1872-1874. However, the plant fossils with the label Cap Starastschin derive from the Natural History Museum in Stockholm (Mus. Holm.). According to the catalogue of the plants from Spitsbergen from the museum in Stockholm, the locality names and the stratigraphic position can be revised or added (Cap Lyell = Renardodden, Late Eocene-Early Oligocene; Cap Starastschin = Festningsodden, Cap Boheman = Bohemanneset, Jurassic-Cretaceous).

Some questions and problems are still to resolve:

What kind of conclusions are allowed for material of uncertain origin?

Which labels are reliable? If you notice that some labels are not reliable, how can more reliable information be found? Sometimes, wrong labels are easy to recognize, but only for specialists (e.g. plants labelled as Cretaceous of unknown locality are in fact Miocene plants, probably from Hungary).

Many plant fossils derive from the Carboniferous deposits in Silesia and Bohemia but parts of this material miss exact labels. Often, only the name of a seam or pit is mentioned, not the locality. But pit and seam names are not unique and appear in different coal mining districts.

All scientists are asked for help, to revise the wrong labels or give labels to unlabelled material.

Examples

Only a few labels which were lying around in several drawers, gave us the information that the plant fossils derive from Carboniferous layers in **Rakonitz** (right). Looking at the specimens, we cannot be sure about this, but probably specialists about this area. Other specimens have several labels (left), but they don't tell us the exact locality or, rarely, detailed information about the geological situation is provided.

