

THE METEORITE HALL OF THE NATURAL HISTORY MUSEUM VIENNA (AUSTRIA) – HERITAGE AND SCIENCE ON DISPLAY, A SOURCE OF INSPIRATION FOR THE NEXT GENERATIONS. L. Ferrière¹, F. Brandstätter¹, and C. Koeberl². ¹Natural History Museum Vienna, Burgring 7, A-1010 Vienna, Austria (ludovic.ferriere@nhm-wien.ac.at), ²Department of Lithospheric Research, University of Vienna, Althanstrasse 14, A-1090 Vienna, Austria.

Résumé: À l'occasion du 10^{ème} anniversaire de la réouverture de la salle des météorites du Musée d'histoire naturelle de Vienne (Autriche), la plus grande exposition de météorites au monde, nous présentons ici le concept de l'exposition et les principaux ajouts des dernières années. Nous initiions également une discussion sur l'importance des musées d'histoire naturelle et de leurs collections.

Introduction: The Natural History Museum Vienna (NHMV, Austria) houses the oldest meteorite collection in the world, dating to 1778, and also one of the world largest meteorite collections [1,2]. The entirely renovated and modernized Meteorite Hall of the NHMV, re-opened to the public in mid-November 2012, is the world's largest meteorite exhibit, with ~1,100 meteorites on display (including ~650 different meteorites, consisting of 300 falls and 350 finds), many of which are historic falls or finds. In addition, a part of the hall is dedicated to impact craters and their ejecta, with about 150 impactite specimens (including tektites, shatter cones, impact breccias, etc.) exhibited.

On the occasion of 10th anniversary of the re-opening of the Meteorite Hall, we present here the concept of the exhibition and the main additions of the last years. We also initiate a discussion on the importance of natural history museums and their collections, not only for the general public but also for scientists and the next generations.

Discussion:

Renovation of the Meteorite Hall: The old (up to 2011) exhibition, consisting of the systematic meteorite collection displayed in glass-topped table cases, and surrounded by wall cabinets mainly devoted to different topics and larger selected specimens, had a major drawback – there was very little information in general, and hardly any explanation for the general public. Although of interest to scientists and specialized collectors, it was not attractive enough for most of the visitors and in part outdated. Based on these considerations we decided to completely renovate and modernize the entire hall in less than one year of intense work, preceded by another year of detailed planning. The concept for updating the Meteorite Hall included the renovation of the central historic display cabinets and fitting them with modern LED lighting, supplemented by new display cases and multimedia stations along the walls and in the windows area (Fig. 1). These stations focus on different topics and try to engage the visitor in interactive displays. The thematic stations include a display of all known Austrian meteorites, fossil meteorites (a unique display with two fossil meteorite sam-

ples from Sweden), as well as stations on Mars and the Moon, completed with exceptional displays of Martian meteorites, lunar rocks (a basalt rock of 83.7 g and two samples of lunar soils; on long-term loan from NASA), and several lunar meteorites. Other topics for the new display cases deal with meteorite showers, the origin and age of the solar system, impact craters, as well as impactites, and more. Several multi-media stations add to the attraction of the new Meteorite Hall. With an “Impact simulator”, visitors can control the extent of a possible destruction of the City of Vienna or Central Europe by the impact of asteroids of different sizes and velocities. A major highlight is a wide-screen animation on the “Origin of the Solar System”, which was specially produced for the NHMV. A large magnifying glass, coupled with a wide screen and special software, invites visitors to explore the interior of various meteorites (Fig. 2). The hands-on station “Density of meteorites” enables the visitors to determine the difference in density between iron (Canyon Diablo) and stony (unclassified NWA) meteorites of the same size. In addition, an interactive quiz challenges the public to guess which of eight displayed objects are actual meteorites and which are “meteorwrongs”.



Figure 1. Overview of the renovated Meteorite Hall, Natural History Museum Vienna, Austria (© K. Kracher).

The four renovated historic display cabinets in the center of the hall, equipped with new light, alarm, and electrical systems, contain the systematic meteorite collection, based on the current mineralogical-

chemical classification scheme, allowing the visitors to “walk through the classification of meteorites” and to learn more about some special meteorites that are of historic and/or scientific importance, and for which explanatory labels are included (such as Orgueil, Allende, L’Aigle, Ensisheim, the original platelets of the “Widmanstätten pattern” experiments, etc.). The display starts with the carbonaceous chondrites and continues through the ordinary chondrites (H, L, and LL chondrites), the Rumuruti chondrites (R), the enstatite chondrites (EC), the achondrites, the pallasites, the mesosiderites, and, finally, the iron meteorites (which are arranged according to their chemical composition). It was a surprise that during the renovation, after removing the old red carpet that covered the inside of the cabinets, a letter and a few messages were discovered underneath, showing that it was unchanged since the opening of the newly built museum at the end of the 19th century.



Figure 2. Interactive station with a large magnifying glass coupled with a wide screen allowing visitors to explore the interior of various meteorites (© K. Kracher).

On the front ends of each of these central showcases are interactive screens with informative slide shows lasting a few minutes. The topics include: “Where do meteorites come from?”, “Where and how do I find meteorites?” or “What are meteorites made of?”, as well as information on the classification of meteorites, the history of meteorite research, the history and importance of the Vienna meteorite collection, etc.

Some of the museum’s largest and unique meteorites samples are displayed in two renovated old large glass cabinets that are located in front of the two entrances of the hall, with one containing the “stony and stony iron meteorites”, including our almost 300 kg Knyahinya (ordinary chondrite, L5), 44.2 kg Lancé (carbonaceous chondrite, CO3), 2 kg Stannern (eucrite), 7.8 kg Eagle Station (pallasite), 2.8 kg Tabor (ordinary chondrite, H5) [one of the two founding objects of our collection], and many others. The iron meteorites, including the beautifully oriented 47.3 kg

Cabin Creek meteorite, the 39.2 kg Hraschina meteorite [which fell in 1751 and is the founding object of the Vienna meteorite collection], the 79.2 kg Elbogen, and many others, can be viewed in the other large glass cabinet. Finally, visitors can see and touch our largest iron meteorite specimens, including the 909 kg Youdegin and the 210 kg Acuña.

Main additions of the last years:

Dozens of newly acquired meteorite specimens have been added to the display in the last decade, including representative specimens of recent falls, such as, in alphabetical order, Aba Panu, Beninitra, Chelyabinsk, Kheneg Ljouâd, Kindberg, Ozerki, Sariççek, Serra Pelada, Viñales, etc., lunar meteorites (including the main mass, 1.8 kg, of Galb Inal and Oued Awlitis 001), very impressive slices of Seymchan and Yardymly, as well as a number of rare types of achondrites.

Since 2018, visitors can also see and listen to meteor echoes, live!, thanks to our meteor radar station, which is also accessible online at https://www.nhm-wien.ac.at/en/research/mineralogy_petrography/meteor.

Importance of natural history museums and their collections:

Natural history museums main functions are to collect (/protect), preserve, study, make available (for research), and display specimens of scientific and/or cultural significance for the education of the general public. Collections preserve historical data, offering insight into the past. Specimens are used for the advancement of science, and more recently, digitization initiatives increase the visibility and utility of specimens use and associated data. Museums and curators are now facing the challenges of the “digital age”.

References: [1] Brandstätter F., Ferrière L., and Koeberl C. (2013) Meteoriten: Zeitzeugen der Entstehung des Sonnensystems / Meteorites: Witnesses of the origin of the solar system. Edition Lammerhuber, 267 pp., ISBN-10: 3901753435. [2] Koeberl C. et al. (2018) *Geological Society of America Special Paper* 535, 131–161, [https://doi.org/10.1130/2018.2535\(09\)](https://doi.org/10.1130/2018.2535(09)).

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