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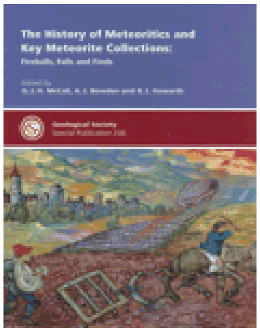
PALAIOS 2008
Book Review
DOI: 10.2110/palo.2008.BR33

1926 SEPM
Society for
Sedimentary Geology



The History of Meteoritics and Key Meteorite Collections: Fireballs, Falls, and Finds, edited by G.J.H McCall, A.J. Bowden, and R.J., Howarth, 2006, Geological Society, London, Special Publications no. 256, 513 p., cloth, £95.

The purpose of this publication is to provide the history of meteoritics as a science, how the science began, its key researchers, significant meteorite recoveries, the major meteorite collections from around the world, and contemporary meteoritics. The publication is a collection of papers that reads sometimes like a textbook and other times like a history book. This is a combination that, at times, can be both enlightening and frustrating for the reader depending on your knowledge of the subject matter. Overall, it is very comprehensive and loaded with nice illustrations and photographs.

The opening paper begins with a very condensed history of meteoritics that summarizes many of the topics covered throughout the book. The Table of Contents groups the papers into three sections: early beginnings, key meteoritic collections, and contemporary meteoritics. The first section, Early Beginnings, commences with a discussion on the Nogata, Japan, meteorite that fell on May 19th in the year 861, making it the world's oldest witnessed fall from which a meteorite still exists. Next, it chronicles other key meteorites in history, including: Ensisheim (France, fell November 7th, 1492), Albareto (Italy, fell 1776), Pallas (Russia, found 1772), Siena (Italy, fell June 16th, 1794), Wold Cottage (England, fell December 13, 1795), L'Aigle (France, fell April 26th, 1803), and Weston (Connecticut, USA, fell December 14th, 1807).

Associated with the anecdotal stories behind these falls are discussions about the key researchers who recognized the importance of these meteorites and their associated appearances in the sky. For example, Ernst Florenz Chladni, known as the father of acoustics, astutely recognized the link between the appearance of a fireball and the resulting meteorite(s), and most importantly concluded that "masses of stone and iron do, in fact, fall from the sky" and that the "solid masses, unrelated to the Earth or Sun, originate in cosmic space either as small bodies that never accumulated into planets, or fragments of planets disrupted by explosions from within or collisions from without" (p. 35). These fundamental concepts helped to make Chladni one of the founding persons of the science of meteoritics. The publication also dispels the myth commonly found in books on meteorites that Thomas Jefferson once said in regard to the meteorite fall at Weston: "it is easier to believe that those two Yankee professors would lie than that stones would fall from heaven" (p. 52). This quote is simply hearsay, and as the book states, they "would not be acceptable in a court of law" (p. 52). One paper is devoted to the Jean Baptiste Biot report and the meteorite fall at L'Aigle, France, which the author argues is the "key event in establishing the extraterrestrial origin of meteoritics" (p. 73). Indeed, prior to the work of Jean Baptiste Biot at L'Aigle, many scientists and the public did not believe in the extraterrestrial origin of meteorites. On the basis of Biot's detailed witness reports from the actual meteorite-strewn field and recovery of *bona-fide* meteorites, the fall at L'Aigle leaves little doubt that meteorites do, in fact, fall from the sky.

The second section of the book, appropriately named Key Meteorite Collections, covers some of the world's oldest and largest meteorite collections. Each paper is a tribute to the founder(s) of the collection as well as key meteorites found at the housing institution. The section begins with the oldest established collection in the world—the meteorite collection of the Natural History Museum in Vienna, which was founded in 1748 with the acquisition of the Johann von Baillou natural history collection. In 1781, the meteorite collection of the Museum of Natural History in Berlin began with the collection of Carl Abraham Gerhard and a piece of the famous Pallas iron, for which the group of pallasites are named. While under the directorship of Gustav Rose and Christian Weiss, the collection grew with the acquisition of the private collections of Martin Heinrich Klaproth (discoverer of the element uranium and others) and Chladni. Rose studied these meteorites and in 1863 proposed the classification scheme that is still in use today, as well as the terms chondrule, mesosiderite, pallasite, howardite, eucrite, chondrite, and chassignite.

The second paper covers the meteorite collection at the Natural History Museum in London, which was founded in 1803 and houses the largest collection of witnessed falls in the world. In 1959, The Natural History Museum purchased half of the H.H. Nininger meteorite collection, resulting in the acquisition of around 1000 samples Nininger collected, mainly from the United States. The meteorite collection of the National Museum of Natural History in Paris, France, has similar credentials, holding 512 witnessed falls, including the largest piece of the Orgueil carbonaceous chondrite and Chassigny, the first meteorite originating from Mars. The incredible history of the collection, as well as an extensive list of these falls, is included in the third paper. This paper states the collection was greatly expanded by Gabriel-Auguste Daubrée, who added over 450 samples in just 7 years! Furthermore, the first catalog of meteorites was authored by Pierre-Louis Antoine Cordier, Professor and Chair of Geology at the National Museum of Natural History. Illustrating the connection between astronomy and Papal support is the Vatican meteorite collection, discussed in the fourth paper. The collection that is now housed at the Vatican Observatory in Italy contains over 1000 specimens from 500 witnessed falls.

In 1749, the enormous collection of the Russian Academy of Sciences was founded, which contains approximately 25,000 individual meteorites that represent over 1230 locations. Many of the specimens in the collection helped establish meteoritics as a science; one of the most important is the 687 kg mass of the original Pallas iron. The story of this famous pallasite, first discovered in the 17th or early 18th century, is discussed in the fifth paper, which states the original finders of the mass were actually local tribes called Tartars, who treated the large mass as sacred. This is surprising to learn, especially since Johann Kaspar Mettich and occasionally Pyotr Pallas are acknowledged as the finders in many books about meteorites. It wasn't until the 1740s that Yakov Medvedev, a traveling blacksmith, wrote to Mettich, who was working as a local copper miner, and told him of a great mass of iron and associated vein of iron ore. Mettich visited the site and transported the large mass from its mountainous find site. Pallas saw the mass in 1771 and later, in 1786, published a detailed report on the specimen that was later named in his honor. In addition to the account of the Pallas iron, the paper also covers the groundbreaking work of Vladimir Verdansky, Leonid Kulik, and Eugeny Krinov, with insight into the Tunguska event and the fall of the Sikhote-Alin iron meteorites.

The meteorite collection at the Smithsonian Institution was established by the bequest of the Institution's founder, James Smithson. Smithson was an established meteorite and mineral collector, having amassed more than 10,000 specimens of minerals and meteorites. Paper six covers the important role that the Smithsonian Institution has played in the study of meteorites, the key researchers who have advanced the science of meteoritics, the development of the collection, and key meteorite specimens. Discussed in the paper and on display at the Smithsonian Institution are the iconic 688 kg Tucson Ring meteorite and the associated 287 kg Carlton mass. These large iron meteorites were used as anvils in the presidio of Tucson while it was under Mexican rule. The meteorites were transported to the Smithsonian Institution in 1863 as a result of the Gadsden Purchase of 1853–1854. They have been on display, almost constantly, since that time. Shortly thereafter, George Perkins Merrill became curator of the collection, where he added numerous specimens to the collection and became instrumental in the discussion about the formation of meteorite craters and the petrographic study of meteorites. The paper closes with a discussion about the important meteorites that have made the Smithsonian a leader in meteorite research since 1969, which includes Allende, Murchison, Lost City, and various Antarctic meteorites.

A detailed account of the fine collection at the American Museum of Natural history is covered in the seventh paper. Its beginnings were born of the great natural history collection of the manufacturer Clarence S. Bement. His collection contained 580 specimens that represented 500 falls and finds. In 1900, the entire collection was purchased by philanthropist John Pierpont Morgan and donated to the museum. The paper gives a wonderful narration on the acquisition of arguably the two greatest iron meteorites in the world: Cape York and Willamette. These iron giants, weighing in at a whopping 30,945 kg and 14,110 kg, respectively, have been on display at the museum for over 80 years and make up the centerpieces of the collection. The paper closes with a discussion on recent acquisitions and meteorite science at the museum.

A history of Japanese Antarctic meteorites is discussed in the eighth paper. The first Antarctic meteorites were discovered in 1969 and consist of several rare classifications, which began the search in earnest for meteorites in Antarctica. Scientists with the National Institute for Polar Research have scoured the ice fields on snowmobiles, resulting in the discovery of over 15,000 individual specimens to date. These specimens are made available to meteorite researchers around the world. The paper gives background on some of the key meteorite specimens in the collection and the mechanism by which the meteorites are brought to the surface of the ice field.

The final paper in the Key Meteorite Collections section covers the meteorite collection of the Western Australian Museum, which had its beginnings in the early 1880s with the discovery of the Youndegin iron meteorites. Many key meteorite specimens ended up being exported from Australia because there was not an official repository for specimens. This changed in the early 20th century, largely due to the efforts of Edward Sydney Simpson, a government mineralogist and analyst with a keen interest in meteorites. He was dedicated to preserving Australia's meteorite specimens and was a key player in establishing a permanent collection. The paper continues with sections on meteorite legislation in Western Australia, the meteorite-rich Nullarbor Region, and some of the key meteorites in the collection. One of the more impressive meteorite finds from Nullarbor that resides in the collection is the 11,500 kg main mass of Mundrabilla iron, a car-sized meteorite you can sit on in the Museum's courtyard!

The final section in the publication is Contemporary Meteoritics. It is a compilation of seven different papers and an epilogue that cover a variety of topics including tektite formation and impact cratering processes, meteorites and the origin of the solar system, meteorites from mars, meteorites and their parent bodies. Especially compelling are the meteorite cratering and tektite papers, which are wonderfully illustrated with photos and diagrams that lead the reader through somewhat complicated subject matter. This final chapter of the publication is a fine way to draw the book to a close, leaving the reader satisfied, but wanting more!

The History of Meteoritics and Key Meteorite Collections: Fireballs, Falls, and Finds is a must for the serious meteorite enthusiast, either researcher or amateur scientist. It covers the gamut of topics in meteoritics but pays special attention to the world's great assemblages of meteorites and the key personnel behind them. The book does have some shortcomings, however; many spelling mistakes and inconsistencies between some of the papers distract the reader. Furthermore, there were no papers detailing the fine collections at Texas Christian University, the University of Arizona, and the University of Copenhagen. Nonetheless, this publication does a wonderful job of showing the reader the intimacies of meteoritics, its history, the incredible collections of meteorites, and how meteorites help scientists unlock the mysteries of the universe around us.

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