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Note

The new Arthur Ross Hall of Meteorites at the American Museum of Natural History

On September 20, 2003, the Arthur Ross Hall of Meteorites at the American Museum of Natural History reopened to the public following a complete renovation. The exhibit showcases over 150 meteorite, lunar, and impact-related samples. Featured items include presolar nanodiamonds, five martian meteorites, three lunar samples, and a hyper-accurate cutaway diorama of the Barringer Meteor Crater in Arizona (1:82,400 scale). The Meteorite Theater highlights the science of meteoritics and the history of our solar system with an eight minute film recapitulating many themes of the exhibit. An interactive display engages visitors on the actual dangers of impacts, and a three minute film recounts the saga of Ahnighito's journey from space to the museum, via Greenland and the explorer Robert Peary (around 1897).

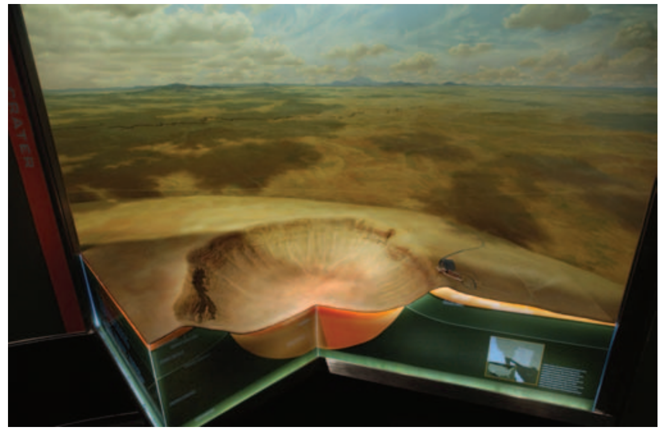
The 2,700-square foot hexagonal Hall, centered on Ahnighito, first opened in 1981 under the direction of our late friend and colleague, Marty Prinz. Many will remember it as the venue for the Meteoritical Society's 1986 meeting. The new Hall represents a dramatic change in both scientific conception and exhibit design from its previous incarnation. The space is now circular, and the central themes are the solar system processes for which meteorites and impact craters provide evidence. The 34-ton Ahnighito, a fragment of Cape York (IIIAB iron), remains the Hall's eye-popping centerpiece but takes on a new perspective from the raised platform surrounding it.

The new Arthur Ross Hall of Meteorites introduces meteorites and then asks, "What do meteorites tell us?" The answer is given in three themes: solar system origins, planet

formation, and the dynamic solar system we live in (impacts). The introductory section surrounds Ahnighito and explains what meteorites are, where they come from, how they vary chemically andgeologically, what their surface features tell us, and the history of meteoritics. The three main themes occupy the periphery.

In the Origins section, solar system genesis is explored beginning with chondrules, calcium-aluminum inclusions (CAIs), and matrix. Cases full of samples illustrate the observations leading to the concept of parent bodies, the identification of asteroid types with meteorite chemistry, and the recognition of the planet-forming processes of brecciation, compaction, and impact melting. This section includes a comparison of CI chondrites with solar bulk composition and the oxygen isotopic compositions of meteorite groups including SNCs and HEDs.

The process of planetary differentiation is explored with samples from asteroidal and planetary bodies. Lunar, martian,



vestal, and terrestrial basalts exemplify the crustal rocks. A spectacular array of pallasites, including a backlit Esquel slab, introduces the question: Where are their complementary mantles? Basic petrologic features, such as crystal size, are related to the depth at which the samples likely derive. Two cases of irons illustrate planetary cores and the significance of the Widmanstätten structure. Four martian basalts are related to their probable provenance near the Tharsis bulge. Moon rocks from the Apollo missions are discussed in relation to lunar geology and a giant-impact theory.

Our dynamic solar system is explored using the story of cratering. The Meteor Crater diorama is the focal point, flanked by impactites, ejecta, and two magnificent Canyon Diablo specimens. Samples from historic impacts are displayed, with a realistic exposition of hazards from interstellar dust to giant asteroids.

Further information about the Hall exhibits and a guide for educators,[1] respectively, are found at:

- http://www.amnh.org/exhibitions/permanent/meteorites/
- http://www.amnh.org/education/resources/halls/meteorites/educators.php

We would like to thank the numerous colleagues in meteoritics who assisted us in this project through the development of the ideas and stories for the Hall of Meteorites and the acquisition of the samples, data, and photographs that best demonstrate them.

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