The Geology of Multi-Ring Impact Basins: The Moon and Other Planets

*by **Paul D. Spudis**, published by Cambridge University Press in 1993, ISBN 0-521-26103-1, 263 pages.*

Review by **Christopher G. Kendall**

With the current stir caused by the recent comet fragment impacts with Jupiter, the book may be of interest to more general readers than the author expected. This topical small book is focused on the occurrence of the multi-ring basins produced by the impact of the extraterrestrial bodies when they collide with the planets and the satellites. These multi-ring basins represent the largest impact features on planetary bodies and their satellites within the solar system. The book focuses largely on the Moon, but has chapters and/or sections on the Mercury, Mars, and the Earth, the satellites of Jupiter and Saturn.

The book is divided into ten chapters. The first is on the occurrence of the multi-ring basins, how they formed, and the nature of the ejecta and its emplacement in mostly on the moon craters. It discusses the use of photogeologic evidence, the geology and petrology of Apollo and Luna landing sites, remote sensing of the chemistry and mineralogy of basin ejecta, geophysical data and how this information has been tied together and synthesized. It discusses how craters developed into basins, the cratering process, impact mechanics and impact craters. It includes a discussion of the morphology of fresh lunar craters and the size-dependent morphological relationship between crater and basin. It also provides an inventory of lunar multi-ring basins. It discusses the Orientale basin, the Nectaris, Crisium basin, Serenitatis, the Imbrium basin of the moon in terms of their photogeology and the various geological units, the structure of the rings, and the composition of the rocks in these different basins, particularly where the various samples were collected by the astronauts. The final three chapters deal with the geological processes involved with the formation of lunar basins and their occurrence as the multi-ring structures on the terrestrial planets of the Earth, Mercury, Mars, Venus and the icy satellites of Jupiter and Saturn. It discusses then how multi-ring basins are related to planetary evolution.

This is a source volume for those of you who have any interest in impact basins or are interested in impact features which may have affected the Earth. The book is well written and is clearly illustrated with numerous black and white photographs and beautiful line drawings and maps. I am especially pleased to have this text in my shelves and have gained a great deal from reading it. It was a topic that I knew little of till this book came to hand. It has certainly changed my thinking on the importance of extraterrestrial object impacts with the Earth. The style of the text is unassuming, but the information is mind boggling. If the Moon and the other planets have so much evidence of impacts on their surface, it would suggest that the history of Earth has also seen a similar history of impacts. This is not exactly a bed time read, but it is interesting. If you don't want to have this on your shelves, then I would certainly recommend it for your local library.