

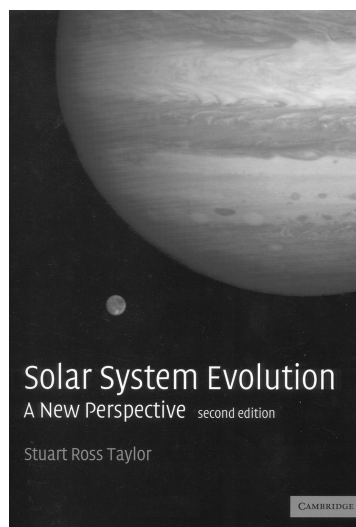
Book Review

Solar system evolution: A new perspective. by Stuart Ross Taylor. Second edition. Cambridge University Press, 2001, 460 p., \$90, hardback, (ISBN 0-521-64130-6).

This book is a welcome outgrowth and extension of its first edition in 1992 and well-representative of Ross Taylor's ever-increasing ability to compile planetary data and aggressively synthesize these into logically presented concepts and principles. This book presents the reader with a ring-side seat to the steady convergence of ideas of planetary science, as based upon a continuing accrual of new facts. It demonstrates the origin and evolution, not only of the heavenly bodies, but also of the intense science that has been brought forth in the last decade. This is not a "whodunit story" of the solar system bodies from the sun outward, but the chapters are presented as an ever-evolving story of a star's influence in producing a phylogeny of planets and satellites that is complex, yet is slowly revealing hints and signatures of their heritage.

Starting with the birth of the solar nebula, the book progresses to how the solar system arose and why the planets and satellites happen to have their compositions and why they are where they are. In so doing, the author treats the story of the solar system as an unfolding play, bringing forth the predictable, as well as the fortuitous, circumstances that led to such a system, while introducing the players (planets) in their orderly sequence of importance, not from the mnemonic sentences we all recall. The circumstances are addressed that went into the production of planets about our G5 star, leading to the assembly and evolution of bodies rich in diversity. With emphasis on the unpredictable and accidental events that shaped the solar system, the author justifiably feels that it is entirely unlikely that another Earth exists elsewhere in the universe.

In the preface, the author writes: "So much progress has been made in the last decade that this book has been completely rewritten from the first edition." This is generally the case; some topics are marginally repeated without really addressing some major new discoveries—i.e., meteorites (e.g., pre-solar components, short-lived isotopic chronometers, interplanetary dust particles [IDPs]) and the moon (e.g., Clementine results, short-lived isotopes). These are but minor shortcomings, however. Virtually all fields are so rapidly evolving that we stand each day in wonder of the new and exciting discoveries being made. This book is a remarkable synthesis of scientific data and concepts far removed from the author's expertise. The broadness of the subject matter is amazing. His unique ability to absorb



principles in fields of science peripheral to his specialty of geochemistry is obvious, as is his competence in venturing outside his "box."

This represents a noteworthy attempt to reference the most recent publications from within fields so rapidly evolving that, within a few years, much of the data of the last decade will only be of historical interest. Long lists of relevant and useful references are given at the end of each chapter. The previous seven large chapters have been restructured and expanded into 15 smaller ones, incorporating in the recent flood of new information. Over 1300 references are brought up to the beginning of the twenty-first century. There is an author list of 7 pages, for those vain individuals amongst us, and an extremely thorough and detailed subject index that is a welcome improvement. Although this revised edition has over 50% more pages, to some extent, this is a function of the less-intense printing style, having gone from two columns to one, with 2 inch margins on the outside of each page, especially useful for those of us who write notes in the margins. This edition still remains as an excellent reference book, but is designed more as an easily readable textbook, making it more appealing to a wider audience, an excellent book for a senior-graduate level course. It has already proven to be indispensable for researchers and students in planetary science.

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