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P. Ulmschneider - *Intelligent Life in the Universe. From Common Origins to the Future of Humanity.* Springer-Verlag, Berlin, Heidelberg, New York, 2003; pp. X + 251.

The problem of the existence of life (human and nonhuman beings) in the Universe has bewitched our civilization for a long time. Modern techniques allow us to investigate several related aspects not only in the terrestrial environment, but also in the solar and extrasolar planetary systems. This book addresses the reader through three main topics: planets, life, and intelligence.

The first topic (Planets) develops along four chapters. It begins with when the Universe came into being (Chapt. 1), follows with an account of our knowledge on planet formation (Chapt. 2) and search for extrasolar planets (Chapt. 3), and closes with a detailed discussion on what is expected for planets suitable for life (Chapt. 4).

The second topic (Life) includes three chapters. Life and its origin on the Earth (Chapt. 5) presents the basic biochemical tools (from proteins, carbohydrates, lipids, and nuclei acids to genome and genetic code) to follow the chemical life's route. Evolution (Chapt. 6), starting with Darwin's theory, describes mutation and natural selection role in life. The search for extraterrestrial life (Chapt. 7) summarises what is known from inside (Europa's ocean, Mars meteorities and Viking experiments, Mars atmosphere) and outside the solar system (search for H_2O, CH_4, N_2O, O_2, O_3, CO_2, ...).

The third topic (Intelligence) contains two chapters. The future of mankind (Chapt. 8) goes from the conquest of space (*e.g.*, the space station, moon and Mars projects, asteroids and meteorities, space travel, near-Earth asteroids, space habitats, space colonization, interstellar travel) to creating life in laboratory, decoding human genome, understanding intelligence, androids and miniaturization, etc. Dangers for mankind are described also: bacterial or viral infection, episodes of extreme volcanism, irreversible glaciation, greenhouse effect, comet or asteroid impact,... . Finally, uncontrollable inventions and war, terrorism and irrationality have room in the chapter. Extraterrestrial intelligent life (Chapt. 9) closes the book. Although no trace of such life has so far been found, the book supplies compelling reasons for its existence and the Drake formula is used to estimate the number of extraterrestrial societies. Nevertheless, uncertainties of the formula are discussed; attempts performed to identify such societies (the radio searches) too.

Twelve pages of references to go deeper into the matter and two alphabetic indices for a quick author or subject item search are included. In conclusion, "Intelligent life in the Universe" is a nice monographic presentation of the cosmic vision of life. Certainly the book is a pleasant reading not only for scientists but also for a broad audience of non specialised readers.

M. Storini

T. Encrenaz, J.-P. Bibring, M. Blanc, M.-A. Barucci, F. Roques, Ph. Zarka - *The Solar System.* Springer-Verlag, Berlin, Heidelberg, New York, 2004; pp. XII + 512.

This book, originally appeared in French in 1987 as "The Solar System" by T. Encrenaz, J.-P. Bibring and M. Blanc (InterÉditions & Éditions du CNRS), represents the third edition (with new and revised chapters) performed by Springer-Verlag (translated by S. Dunlop). It is a good book for those intending to increase their knowledge on modern planetology.

Modern planetology is a composite astrophysical branch aiming to improve our understanding on the physical and chemical phenomena involved in the broad Planetary Sci-

ence (*i.e.* in the solar and extrasolar planetary systems). This volume offers a nice journey inside the solar system and closes with a brief account on the search for life in the Universe. The topics develop along fifteen chapters.

The general features of the solar system (Chapt. 1) are organised inside *Mechanics and Dynamics of the Solar System* (laws, resonances, gravity, collisions,...) and *Physics of the Solar System* (thermal radiation and reflected solar radiation, planets, satellites, rings, asteroids, comets, trans-Neptunian objects, interplanetary medium).

To place the *Solar System within the Universe* (Chapt. 2) the distance scales are discussed, followed by the primordial nucleosynthesis in the Big Bang, life and death of the stars, stellar nucleosynthesis, the first stages of stellar formation and the interstellar medium.

What are the methods for the Solar System study? They are summarised in three sections of Chapt. 3: *The Determination of Geometrical and Physical Parameters, Physical and Chemical Analysis of Gas and Dust Particles* and *The Analysis of Plasma and Magnetic Fields*.

What is the origin and evolution of the Solar System? The answer can be found in Chapt. 4 (*The Formation of the Solar System*), where it is described through the history of the available models, the performed observations and the emergence of a *Standard Model*. Comparison with other stellar systems are also given.

Special attention is paid to the *Interaction of Solar-System Bodies with the Interplanetary Medium* (Chapt. 5). Starting from a description of the solar wind and coronal expansion together with the outer gaseous envelopes of the planets the chapter ends with the different interaction cases. There is also room for auroral radio emission but not for cosmic ray/planet interactions (this is the only hole found in the developed subject).

Mercury, Venus, Earth, Moon, Mars, Phobos and Deimos are described in Chapt. 6 (*Terrestrial Planets and Their Satellites*), while *The Asteroids, The Giant Planets* and *Titan* in Chapt. 7, Chapt. 8 and Chapt. 9, respectively.

What about the *Bodies Without Atmospheres in the Outer Solar System*? The satellites and rings of the Giant Planets, Pluto and Charon are illustrated in Chapt. 10, including in their historical context.

The fascinating topic of *Comets* is developed in Chapt. 11, by starting on nomenclatures/orbits/origin, going through the brightness measurements and physics (nucleus, coma, cometary dust,..) and ending with the comet/solar wind interaction.

The discovery of distant objects, the orbital characteristics of the Trans-Neptunian objects (TNO), the Centaurs are subjects included in Chapt. 12 (*New Frontiers*). The TNO physical and chemical properties are poorly known but some details for them are given.

Dust and rocky bodies of all sizes populate the interplanetary space. They are illustrated in Chapt. 13 (*Interplanetary Dust, Micrometeorities and Meteorities*).

Chapter 14 (*New Planetary Systems*) allows a jump outside the Solar System. It introduces the reader into the Galaxy and extragalactic universe and the discovery of extrasolar planets (including searching methods and theoretical open questions).

The debate on "life" can be found in Chapt. 15 (*Search for Life in the Universe*), together with *The Search for Life in the Solar System* (Par. 15.3) and *Possibilities for Life in the Universe* (Par. 15.4).

The volume ends with a series of references for each chapter together with an alphabetic index for a quick item search. The book is accessible to many researchers and postgraduate students.

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