



Book Review: Galactic Encounters

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A book review on Galactic Encounters

Written by William Sheehan and Christopher J. Conselice, New York: Springer-Verlag, 2015, 385 pages. ISBN: 978-0-387-85347-5

“Galactic Encounters” by Sheehan and Conselice provides a view of galaxies telling the story of how astronomers have pieced together what is known about the modern view of the Universe. The book helps the reader to understand “why” we know what we do, not simply “what,” starting with the development of the telescope that coincides with the modern picture of the Universe. William Sheehan is a noted historian of astronomy but also a Doctor of Medicine, specializing in psychiatry. In this perspective, he has a unique insight into the personalities of the pioneering figures of the history of science. Christopher Conselice is a Professor of Astrophysics at the University of Nottingham, who studies the formation of galaxies, addressing the issue of “how” rather than “when” galaxies form. Reading the book, amateur astronomers would have been able to feel what actually drives them: “it is the desire to participate in this vast universe, in their own small way,... and not let the experts do everything for them.” I have to admit that I have also quite enjoyed the author’s remark pertinent to the history and philosophy of science about the distinction, nowadays, between “polymaths” and “monomaths.”

The book is divided into 16 chapters starting from mentioning the early astronomy findings of Galileo, Huygens, and Newton. Then the evolution of a long glorious parade begins with Messier, William Herschel (the musician who underwent a dramatic metamorphosis into the astronomer!) and his discoveries, John Herschel (William’s son), and other eminent and esteemed astronomers of the eighteenth century. William Herschel was the first astronomer to push his investigation beyond the Solar System to stars and nebulae. In chapter 6, the story reaches to Fraunhofer and the dawn of spectroscopy while chapter 7 proceeds to the fields of glory with our own Milky Way Galaxy. This chapter introduces Edward Emerson Barnard, the foremost practitioner of celestial photography of his era, who is remembered for his pioneering (and in some ways still unsurpassed) wide-angle photographs of our galaxy. It is worth mentioning that Barnard was, in contrast to most of the figures encountered in the book so far, “decidedly not born with a silver spoon in his mouth.” The chapter includes some of the most wonderful pictures of Milky Way and devotes approximately 25 pages to Barnard’s contributions to experimental astronomy. In 1913 Barnard was the first to recognize that the dark markings of the Milky Way, which their nature was for a long time one of the seemingly insoluble problems of astronomy, was some kind of vast clouds of interstellar matter in space. However, only later (1930’s) did astronomers fully appreciate the significance of dust, which renders to some extent the light of all the stars. Following his death in 1923, Barnard’s Atlas, one of the most highly sought-after books in astronomy, appeared in 1927 under the title “An Atlas of Selected Regions of the Milky Way.”

Chapter 8 turns into star’s composition: from stars’ classification based on their brightness or luminosity (already being identified by ancient Greek astronomers such as Hipparchus and Ptolemy), color, and mass to stellar spectroscopy and the Hertzsprung–Russell (H–R) diagram.

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Chapter 9 deals with the birth in America of observational cosmology in the early years of the twentieth century. The reasons for this were the climate conditions and the construction of large telescopes. The chapter refers to the meeting of the International Solar Union, one of the most important astronomical meetings in the first quarter of the century, the foundation of the *Astrophysical Journal* in 1895 and Percival Lowell. Lowell entered astronomy at the age of 39 and he was a well-educated generalist in an era of increasing specialization in the sciences. Together with V. M. Slipher he achieved one of the most-paradigm shifting results in the history of astronomy: the discovery of the large radial velocities of the spiral nebulae. Next, comes the man who oversaw the transition from the era of great refractors to that of great reflectors: George Ellery Hale, the greatest astronomical entrepreneur of all time. Hale recognized the possibility of creating the biggest observatory in the world taking advantage of a Carnegie grant, which was the “Mount Wilson Solar Observatory” in 1904.

Chapter 11 is entitled “From Olympus” as it is devoted to Edwin Powell Hubble and his era with his notorious classification scheme and Hubble’s law. The authors proceed with W. W. Morgan and the discovery of the spiral arms of the Milky Way. The discovery of the Universe of galaxies in the twentieth and twenty-first century has led to a new revolution in our understanding of our place in the universe. In more recent years, progress has dependent less on individuals making towering contributions as in the past and more on the development of a large experts group. The Hubble Space Telescope, which was launched in 1990, offered new insights

of galaxies in universe by comparing nearby and distant galaxies.

Chapter 14 and 15 passes to the Dark Side: Dark Energy, Dark Matter, Black Holes, and the Origin of the Universe. Sheehan and Conselice conclude their marvelous journey to Cosmos in page 377 of chapter 16.

I quite enjoy reading their book and also completely understand why it took them 10 years in order to collect the necessary material and finish it. It is, without doubt, a marvelous reference book for both professional practitioners of the field and amateur astronomers. I believe the book would be particularly important for students pursuing either undergraduate or postgraduate studies in Physics, Astronomy, Space Sciences, and History and Philosophy of Science, and, therefore, I highly recommend it for University libraries and academic institutions.

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