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Italian Contributions to Planetary Astronomy

From the Discovery of Ceres to Pluto's Orbit

Springer

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Preface

Italy has a long and interesting tradition in the field of planetary astronomy and has significantly contributed to the study and exploration of Solar System bodies. The recent qualified participation of Italian scientists in many of the last space missions (DAWN, ROSETTA, EXOMARS, BEPICOLOMBO, etc.) has consolidated this tradition, which is still promising for the future.

Most of the historical instruments, books and manuscripts giving evidence of this tradition—especially in the nineteenth century—are still preserved in many Italian Observatories, which are today part of INAF (National Institute for Astrophysics). Most of these materials in INAF libraries, archives, museums, and collections have not yet been sufficiently exploited, although they are fairly accessible on the web. This precious heritage offers the opportunity to carry out historical research in this field in order to fill a gap in the historiography of planetary astronomy.

The currently available bibliography is in fact mainly focused on the major Italian contributions to planetary astronomy in the nineteenth century, namely, the discovery of Ceres by Giuseppe Piazzi in 1801 and the studies on Mars by Giovanni Virginio Schiaparelli in the last quarter of the nineteenth century. In contrast, nineteenth- and twentieth-century Italian studies on other topics (observations of early cometary spectra, discoveries of comets and minor planets, orbit calculations, studies of Jupiter's surface and Saturn's ring shape, determination of Pluto's orbit) are almost unknown to the international community and deserve to be explored in depth.

This volume intends to fill (in part) the abovementioned gap in the historiography of astronomy. Contributors are mostly historians, astronomers, and technicians working in INAF Observatories, who have easy access to local nondigitized archival resources and possess the necessary expertise for analyzing them in detail. A few non-INAF exceptions are represented by specialists in their fields, from Italy and abroad.

The reason why the Italian contribution to the development of nineteenth-century planetary astronomy is mostly unknown partly lies in the scarce international circulation of the related papers and works, which was often limited by the use of the Italian language, and partly in the fact that, in general, they are (or are considered) minor contributions, with a few exceptions. This book does not pretend to be exhaustive, of course, but just to provide additional (often less-known) elements for reconstructing

the complex process that led to building astronomical knowledge about Solar System bodies in different chronological and geographical contexts.

Moreover, it is beyond the aims of this book to provide an extended description of the development of planetary astronomy and its impact in the cultural context. However, it cannot be ignored that Galileo's telescopic observations of the Moon, Jupiter's satellites and Venus's phases were the starting point of this development. Consequently, even if this book is mainly focused on the nineteenth century, the introductory chapter is a sort of tribute to Galileo, as it contains original work and new results on his telescopes.

After Galileo, the most well-known Italian astronomer who worked in the field of planetary astronomy was Giovanni Virginio Schiaparelli, whose studies on Mars strongly impacted the society of the time. The second chapter describes his contributions not only to the studies of Mars but also to those, less known, of Mercury and Venus.

Jesuit astronomy gave (and still gives) interesting contributions to the study of the Solar System bodies. The third chapter describes the important studies on planets and comets carried out at the Collegio Romano by Jesuit astronomers, paying special attention to the works of Father Angelo Secchi.

As Florence was the most active Italian center in discovering comets, a chapter describes the Florentine contribution to cometary astronomy (and to the denial of comet-related fake news). At about half-way through the book, a fun retelling of the discovery of Ceres—the first asteroid (today classified as dwarf planet)—is a light reading after the dense initial chapters.

When the photographic technique became usual in astronomy, the procedure for observing comets and asteroids changed. The Catania Observatory participated in the photographic campaign for the measurement of Eros' parallax, which was launched during the implementation of the Carte du Ciel international project, the first attempt to photograph the entire sky vault on a global scale. The use of an astrograph and the method for measuring the positions of a celestial object on a photographic plate are described in detail in the chapter regarding the contributions of the astronomers in Turin, who discovered some minor planets around the Thirties.

The last chapter resumes the most interesting contributions given by the astronomers of Padua Observatory in the field of cometary and planetary astronomy, with a double focus on the ephemerides of Biela's comet and the calculation of Pluto's orbit.

In conclusion, this book provides information on lesser known Italian observatories, new perspectives, and microhistories that shed light on those aspects of the development of planetary astronomy in Italy in the nineteenth and early twentieth centuries that are not yet (or not at all) fully covered by the current bibliography.

Palermo, Italy Ileana Chinnici

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