

prophecy. Personal, immediate, mystical experience of God was the form of it he most desired, but he was too immoral, he thought, had committed too many crimes to receive such a gift. He never acted like a mystic, but he hoped he might access mystical insights through mathematics. (page 86)

Fauber describes Galileo's book *Dialogue on the Two Chief World Systems* as "the literary equivalent of a single man trying to take apart a castle with his bare hands," the castle being nearly two millennia of commentary on Aristotle's natural philosophy. (page 215).

The author (who is only identified as having attended Bard College and is now working on a PhD in Computer Science at the University of California, Riverside), is quite aware of his/her approach to the subject matter. It is evident if one reads the endnotes in conjunction with the text. The author has a powerful line about Giordano Bruno's reaction to a portrait of Jesus thrust before him, after he had been tied to a stake for execution: "Bruno would not look-out of disdain for Christ? Unlikely-out of disdain for the Church." (page 88). Turn to the note for this and you will read "I step into histrionics here, naturally." (page 281). This self-reflection actually saves the book from the travesty it could have been—what we have instead is a gem that is all the better for being unpolished.

These notes comprise 60 pages, giving exact locations for the material used to create the narrative, and much more. For example, a note on pages 312–314 contains the first English translation of a poem about Galileo by Maffeo Barberini (better known as Pope Urban VIII).

The book contains many delights, including quite a bit on Tycho's sister Sophie (listed as Sophia in the index), such as a quote from Tycho on his attempt to dissuade her from astrological speculations. Written with brio, the breezy, off-the-cuff style of this book serves as a counterpoint to all other books I have read on the four 'greats'. Despite the latitude taken in many instances, it is not, however, counterfactual. Even professional historians of astronomy may reconsider certain people or events in a different light after reading this, and it can equally well be recommended as an entry-level text to the complexities that surround early modern astronomy.

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***Internationality in the Astronomical Research of the 18<sup>th</sup> to 20<sup>th</sup> Centuries* edited by G. Wolfschmidt (Hamburg, Tredition, Nuncius Hamburgensis, Volume 49, 2020), Pp. 508, ISBN 978-3-7482-4975-7 (paperback), €39.90, 220mm × 170mm, 978-3-7482-4976-4 (hardback), €46.60, 226mm × 175mm, 978-3-7482-4977-1 (e-Book), €9.90**

This is the Proceedings of the meeting of the Working Group for the History of Astronomy of the German Astronomical Society held on 17–19 August, 2018 at Kuffner Observatory in Vienna.

There is no research in astronomy or any other field without contact with other scientists, and science is usually not bound to national borders. The guiding ideas of the topic addressed in this meeting were the beginnings of international cooperation mediated by the newly founded academies and societies; the establishment of the first journals as academy publications; and international campaigns.

The proceedings start with an introduction to the historical development of the internationality in the astronomical research by Gudrun Wolfschmidt covering the foundation of national and international astronomical academies with focus on the German societies and the IAU, the international campaigns of observing transits, creating star catalogs and monitoring variable stars, and ending in a short and rather incomplete mention of some current international projects.

Thirteen of the seventeen contributions to the meeting more or less addressing the general topic in a time range from the seventeenth to the twenty-first century are presented as chapters in the book; four contributions are included with abstracts only. The time range given in the title could be cause for misunderstanding: the cover pages state eighteenth to twentieth century, the title page eighteenth to twenty-first century, but actually seventeenth to twenty-first century is the correct range of the contributions. The papers concentrate on Austrian and German astronomical research.

In the first paper a detailed analysis of Kepler's eclipse observations from 1616 to 1620 in Linz is presented, in order to identify the house where Kepler lived when authoring his third law of planetary motion. The paper also gives a list and a short explanation of Kepler's publications that he finished while in Linz. The second paper describes the life of Giovanni Jacopo de Marinoni, mathematician, astronomer and geodesist in Vienna at the beginning of the eighteenth century. His pri-

vate observatory was the first observatory in Vienna. The Venus transit observations of 1761 at Vienna by Maximilian Hell, successor of Marinoni as Director of Vienna Observatory, and the French team of César François Cassini de Thury as well as Hells expedition to Vardøya (1768/1769) are in focus of the next two papers.

In the nineteenth century the internationality of science was strongly supported by the newly founded academies and societies. The German Astronomical Society (Astronomische Gesellschaft) was founded in 1863 with German as its business language but membership was not bound to any nationality. Until the end of World War I the fraction of foreign astronomers was about 60%. The development of international membership during the first 150 years of its history is presented in the first paper in the nineteenth century section of the book. Two contributions cover the founding history of Greece's first observatory by Georgios Constantin Bouris and the exchange between German and Greek astronomers in the nineteenth century. The influence of Ernst Mach's historical critical analysis of Newtons mechanics on the development of the General Theory of Relativity by Albert Einstein is discussed in the last paper of this section.

The section of the twentieth century starts with a presentation on the cooperation of Johann Palisa, Joseph Rheden and Max Wolf in the compilation of the Wolf-Palisa star charts from photographic plates of the Bruce Telescope in Heidelberg. Several years ago, an extended version of this paper was published by Schnell (2014).

One of the highlights of this proceedings is the paper about the international cooperation in variable star research. It contains a very good historical review of the development of that field of astronomical research and it addresses the need for co-operation in time-domain astronomy as well as open access to the data. Thus, variable star research is promoting global citizenship. The following paper describes Maria Wähl's efforts in rebuilding and reviving the Urania Observatory at Vienna after its destruction near the end of World War II by an airstrike. The impact of Austrian chemists in the field of cosmochemistry at the Max Planck Institute for Chemistry at Mainz/Germany during the twentieth century is the topic of another paper.

And finally, another highlight is the report about the development of neutrino physics with a special emphasis on the solar neutrino puzzle and its solution. The motivation of

co-operation in this example is the huge effort necessary to make progress that can only be managed together.

When comparing internationality in other fields of science, one is missing some introductory remarks on the special motivation for cooperation in astronomy using ground-based observations: the all-sky coverage and the total time coverage in time-domain astronomy demands cooperation and often was, and still is, the driving force! And, the Introduction does not address the development of the virtual observatory, the world-wide open database of astronomical data. Astronomers are leading players in open access sharing of data without any limitations to nationality.



The book is written in German except the paper about the influence of the Mach principle on the General Theory of Relativity; but all papers start with abstracts in English and in German.

The proceedings of a rather small meeting cannot hope to fully cover the topic of internationality in astronomical research. However, the book contains papers that presumably are not found elsewhere, and gives special insights into internationality in Austrian and German astronomy.

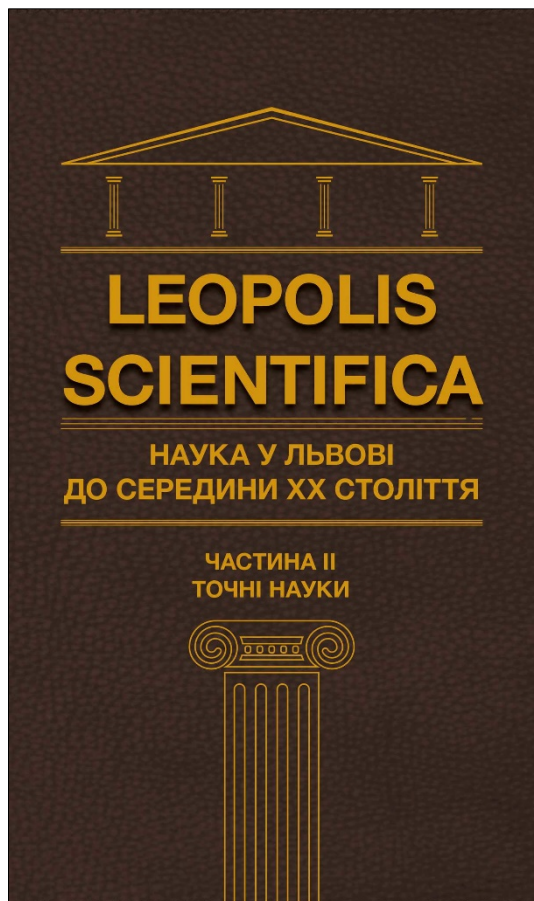
#### Reference

Schnell, A. 2014. Überholt vom Fortschritt – die Geschichte einer Koproduktion Heidelberg–Wien, Die Wolf-Palisa-Karten (ein früher photographischer Himmelsatlas), *Acta Historica Astronomiae* 50, 151–166.

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***Leopolis Scientifica. Science in Lviv till the Middle of XX Century. Two Volumes, edited by Oleh Petruk. (Lviv, Artos, 2020). Volume 1: pp. 336. ISBN 978-617-642-492-5 (hardback); Volume 2: pp. 412. ISBN 978-617-642-493-2 (hardback). 200 × 290 mm.***

The city of Leopolis (other spellings are Lemberg in German, Lwów in Polish and Lviv in Ukrainian) was founded in the thirteenth century by the Ukrainian ruler Daniel of Galicia (Danylo Halytskyi), the King of Ruthenia. The city and the region were taken by the Polish king in the next century. Galicia became a part of the Habsburg Monarchy in



1772, and of Poland after the World War I. At present, the eastern part of Galicia including Lviv is in Ukraine, and the western part is in Poland. The city is located at an important cross-roads; it was always a multinational city, with dominance of Catholic and Orthodox Christians, as well as Jews. The regions around the city were dominated by Ukrainians.

Lviv University was founded in 1661 when the Polish King John II Casimir gave the title of University to the Jesuit College that had been established in 1608. Thus, the middle of the seventeenth century is assumed as the beginning of science in Lviv. The two-volume book *Leopolis Scientifica* is devoted to an analysis of history of science in the city from that time up till World War II. The edition is a collection of papers written by prominent scholars. The first volume is devoted to history of the state scientific centers, the University and Polytechnic. At the same time, considerable attention is paid to activities of the underground Ukrainian University and Ukrainian scientific societies. (These non-Governmental institutions arose as a result of efforts by Ukrainians in the late nineteenth and early twentieth centuries to have an opportunity for the highest education; this was almost impossible at that time.)

The second volume deals with development of Mathematics, Physics and Astronomy. The book is of the large format, with more than 800 illustrations in both volumes. This review is devoted to the second volume. Its table of contents is as follows: Mathematics in Lviv (Yaroslav Prytula, pp. 3–182), Ukrainian Mathematical Trinity (Bohdan Ptashnyk, pp. 183–218), Physics in Lviv educational institutions since seventeenth century (Andrij Rovenchak, pp. 219–286), Physics and Physicists in Shevchenko Scientific Society in Lviv (Yurij Holovatch, Yulian Honchar, Marjana Krasnytska, pp. 287–338), Astronomical Observatory in Lviv University (Stepan Apunevych, Bohdan Novosyadlyj, pp. 339–356), Astronomy in Lviv Polytechnic (Stepan Savchuk, Liubov Yankiv-Vitkovska, pp. 357–380), Astronomy in Ukrainian Scientific Societies (Oleh Petruk, pp.381–406).

As one can see, three papers in this volume are devoted to astronomy. The first explores evidence about scientific astronomical observations performed in Lviv, and is related to the year 1764 when the priest Dominik Lysogorski studied a solar eclipse. Astronomical education at that time was already at a high level as one can see from the programs of public exams for students of the two-years mathematical courses in the Lviv Jesuit College during 1745–1749. The specialized institution, Astronomical Observatory, was opened in Lviv on 15 May 1771, i.e. 250 years ago. Therefore, it is amongst the oldest observatories in Europe. It was created by the efforts and funding of the Jesuits, in particular Sebastian Sierakowski, who prepared the project of the tower (Sierakowski was later the Rector of Jagiellonian University in Cracow).