

Author: Guy Consolmagno

Book Review in *Archivum Historicum Societatis Iesu* 76, 159-161 (2007) of *Searching the Heavens and the Earth: The History of Jesuit Observatories* by Agustin Udias (2003)

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This compendium of information about astronomical and geophysical observatories founded or run by members of the Jesuit order since the 16th century is not so much a book of history as the extended appendix for a book still to be written. It is filled with an enormous amount of data, and fascinating anecdotes, but it raises many questions that cry out for a deeper analysis.

The Jesuit observatories are significant for a number of reasons. Simply by sheer number, they make up an impressive fraction of the astronomy and geophysics done from the 16th through the 20th century. At a time when most working scientists were clergymen (in the 18th century, who else had the education, the inclination, and the free time to do science?), it has been estimated that the majority of such clergymen were Jesuits. A quarter of all the astronomical observatories in Europe during the 17th century transits of Venus were run by Jesuits.

While a few notable scientists like Grimaldi or Kircher or Boscovich were Jesuits, perhaps even more important in the history of science were the contributions made by all the lesser-known workers who provided, brick by brick, the materials from which modern science was constructed. Especially important in this regard is the scientific work done by Jesuits in mission territories. Jesuits were often the only scientists to be found outside of Europe during that epoch, and their work in the third world was essential even well into the early 20th century. Besides their more famous contributions such as directing the Imperial Observatory of Beijing from 1644 to 1805, they also provided important meteorological and geophysical observations in dozens of posts from Madagascar to Havana.

The book is divided into three sections. The first seven chapters narrate in a workmanlike fashion brief histories of every Jesuit observatory since 1540, both independent institutions and those affiliated with Jesuit colleges and universities. The second part essentially repeats this information in a more tabular form for those observatories in operation after the refoundation of the Jesuit order in 1814. The third section provides brief biographies for nearly 60 Jesuit scientists, primarily the directors of the observatories described in part II.

The discussion of observatories before the suppression of the Jesuits in 1773 is admittedly merely a review of other secondary literature, though it is a useful compendium of data. The section after the restoration is based on a significant amount of original research, including a systematic search through the annual catalogues of each Jesuit province held in the archives of the Jesuit curia in Rome, as well as other documentary material from the Jesuit archives in Cologne, Paris, and London. These were supplemented by many other letters and reports, and personal contacts with Jesuits still living who had worked in these institutions.

The personal details found in these letters and interviews provide the greatest strength of this book. Commonly, a given observatory was founded on the interests, and personality, of an individual Jesuit. The success of such institutions depended on the personal contacts and friendships (or animosities) among these individuals. And these observatories often failed to survive the passing of that key person.

Udías, through his research into the lives of these individuals, often can point out places where these men studied together and worked together — or, in a few cases, worked at cross purposes.

In this wealth of detail, however, many questions are raised that never get answered. “Jesuit observatories are seldom mentioned in the history of astronomy,” Udías notes at the beginning of the text. Probably this is true; but why is this so? The book describes several instances where non-Jesuit observatories were in open conflict with previously-established Jesuit institutions, for example the case of the agitation on the part of certain British authorities against the meteorological station at Zikawei, China. But what was the source of this conflict? And, of course, the history of all these observatories was colored completely by the events that led to the suppression of the Jesuit order from 1773 to 1814; but the context of that suppression, and any possible role that the Jesuit scientists of the time may have played, is never described.

Udías was not served well by his copy editor at Kluwer, as unfortunately the book is peppered with typographical errors. For example: we read on p. 20 that “Kircher... occupied the chair of mathematics in 1639-1630” (sic). Trnava is located in the Czech Republic on p. 27, but – correctly – in Slovakia on p. 31. On p. 95 we are told that “In 1870 Dressel and Wulf went to Quito, Ecuador...” which is unlikely, since on the previous page the date of Wulf’s birth is list as 1868. (Both dates appear to be correct; the identification of the same “Wulf” traveling to Quito appears to be in error.) I mention these because they are examples (and not the only ones) of many minor inconsistencies that an internal reading of the book shows up. How many other typos involve dates or the spelling of names are there, that an unwary reader may not be able to check?

Ultimately, this book is a resource, not a history. Ideally, given these descriptions of their local histories institute by institute, a full analysis of the Jesuit observatories would place all of them chronologically in the context of the contemporary historical events — scientific, political, and ecclesiastical. Such a history of the Jesuit observatories, centered on an overarching theme with a careful selection and analysis of this wonderful compilation of data, remains to be written.

Udías is a geophysicist, not a historian, and clearly this book (nearly 20 years in the making) was a labor of love as much as scholarship. It points the way to a field that deserves an even deeper more scholarly analysis. If it can inspire such an analysis by a trained historian, it will have accomplished a great service to our understanding of the history of science and its relationship with both religion and culture.