

BOOK REVIEW of a major new publication on Orreys of the 18th Century.

Astronomical Clocks and Models of the Universe by the Mechanic-Priests of the 18th Century

(Astronomische Uhren und Welt Modelle der Priestermechaniker im 18. Jahrhundert)

written by Ludwig Oechslin, in German. ISBN 2-88380-008-1

published in 1996 by: Antoine Simonin, Rue des Saars, CH-2000 Neuchatel, Switzerland

Price ca. US\$ 220.-, 2 Volumes of about 250 pages each, richly illustrated, plus separate folder with over 50 oversize construction drawings and diagrams.

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Ludwig Oechslin is a well known Swiss astronomer, philosopher, historian and timepiece designer. He may be best known among Horologists as the designer of and mastermind behind the world famous Thuerler astronomical clock in Zuerich, arguably the most complex mechanical timepiece built in the 1990s. He is also the conceptual creator of the Ulysse Nardin series of astronomical wristwatches.

Mr. Oechslin has spent several years researching all astronomical clocks and orreys he could find which were designed and built in the 18th century by clerics. Most are extraordinarily complex mechanisms, with dozens of dials and indications covering not only planetary motion, but other astronomical and calender data as well. Oechslin found a total of 28 masterpieces, created by 10 different artists, mostly located in central Europe. This includes the clocks/orreys of David a San Cajetano (Vienna), Bernard Stuard, Johanes Klein, Engelbertus Seige, Johann Georg Nestfell, Philipp Matthaeus Hahn etc. Most of these works are major focal points of horological exhibits in Museums in Dresden, Vienna, Stuttgart, Furtwangen, Munich, Prague, Gotha, Basel etc. Mr. Oechslin, over a period of several years, has been given permission to handle, disassemble, record, catalogue and study these unique masterpieces in great detail.

Volume One of the publication deals mainly on a theoretical and conceptual level with the issues of modeling earth and the heavens. After examining the theological foundations which led these clerics to build these orreys, he first describes the problems of the mathematical/geometrical models and later the corresponding mechanical models. Oechslin discusses at length the desire for perfection when showing the "real" orbit of planets and other heavenly bodies, and how these are dealt with by mechanical approximations, including excentric gears, cam followers, epicyclical gears, three dimensional displays etc. He examines in detail the various mechanical solutions found for highly complex and nonlinear motion. There are numerous diagrams further explaining points covered in 250 pages of text.

Volume Two, also approximatly 250 pages, examines, describes and illustrates in detail the 28 historical astronomical clocks/orreys he studied. Oechslin provides detailed tooth counts and gearing ratios for all the clocks (in some cases this data stretches over pages of formulas), calculating the motions as displayed and comparing them to the "real" values. In many cases the exact tooth counts of these clocks had never before been established, and in most cases have not been published before. The book provides a unique glimpse into the inner workings of these masterpieces, a world that is hidden to the the ordinary orrey enthusiast behind the dials of "do-not-touch" museum pieces, but which becomes understandable and accesible because Oechslin was permitted to disassemble most of the works.

The third part of the publication is a folder containing oversize diagrams (mostly approx. 11x17 inches) mapping out both the displays and the mechanical works of the 28 clocks described in volume two.

While the text is in German, the book should be of interest to and a worthwhile acquisition for any serious orrey/astronomical clock enthusiast. As much of the information is in photos, diagrams, construction drawings and mathematical formulas, the mechanical/desin part of the book can be followed and appreciated even if you have only a vague notion of the German language. To fully appreciate the philosophical and historic context a command of the German language is essential.

Evaluation: A "must-have" publication for the serious student of astronomical clocks. Quite likely this is the most comprehensive study ever undertaken of highly complex historical orreys. While there are many illustrations, this is NOT a coffee table book of pretty pictures, photographs were selected for clarity of showing mechanisms, not for aesthetics. The book is a serious work of scholarship into the underlying philosophy, the history, and the mechanics of 18th century modeling of the heavens.

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