

RECENSIONES

A. J. LYON: *Dealing with Data*

Pergamon Press, Oxford - New York - Toronto - Sydney - Braunschweig, 1970, XVII + 392 p.

The book is an excellent guide for graduate students and young scientists to problems arising in connection with data analysis. Almost every discipline in the natural sciences is based on experimental data and dealing with them is not always as easy as often imagined.

Chapters 1 and 2 give a review on the possible sources of experimental and computational errors. These are recommended to students who are beginning laboratory studies.

Chapters 3, 4 and 5 deal with such basic statistical problems as standard errors, propagation of errors, significance tests. Special interest is devoted to range methods; these make otherwise complicated statistical studies straightforward and rapid to apply even at the laboratory bench. Any research worker who does not have a thorough grounding in statistical studies will find interesting topics in these chapters.

Chapter 6 gives a guide to fitting a straight line in an elementary but effective manner. Some of the practical advice given on the choice of the scales of a graph and rejection of outliers is very useful. The generally more difficult problem of fitting of curves is treated in Chapter 9.

Computational errors and numerical methods such as integration and differentiation are briefly discussed in Chapters 7 and 8. The use of slide rules, logarithm tables and desk calculating machines is also described. This part can be recommended to students of non-mathematical sciences such as biology or mineralogy. Electronic computers and their related special problems, such as Monte Carlo methods and double precision variables are, however, not discussed. As these are generally applied in physics, chemistry and many other fields, it would have been useful for a young expert to find something about them in the book.

The numerous well-chosen examples and problems form an important part of the book. These examples will be helpful to tutors in setting effective teaching courses of their students and greatly facilitate self-education. Some very useful tables and summaries in the appendices complete the book and make it easy to use directly in the laboratory.

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John Pecham and the Science of Optics

(*Perspectiva communis*) Edited with an Introduction, English translation and Critical Notes by DAVID C. LINDBERG

The University of Wisconsin Press, Madison, Milwaukee and London, 1970, 300 pages

Over the past few decades historians have considerably neglected medieval contributions to the science of optics. This has mainly been due to the fact that modern editions of basic texts have simply not been available. However, with the publication of the first English edition of JOHN PECHAM's study "*Perspectiva communis*" DAVID C. LINDBERG has made this most widely known and cited of all medieval works on optics available for scientists.

A lecturer of the Franciscan schools at the universities of Paris and Oxford and later Archbishop of Canterbury, JOHN PECHAM (1292) was one of the men most actively engaged in the criticism and assimilation of the science of Islam and ancient Greece newly discovered in the XIIIth century. In addition to participating in the philosophical controversies associated

with the new Aristotelianism, Pecham was interested in several technical aspects of scientific thinking. The revival in the West of the ancient traditions of optics in particular, developed to a high level by the Greeks, but enriched by the newer discoveries of Islamic scientists — especially ALHAZEN (IBN AL-HAITHAN) — was largely due to the efforts first of ROBERT GROSSETESTE and later ROGER BACON. PECHAM was heir to this tradition, and in “*Perspectiva Communis*” he attempted to reconcile all available authorities on optics and to express their conclusions in easily understandable terms.

In Part I PECHAM discusses the propagation of light and colour, the conditions of visual perception, the anatomy and physiology of the eye, the physiology of vision and the errors of direct vision. Part II contains a discussion of vision by reflected rays. Part III is devoted to vision by refracted rays as well as to the rainbow and the Milky Way. Thus PECHAM intended his study as introduction to the science of optics, especially to the optical theory of its original source, ALHAZEN.

LINDBERG’s edition of “*Perspectiva Communis*” strikes a marvellous balance between a literal and interpretative translation. The Latin text, based on 11 early manuscripts, is printed with the English translation on the opposite pages. LINDBERG also provides the reader with an introduction placing PECHAM in an appropriate historical perspective and gives detailed explanations of the text and references to many other medieval works.

The book reviewed here is of value to scientists studying medieval science, particularly with regard to the development of optics in the late Middle Ages and the Renaissance. Art historians will find this book exceedingly useful, as many renaissance painters relied on PECHAM’s study of the theory of perspective. The book is an excellent example of a medieval university textbook and as such will be of interest to students of the history of education.

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