

## REVIEWS

EDITED BY JUDY V. GRABINER

All books monographs, journal articles, and other publications (including films and other multi-sensory materials) relating to the history of mathematics are abstracted in the Abstracts Department. The Reviews Department prints extended reviews of selected publications.

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Most reviews are solicited. However, colleagues wishing to review a book are invited to make known their wishes. Comments on books, articles, or reviews should be submitted to the Correspondence Department. We also welcome retrospective reviews of older books. Colleagues interested in writing such reviews should consult first with the editor to avoid duplication.

PIERO DELL FRANCESCA'S MATHEMATICAL TREATISES: THE "TRATTATO D'ABACO" AND "LIBELLUS DE QUINQUE CORPORIBUS REGULARIBUS."  
By Margaret Daly Davis. Ravenna (Longo Editore). 1977  
xxii + 135 pp., 36 plates. Lit 8000

*Reviewed by Warren Van Egmond*

*Institut für Geschichte der Naturwissenschaften  
Deutsche Museum, 8 München 26, West Germany*

The connections between art and mathematics in the Italian Renaissance have long been recognized by both historians of art and historians of mathematics. George Sarton devoted a page to the development of the theory of perspective in painting in 14th-century Italy in his *Introduction to the History of Science* (Vol. III, p. 1105), while Rudolf Wittkower and P.H. Scholfield have carefully studied the mathematical principles used in Renaissance architecture. But with these exceptions, the barriers presented by modern disciplinary boundaries have long prevented any real interchange between the two fields. Except for Lon Shelby's article, "The Geometrical Knowledge of Mediaeval Master Masons" (*Speculum* 47 (1972), 395-421) and Diane Finiello Zervas' study, "The *Trattato dell'abaco* and Andrea Pisano's Design for the Florentine Baptistery Door" (*Renaissance Quarterly* 28 (1975), 483-503), there has been little recent interaction between the

two disciplines. Margaret Daly Davis' book thus constitutes one of the first major studies to concentrate on the links between art and mathematics, connected historically yet separated in scholarly activity.

Its focus is a personage no less important than Piero Della Francesca, one of the foremost artists of the Italian Renaissance, whose paintings have long been recognized for their mathematical precision. This precision is not surprising since Piero based his paintings on sound mathematical principles of optics and perspective, and composed three theoretical treatises outlining these principles for those who wished to follow them: a treatise on perspective, *De prospectiva pingendi*; a treatise on the five regular bodies, *De corporibus regularibus*; and *Trattato d'abaco*, a general treatise on commercial arithmetic, algebra, and geometry which was probably written first and served as the mathematical foundation for the other two. Yet despite his great fame as a painter, Piero's written works passed into an early obscurity and were not even printed until within the last century, *De prospectiva* in 1899 and again in 1942, *De corporibus* in 1916 and the *Trattato d'abaco* only within the last decade. Mrs. Davis' book is an analysis of the last two.

It should be pointed out that, in spite of its perhaps slightly misleading title, this is a work in the history of art, not the history of mathematics. Only five pages are devoted to the first two parts of Piero's treatise on commercial mathematics and algebra, and these draw on sources no more recent than Libri, Cantor, and Zeuthen, yet still manage to make some minor errors within this small compass, such as saying that the solution of the cubic equation "was probably due to Niccolo Tartaglia" (p. 23), neglecting to mention the first successful solution made by Scipione del Ferro of Bologna.

Mrs. Davis' primary attention is devoted to an analysis of the geometrical section of the *abaco* and the book on the five regular bodies, with particular concern for how they relate to the construction of perspective drawings of the regular bodies as they appear in Luca Pacioli's *De divina proportione* of 1509 and numerous treatises on perspective written after that date. A short preliminary chapter is devoted to the application of mathematics to art and its study before Piero; one chapter each is devoted to the *Trattato* and the *Libellus*; and a final chapter studies the influence they had on the artists of the 16th century, particularly Albrecht Dürer and Daniele Barbaro, mediated primarily by Luca Pacioli's uncredited publication of the major portion of the *Libellus* and part of the *abaco* in his *Summa* and *De divina proportione*.

Perhaps the greatest direct interest the book holds for historians of mathematics is its very careful, detailed study of the connections between Piero and Pacioli, showing precisely which works Pacioli used and how he altered them. Two appendixes sum-

marize the results of these studies, and two tables of concordances list the corresponding problems in the *Trattato d'abaco*, the *Libellus de corporibus regularibus*, and Pacioli's *Summa*.

Overall, the book is very well organized and well written. It is brief, clear, and nontechnical and does not demand any previous knowledge of the history of art or its voluminous literature. Since it also includes a very well selected bibliography, it is a particularly good point of entry for any historian of mathematics who is interested in pursuing this subject in greater detail.

Mrs. Davis has not built the bridge between Renaissance art and mathematics we have all been looking for (to be fair we must realize that this was not her intent), but she has surely laid one of the principal foundation stones on which any such bridge will eventually be built.

WOMEN AND MATHEMATICS, SCIENCE AND ENGINEERING. A PARTIALLY ANNOTATED BIBLIOGRAPHY WITH EMPHASIS ON MATHEMATICS AND WITH REFERENCES ON RELATED TOPICS. By Else Høyrup. Roskilde University Library, Denmark. 1978.

*Reviewed by Dr. Louis L. Bucciarelli*  
*Program in Science*  
*Technology and Society*  
*M. I. T.*  
*Cambridge, Mass. 02139*

Else Høyrup is a Danish mathematician who has turned her attention to the study of the sociology and psychology of mathematics and the individual--especially women and mathematics. Her bibliography contains approximately 400 items drawn primarily from contemporary journals in the fields of education, mathematics, and psychology and gathers citations under the headings "Women and Engineering," "Women and Problem Solving," "Sex-differences in Cognition," and "Creativity," as well as "Women and Mathematics." Most of the entries are annotated with a brief comment, e.g., "important," "prejudiced," "very technical," "good bibliography," etc.

This slender paperback is described by the author as a work in progress. It is well worth perusing and could serve as the basis for a coherent and more comprehensive bibliography. Else Høyrup would be pleased to receive comments and references on this subject. Her address is Bøggerej 8, DK 3500 Voerløse, Denmark.