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Robins, Gay (4-CAMBX); **Shute, Charles C. D.** (4-CAMB)
Mathematical bases of ancient Egyptian architecture and graphic art. (French, German summaries)
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The authors show, using a new, improved surveying method, that the slopes of pyramids were determined in practice as indicated in the Rhind mathematical papyrus, from the "seked" of the sides, i.e. by the regression in palms corresponding to a vertical rise of 1 royal cubit (= 7 palms), the favoured seked-values being $5\frac{1}{2}$ palms and $5\frac{1}{4}$ palms. The former, older value is shown to stem from the average slope of King Djoser's step pyramid; so the coincidence of $5\frac{1}{2} \div 7$ with the Archimedes approximation to $\pi/4$ is shown to be really a random coincidence, *pace* all pyramidologists. Similarly, the near coincidence of the slope of certain pyramidal edges with nice numbers and the occurrence of numbers close to powers of φ, the inverse "golden section", are shown to be fortuitous. For some reason (obscure to the reviewer) it is claimed that the use of a seked of $5\frac{1}{4}$ palms indicates not only (since $5\frac{1}{4} \div 7 = \frac{3}{4}$) that a right triangle with sides 3 and 4 was sought (as it also appears in other sorts of Egyptian architecture) but also that the Egyptians knew that a 3-4-5-triangle is right.

The second part of the article investigates the slope of slanting lines in Egyptian two-dimensional art (as performed in square grids in agreement with the system of "canonica proportions"; see a book by E. Iversen (in collaboration with Y. Shibata) [*Canon and proportions in Egyptian art*, second edition, Aris & Phillips, Warminster, 1975]). It is argued against Iversen, among other things from anthropometric measurements on Egyptian skeletons, that the elbow-fingertip distance in such art corresponds to a "small cubit" of 6 palms and not to a royal cubit, and that it fills out 5 and not $5\frac{1}{4}$ square grids. This importance of the small cubit in such art leads the authors to the hypothesis that the regression of slanting lines in two-dimensional art was planned by artists as a certain number of palms per small cubit vertical rise. The hypothesis is verified not only in a drawing of a feature of a Rameses II-temple made in the temple itself, where a seked of 1 palm in 7 in the real building is represented as 1 palm in 6, but also on a series of representations of persons with inclined scepters and apron-edges. Once more, near coincidences with famous irrational numbers are shown to be random when not based on false measurements. *Jens Høyrup*