

ABRAHAM IBN EZRA, *Sefer ha-Mispar* [*Book of Numbers*] and *Hokhmat ha-Mispar* [*Science of Numbers*]

In Hebrew, manuscript on Paper

[Balkans or Turkey, mid to late fifteenth century]

i + 56 + i (collation: manuscript too fragile to determine) on paper, ff. 2v-6v blank, paper size 216 x 141 mm., two unidentifiable watermarks tête de boeuf and ciseaux, modern foliation in pencil, catchwords, written in Byzantine semi-cursive script in brown ink, single column of 27-31 lines, no framing ff. 7r-32r (writing space 165 x 100 mm.), text framed by plummet ff. 32v-50r (justification 158 x 97 mm.) and by hard point 52v-56v (justification 140 x 88 mm.), rubrics in light brown ink ff. 7r-32v and in red ink ff. 32v-56v, FOUR DIAGRAMS OF CALCULATIONS, f. 7r, 40 x 40 mm.; f. 9v, 32 x 34 mm.; f. 43v, 20 x 22 mm.; f. 44r, 25 x 30 mm. (incomplete), FOUR LARGE TABLES f. 8v, 195 x 105 mm.; f. 9r, 83 x 115 mm.; f. 16r, 50 x 57 mm.; f. 50r, 42 x 45 mm., small pen drawing of a comet (?) on f. 26r, numerous computations in text and margins throughout, marginalia in multiple hands throughout, blank space for computations on ff. 30-32r, ff. 32-42 partially detached, severe foxing ff. 31-32, water stains to fore edge on ff. 33-40, slight worming in margins not affecting text, paper torn on upper margin of spine on ff. 39-40 and 46, paper chipped and broken on f. 1, paper broken on f. 9, modern paper repairs to ff. 9, 16, 32-33, 37, 41, 42, 43, 47-56. Bound modern dark brown leather binding over cardboard, heavily worn gilded ornamentation with Hebrew title on spine, head, tail, and fore edges heavily worn, corners bumped and worn, heavy wear on spine with separation on head and tail edges, modern paper flyleaves and pastedowns. Dimensions: 218 x 150 mm.

Compendium of two important Hebrew works on arithmetic, both attributed to a major Jewish scholar of the twelfth century instrumental in bringing Arabic ideas to the West through Spain. The first treatise introduces the decimal system to western Europe. It is extant in 11 manuscripts, last edited in the nineteenth century without its final chapter. The second treatise is entirely unpublished and exists only in a single other, incomplete, copy.

PROVENANCE

1. Written in the Byzantine area, the Balkans or Turkey judging from the script and the paper.
2. Samuel David Luzzato (1800-1865), Italy, Trieste and Padua, his owner's inscription, f. 1r. Luzzato was an Italian philologist, poet, and biblical exegete, who authored a large number of important writings both in Hebrew and in Italian and who also left a voluminous correspondence.
3. Solomon Hayyim Halberstam (1832-1900), his MS 126, stamped on spine and front pastedown, "126" written in blue pencil and brown ink on recto of front flyleaf. Polish scholar and bibliophile, Solomon Halberstam was a wealthy and avid collector and scholar of Hebrew manuscripts, including codices from Luzzato's estate and Zunz's private library.
4. Sir Moses Montefiore (1784-1885), his MS 419, stamped on spine, and front

pastedown. Most famous English Jew of his time, Montefiore became a legend in his lifetime, fighting worldwide for the lives and rights of Jews. He founded after the death of his wife Judith Lady Montefiore a college in Ramsgate, which with the appointment of Rabbi Moses Gaster acquired many manuscripts including the Halberstam Collection and the Zunz legacy.

5. London, Jews' College, on deposit since 1899, as part of the Montefiore Endowment.

TEXT

ff. 1v-2r, A ledger belonging to a pawnbroker residing in a town in the Byzantine area in the mid-sixteenth century (ff. 2v-6v blank);

ff. 7r-8r, Various extracts including several short polemical dialogues between Jews and Christians, verses and astronomical tables;

ff. 9v-45r, *Sefer ha-Mispar*, a mathematical work by Abraham ibn Ezra (This manuscript includes an additional chapter, *Sha'ar ha-Dagim*, not included in that edition [ff. 44v-45r], and some glosses in the margins);

ff. 45v-56v, *Hokhmat ha-Mispar*, another mathematical work attributed in this manuscript to Abraham ibn Ezra. f. 56, ending with an inscription indicating that a transcription of al-Farabi's *Sefer Hathalot*[*ha-Nimzaot*] would be copied on the following leaves, but it was never completed.

Abraham Ibn Ezra (1089-1164), poet, grammarian, biblical commentator, philosopher, astronomer, and physician was born in Toledo, Spain. The events of Ibn Ezra's life may be divided into two distinct periods; during the first period he lived in Spain and in the second period, from 1140 until his death, he left Spain and traveled widely throughout Europe, to Italy and France and perhaps also to North Africa and Asia. Wherever he traveled he sought the company of scholars. Ibn Ezra left a large body of writings, including biblical exegesis, grammatical treatises, religious philosophy, and he was the author of a number of important mathematical, astronomical, and astrological works, drawn from Arabic sources, including *Sefer ha-Mispar*. No works by him in Arabic survive, but he surely knew the language.

In the *Sefer ha-Mispar* Abraham Ibn Ezra is credited with introducing the Indian-Arabic decimal system of enumeration to Europe. He uses the Hebrew letters *Aleph* to *Tet* as the equivalents of the Arabic numerals one to nine and as the components of all larger numbers. He employs the use of a circle for the zero symbol. Later chapters deal with different mathematical operations, such as addition, subtraction, multiplication, division, fractions, proportions, square roots, geometry, etc. (see Levy, p. 43, nos. 50-51).

The provenances and origins of the eleven extant manuscripts of the *Sefer ha-Mispar* reflect a widespread transmission of the text. They were written in Italy, Ashkenaz (German area), Turkey, and Spain from the fourteenth to the sixteenth centuries, and there is even a copy by a Karaite around 1600 in Turkey. Two of the nine copies were transcribed in early nineteenth-century Italy, and the work was not printed until its edition in the late nineteenth century. The critical edition of *Sefer ha-Mispar* published in Frankfurt in 1895 with a commentary and a German translation made use of this manuscript for variants, although it did not publish the additional chapter *Sha'ar ha-Dagim* (ff. 44v-45r). Ibn Ezra's *Hokhmat ha-Mispar* remains unstudied, and it has

never been published. The only other known copy in Cambridge University Library, Add. 481, ff. 53v-55v is incomplete and is not attributed to ibn Ezra (see Stefan C. Reif, assisted by Shulamit Reif, *Hebrew Manuscripts at Cambridge University Library: a Description and Introduction*, Cambridge, Cambridge University Press, 1997, no. SCR 581).

LITERATURE

Hirschfeld, H. *Descriptive Catalogue of the Hebrew Manuscripts of the Montefiore Library*, London, MacMillan, 1904 (reprint from JQR, 1902 and 1903), no. 419; see the separate catalogue of the Halberstam collection of 412 manuscripts published as *Qehillath Shelomoh*, Vienna, 1890.

Levy, B. Barry. *Planets Potions and Parchments: Scientifica Hebraica from the Dead Sea Scrolls to the Eighteenth Century*, (exhibition catalogue for the Jewish Public Library), Montreal, McGill-Queen's University Press, 1990.

Levy, Tony. "Abraham ibn Ezra et les mathématiques; remarques bibliographiques et historiques," in *Abraham Ibn Ezra—savant universel, Conférences données au colloque de l'Institutum Iudaicum. Namur, 25 novembre 1999*, ed. P. J. Tomson, Brussels, 2000, pp. 60-75.

Sela, Shlomo. *Abraham Ibn Ezra and the Rise of Medieval Hebrew Science*, Leiden, Brill, 2003.

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