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ANONYMOUS, *Sefer Evronot* (Book of Intercalations)
In Hebrew, illustrated manuscript on paper
[Eastern Europe, Moravia, Silesia, or Galicia, 1593-1604]

I + 44 + i folios, complete, (collation i^{2+2} + ii^{2} + iii^{4} + iv^{2} + v^{6} + vi^{2} + vii^{6} + $viii^{4}$ + ix^{4} + x^{4} + xi^{2} + xii^{4}), paper size (193 x 151 mm.), watermark not in Briquet ("homme dans un cercle surmonté d'la lettre B"), modern foliation in pencil in Arabic numerals on lower recto side, manuscript written in Ashkenazi script in dark brown ink, large architectural frontispiece with zoomorphic and anthropomorphic details on f. 1 r (185 x 127 mm.), large architectural frontispiece with vegetative designs on f. 11r (183 x 140 mm.), 35 charts and tables of various sizes with zoomorphic penwork in brown ink on f. 2r-19v, 14 calendar tables with roundels on ff. 20r-26v (183 x 123 mm.), 2 calendar tables of Christian feast days on f. 27rv (180 x 119 mm. and 150 x 78 mm.), 16 rectangular tables of the Gregorian Calendar on ff. 28r-35v (155 x 137 mm.), large recto-verso facing mathematical chart on ff. 43v-44r (296 x 180 mm), ff. 1v, 11v, blank, contemporary marginalia in brown ink on ff. 15r-16r, 22v-23r, 27r, 28r, contemporary zoomorphic and vegetative pen work doodling in brown ink on f. 13v, missing page on between ff. 16 and 17, 40v-41r, 42r, text worn and missing on ff. 2r, 6r-10v, 12rv, 20r-21v, 28r-35v, 36r-38v, 42v, 44v, heavy ink stain affecting text on f. 4v, bleeding of text and images throughout manuscript, browning and soiling to all edges of manuscript, heavy soiling and wear to ff. 1r and 44v, nib testing on ff. 19v, 27r, very worn marginalia in French in eighteenth-century cursive script in black ink on f. 44v, modern pencil doodling on ff. 4r, 8v, modern pencil correction to Hebrew text on f. 42v, professional modern restorations to paper throughout manuscript. Bound in modern dark brown leather binding over sturdy cardboard, four raised bands appear on the spine, front and rear covers and spine with elaborate blind-stamp decoration (see below), modern heavy cotton bounded paper used as front and rear flyleaves and pastedowns, browning to edges of front pastedown, browning to rear pastedown, rear flyleaf has browning and ink bleeding from f. 1r, modern pencil handwriting within a circle in lower gutter of rear pastedown ("204"), three fragments from the original binding including a decorative stag/ deer are preserved in the modern slipcase (see below). Dimensions 203 x 157 mm.

Richly illustrated manuscript of the *Sefer Evronot* (Book of Intercalations) used to intercalate the Jewish lunisolar calendar and to reconcile it with the Christian calendar for religious and mercantile purposes. Every *Evronot* manuscript, intended for local use by community leaders, merchants, and travelers, is unique. One of only about six illustrated copies dating before 1600, this copy is important also because it was made for use in Eastern Europe, whereas the majority are from Southern Germany.

PROVENANCE

1. Written probably in Eastern Europe, Moravia, Silesia, or the Posen region, on the basis of the list of locations of fairs, which includes dozens of cities in the region between Danzig in the North, Miedzybozh (Poland) in the East, and Hungary in the South. Several dates appear in the manuscript: on f. 9, "like now in the year 1593" (twice); f. 13, "like now in the year 1604" (twice); and f. 27, "In 1583 all these states brought their calendar forward by ten days. On f. 15, there is a chart for all the years from 1542 (the 280th cycle) to 1788 (the 292nd cycle). The final leaves were written later, apparently in 1608, with a detailed calendar for the years 1608-1615, which is followed by a concise calendar for the years 1616-1663 and a detailed calendar for the years 1618-1625, in another hand. This manuscript identifies the scribe, whose first name is illegible

"son of the *katzin* Moses, long may he live, son of the *katzin* Ezra, may his memory be a blessing." The term *katzin* implies some rank within the community, usually that of a lay leader. No other manuscript has been identified by this scribe, although it should be noted that *Evronot* manuscripts were often written and illustrated by the same person on commission. The mention of the institution of the Gregorian calendar speaks of it occurring "in our lands in 1583." This indicates a Catholic state since Protestant states did not accept the Gregorian calendar until much later. Most illustrated *evronot* from this period are from South Germany, making this one a rare example from Central or Eastern Europe.

2. A later owner has added the Hebrew name Issachar Ber written across ff. 15r and 16r.

3. United Kingdom, Private Collection.

TEXT

1r, Title, "Evronot" in Ashkenazic square letters and colophon with scribe's name beneath in Ashkenazic cursive script, with illustration (the anthropomorphic elements may not be original, since they appear to be superimposed by a later doodler upon the careful and clean design of the original. No other human figures exist in the entire ms). Note pen trials on this and other folios in Latin script;

ff. 2r-3v, "Portals" of the four days of the week on which the conjunction of the moon can fall for the month of Tishre (the first month of the Jewish calendar). This chart is one of the factors that sets the "pattern" for the entire year, as it determines the date of the New Year;

ff. 4r-6r, The four *dehiyyot* ("deferments") of the New Year and their explanation and consequences;

ff. 6v-12r, Explanation and chart for *yitronot*, the intervals inserted between the months and seasons to align the solar and lunar calendars, with charts (ff. 7r, 7v, 8r, 8v; those on 8r and 8v are incomplete);

f. 9r, Instructions for calculating the intervals for the equinoctial and soltitial points, the *tekufot*;

f. 11v, Illustration, one of the most elaborate and colorful images in the manuscript, is titled *Moznaim* (scales) and depicts a balance. Each side contains a series of letters whose numeric value is used to check the calculations of the (mean) lunar conjunctions. This was a basic value in calculating the entire calendar, so safeguards are inserted to ensure that error does not creep in;

ff. 12, 13r, and 14v, How to manipulate the volvelles (no longer present), but once affixed in the blank spaces. Because they were attached to the page by thread or other delicate matter, volvelles often came loose and were lost from such manuscripts with the passage of time. Each one was intended to aid in the calculation of the periods and intervals (lunar, seasonal, and annual) required to calculate the calendar;

f. 14r, Chart for calculating the intervals of the *tekufot*, the seasons, in the shape of a hand. Such hand-shaped charts, part of the medieval apparatus for the "ars memorandi," were found also in medieval Latin computus manuscripts—the nineteen year cycle was originally taught to students

using the digits. The chart on f. 14v aids in calculating the day and the hour of the day for the change of the seasons. (Many of the calculation charts arrive at the same goal in different ways);

ff. 17r-19v, Beginning of a section on how to align the Torah readings for each week depending on whether the year is regular or leap, and on other variables. These are followed by charts with rondels;

ff. 20r-26v, Demonstration of these principles in a concise manner for the various configurations of the year. These charts comprise the portion of the calendar that determines the holidays and synagogue services that form the overtly religious core of the Jewish calendar. Each rondel is titled by the Hebrew month it describes. Note that pages for leap years contain thirteen rather than twelve rondels, one extra for the "intercalated" leap month;

ff. 27r-27v, Chart that ties the various configurations of the Jewish year to the Christian holidays of the moveable (Easter) cycle. The text in the bottom square of f. 27v explains the changeover "in these countries" to the Gregorian calendar in 1582, approximately a decade before the ms was written;

ff. 28r-35v, How to calculate the following year's Christian (Gregorian) calendar from the previous year's calendar. Beginning with January, the running commentary on the margins of these charts notes the change of months, the festivals, the saints and Marian holidays, and the dates of notable fairs and markets, local and regional. (As noted earlier, the calendar ends on the second day of December indicating that a final folio is missing here);

ff. 36r-39v, Calculating the equinoctial and soltitial points (the change of seasons, *tekufot*) for various years from 1608-1625, in at least two different hands. These are practical applications of the principles of calculation taught in the text;

ff. 39v-40v, List of markets and fairs, grouped according to Hebrew alphabet, but not complete and not always in order;

f. 40v, Pen trials in Hebrew;

f. 41r, Magical formulae and folk remedies, of which the translations follow: "For a thief, write on a cake and he will be unable to swallow it, thus (this is a tradition from Ben Sira); For a theft, write on a cake and give it to him to eat, and he will be unable to swallow…; For a toothache, take onion seeds and place them on coals. Allow the smoke of those seeds to enter the mouth. The worms will fall our and it will never ache again; To stanch the bleeding of a wound or bloodletting or nosebleed, write these names on the forehead…

f. 42r, Unidentified Yiddish text;

f. 42v, Six mathematical puzzle/problems in Hebrew; (The matter at the end of the text is typically unique to each manuscript; added by later generations of users, it helps make each one a unique cultural artifact reflecting the lives and interests of their owners).

unnumbered folio, Pull-out chart, titled: "According to the large cycle." The large cycle refers to the solar cycle. The chart contains 28 lines, one for each year of the solar cycle, and the

"seasonal points" for those years. (The 19-year metonic or lunar cycle is referred to as the small cycle in *ibbur* literature).

Every society imparts calendrical knowledge in two forms, popular and elite. The accessible popular form, in easy-to-read tables, we call calendars. These are based on complex calculations that combine astronomical, mathematical, religious and cultural elements. Because of the complexity of the material and the danger of controversy if too many people set out to try and calculate their own, this knowledge was often limited to the elite, sometimes in the service of monarch or government. This body of knowledge is called *computus*, the Latin term used by historians of science. In Hebrew it is called *ibbur* (plural *evronot*). In ancient times the knowledge was held by the Sanhedrin, the governing body in ancient Israel, who promulgated the new months. Not widely disseminated, it was held to be esoteric. *Sod seder ha'ibbur*, the secret of the calculations of the *ibbur*, is the title of many medieval Hebrew manuscripts. This did not substantially change until the twelfth century in Sepharad and until the sixteenth century among Ashkenazic Jews. Our discussion focuses on the latter.

Until the mid-sixteenth century, the conventional form calendrical material appeared in was several folios of formulae appended to another work, often to a *machzor*, *siddur*, or other religious or historical work. In the mid-sixteenth century Ashkenazic Jews began to focus on the *evronot* as a self-standing work. Because the Jewish calendar is lunisolar—the months reckoned by the moon and the year by the sun—astronomical expertise was needed to reconcile the two to assure that religious obligations were discharged on the correct days and times. Jewish community leaders, merchants, and travelers used these manuals to construct calendars, intercalate leap years, and determine dates of trade fairs and Christian festivals. More than 200 manuscripts survive, and the first edition was printed in 1560 with many important editions printed subsequently through the eighteenth century. (See, for example, multiple editions of Eliezer ben Jacob Belin's Sefer Ebronot through the eighteenth century).

There is no comprehensive study either of the extant manuscripts or of the printed tradition. Such a study would have to take into account questions of authorship, the degree of standardization of the diagrams and illustrations, the nature of the iconography in comparison with other Hebrew manuscripts, and the relationship between the early printed copies and the manuscripts, which continue to be produced in spite of the existence of printed editions (see Straus below).

Because most of the surviving independent Ashkenazic *evronot* date from the seventeenth century or later, any independent Ashkenazic manuscript *evronot* that dates from the sixteenth century is early in the tradition. Relatively few pre-1600 Evronot manuscripts survive as independent volumes. The earliest is 1552 (see New York, Jewish Theological Society, MS 9487). Other early examples include: New York, Jewish Theological Society, MS 2548, dated 1557; a manuscript in the Stadtsbibliothek in Hamburg, Levi Collection, MS 129, dated 1572. Among illustrated copies are: Oxford, Bodleian Library, Mich. 152 (with few illustrations and apparently incomplete) and Opp. 701, dated 1566 (more fully illustrated). In short, there are no more than a dozen Evronot manuscripts from the sixteenth century, and no more than six of these are illustrated. If this manuscript is complete, it may represent something of an anomaly, as much of the midrashic material that introduces the German-Jewish *evronot* is absent here. Medieval Ashkenazic *evronot* tables, however, opened much like this one, with the "tables of the four portals."

Given the lack of foliation and the practice of the scribe to situate complete blocks of text on pages with no continuation or even lead words onto the following page or folio, as well as the modern rebinding, it is difficult to know whether the manuscript begins incompletely. At least one folio is missing, as the Christian calendar that begins on f. 28r ends on f. 35v on December 2 and should be followed by another folio that completes the month of December. Instead the sheet that follows f. 35 is written in a different ink or hand. As noted above, the volvelles are also missing.

The information on f. 27r of the *evronot* provides information about how to calculate the Christian calendar, including the following five feasts of the moveable Easter cycle, listed as *Fasnacht*, *Ostern*, *Opfabrt*, *Pfingsten* and *Leichnum* (German designations for Shrove Tuesday, Easter, Ascension, Pentecost, and Corpus Christi). An unusual feature in this manuscript is the fact that they are calibrated to the Jewish calendar (e.g. "Fasnacht always falls on the Tuesday after Rosh Chodesh Adar…"). The fixed Christian calendar contains two features that make each *evronot* unique: a list of saints days and market dates. These are often related, such as on f. 28: "Jadwiga: the fair in Reichen Bach always on the Sunday following Jadwiga." It is this feature that allows us to recognize the geographical area for which the manuscript was intended. Among the dozens of place names listed here, both major cities and small towns appear, including Brod, Kunitz, Budwitz, Loschitz, Premysla, Leipnik, Austerlitz, Franken Stein, Gromnitz, Lublin, Prague, Nikolsburg, Prostitz, Kremzier, Cracow, Auschwitz, Mezritch, Lunschitz, Eybeschutz, Pressburg. (Transliteration is given in Yiddish instead of contemporary spelling). A closer study of every place listed would enable us to reconstruct something of an economic atlas of Jewish trade in the region.

A chronograph from the year 1608 appears on f. 36. The manuscript contains list of times for the equinox and solstice through 1640. This is followed on f. 39v with another list of markets and fairs, arranged alphabetically according to location (according to the Hebrew alphabet).

ILLUSTRATION

A description of the charts and their contents is incorporated into the section "Text" because they are so integral to the textual content of the manuscript. Both volvelles and other charts such as the one in the shape of a hand (f. 14r) are integral to *evronot* (and indeed to medieval Latin computus manuscripts as well). They are devices designed to organize the complex calculations in a clear fashion. The hand is a rendition of what was once a mnemonic device using the actual fingers of the students to memorize calculations. The balancing scale (f. 11r) provides a way to check the figures by multiplying results by different sets of variables and seeing whether they are the same. The watercolor charts and illustrations are in pink, green, blue, and red wash.

BINDING

The modern binder has added fragments of the original binding into the inner case. These fragments, made of light brown leather, are conserved in three parts. The first is a fragment of the spine, including raised areas of three of the original four raised bands. On the rear inside cover of the box appears a long strip of the original binding from the spine edge of the manuscript. The front inside cover of the binding has the original front cover, with a partial detail of a stag or deer impressed into the leather. This does not appear to be a blind stamp using a tool. Rather, it appear to be an impression made by a blunt tool that was completed freehand and later given a darker stain to set if off from the binding.

The incised deer is probably original to the manuscript because an almost identical motif recurs on f. 7r, where it is integrated into the original text and illustration. It is not linked there to the content of the text and so may be linked to the anonymous patron's name which may have been Tzvi or Hirsch, meaning deer. (The fish motif from the title page may be echoed in the marginal illustration on f. 9v.)

LITERATURE

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ONLINE RESOURCES

Abstract Joshua Straus Thesis on Evronot
http://ur.wustl.edu/WUURD/wuurdfall06.pdf

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