

Orah Selulah

אורח סלולה, "The Paved Way"

*[The Paved Way — tables for the conjunctions and
oppositions of the Sun and Moon]*

(c. 1396 (composed in Syracuse, Sicily; this is a later manuscript copy))

by Isaac ben Solomon ibn al-Ahdab (יצחק בן שלמה אבן אלאחדב), c.
1350–c. 1429 (Castile → Sicily)

Translation by Scott Weisman



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Translator Version 2

Upright reason dictates that the recipients of the good, of whatever type and level of beneficence it may be, must show gratitude and blessing to the beneficent person in every way possible, commensurate with the value of the beneficence. And one who has benefited all the people of the world — for example, one who invented a new instrument for the good of the world, or a good book — it is fitting for every discerning person, out of the obligation of love of fellow beings, to at least purchase it, so that the man will profit and his heart will be encouraged thereby to invent yet more good instruments in the world. And similarly, all other wise-hearted people will likewise strive and exert themselves to invent good things and instruments needed for the repair of the world and its perfection.

And therefore, whoever says: "What do I need this new instrument for?" — he does not act well towards the world. For if not for the man who invented it, where would you be? And what would your city do? And more than this, if the man did not exert himself, what would the world do?

— R. Pinchas Eliyahu Hurwitz, *Sefer HaBris HaShalem* (1797)

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A note on the work

A set of astronomical tables by Isaac ibn al-Ahdab (Sicily, late 14th c.) for computing the true conjunctions and oppositions of the Sun and Moon — the *Orah Selulah* ("Paved Way"), one of the most widely copied Hebrew astronomical table-works (surviving in ~25 manuscripts). Built from lunar and solar equation tables with rubricated headers. The text is translated from Paris, Bibliothèque nationale de France, MS Hébreu 1086.

A note on the translation process

This translation was produced with the [translation-pipeline](#). See the linked repository for details on the process.

This text is the product of a highly refined automated translation process. It has undergone only cursory human review and should not be treated as an authoritative or scholarly rendering. It is offered solely as a reference and reading aid — a way to make an otherwise inaccessible work approachable — and any passage of real consequence should be checked against the original source.

Acknowledgements

Translated with the assistance of Claude. The translator thanks the [Anthropic](#) team for making this work possible.

Orah Selulah — BnF Hébreu 1086 — pages 1–2 (front matter)

This opening comprises the manuscript's binding and front flyleaf. Neither page carries any Hebrew text, tables, or an incipit; the astronomical work has not yet begun.

Page 1 — Front binding cover

The upper (outer) board of the binding: mottled/marbled brown leather (or leather-grained paper over board), heavily stained and speckled, with no lettering on the visible surface. Along the fore-edge a strip of the paste-down / spine covering is visible bearing a printed archival shelf label reading **HEB[R.] 108[6]** (the label is cropped at the edge of the scan; it corresponds to the fuller "HEBR. 1086" label seen on the following page).

[Librarian note: printed BnF shelfmark label "HEBR. 108[6]" on the binding, fore-edge.]

Page 2 — Front pastedown / flyleaf

A blank leaf (front pastedown or flyleaf), plain laid paper with light foxing and speckling at the fore-edge, otherwise unwritten. Near the center is a lozenge-bordered printed library label:

[Librarian note: printed BnF shelfmark label, black type within a lozenge frame — "HEBR. 1086".]

A faint rust-colored horizontal band across the lower third of the leaf is an offset/ghost transfer (contact stain) from an adjacent surface, not writing.

Attribution / title verification (as requested): This opening does **not** contain the title page or incipit, so the work's title and its attribution to Isaac ibn al-Ahdab cannot be confirmed from these two pages. Only the modern BnF shelfmark ("HEBR. 1086") is present. Verification of the title *Orah Selulah* and the attribution must be carried forward to the first text/incipit page in a following opening.

[Librarian note: The color-control chart and ruler are a post-medieval digitization artifact, not a codicological feature of the manuscript.]

The astronomical text has not yet begun in this opening. No inscribed title page, incipit, ownership note, or author attribution appears on either leaf; the title

Orah Selulah and its attribution to Isaac ibn al-Ahdab therefore remain unconfirmed and are carried forward to the first inscribed page.

The manuscript's astronomical text has not yet begun. No title page, incipit, opening formula, ownership note, or author attribution appears in this opening. The title *Orah Selulah* and the attribution to Isaac ibn al-Ahdab remain unconfirmed and are carried forward to the first inscribed page.

[Front matter — guard leaves and flyleaf. The astronomical work has not yet begun on either side of this opening.]

Page — guard leaf with pen-trials and jottings

This side is a badly damaged parchment guard leaf: the upper third is riddled with wormholes and the whole leaf is water-stained and abraded, with faded and partly erased writing across the center-right. It carries no incipit and no continuous text of the work — only scattered jottings (*probationes pennae* / ownership-type scribbles) in more than one cursive hand, together with a Romance/Latin scribble. What can be made out is fragmentary; most of the leaf is illegible.

Legible fragments (all readings uncertain; transcribed verbatim so far as recoverable):

- A short cursive block in the upper-left, laid out as a broken list, each line opening with **אלה** ("these are...") followed by an abraded word — e.g. אלה שמח אלה [?], אלה טמן[?], אלה [?]. The words after each **אלה** cannot be resolved. [?]
- Lower-left block, a few lines of a small cursive hand:
- [?] לשון הלוועז ("the vernacular tongue...")
- [?] ולזה הדין אחרים עשה
- ציור כ[?] נעש[?] ה בפה [?]
- בהם [?] שבין על [?] אחר [?]
- [?] והוא טוב [?] ר טוב [?]
- [The sense of this block is not recoverable; it reads as disconnected jottings. [?]]
- A larger, hastier cursive hand fills the right half of the leaf with what appear to be pen-trials:
- [?] יורה עני נעל בכר
- [?] [?] אין תוכן זה הספר לבאר
- מ' מ[?] אשר יק[?] ל [?]

- דמי שכרו וחוזק [?] רב
- [?] דין תשובה ולזכות אחר
- [?] הבנתם [?] היו
- [These lines are pen-trials/jottings, not a running text; individual words are uncertain and the whole is not a coherent passage. [?]]
- [Non-Hebrew jotting: a Romance/Latin cursive scribble in the upper-center, reading approximately a[c/o]une de levant — uncertain; possibly "alcune / aoune de levant" or a place/name jotting. [?]]
- Additional erased/smudged strokes across the center (including a faint red-ink trace) are illegible.
- [Librarian note: "Mg"] — pencil/ink mark at the upper-left margin (modern cataloguer's jotting).

Page — blank flyleaf with shelfmark

This side is an essentially blank flyleaf (wormed and stained at the edges) bearing only modern archival notations. No manuscript text of the work appears.

- [Librarian note: "95 / p. 95."] — upper-center, in ink (foliation/pagination reference).
- [Librarian note: "Hebr. 1086"] — center, in pencil (BnF shelfmark, Bibliothèque nationale de France, Hébreu 1086).
- [Librarian note: "61"] — lower-center, an ink numeral/flourish. [?]
- Faint Hebrew cursive is visible along the extreme right (inner) edge; this is show-through / the very edge of the facing leaf, not text belonging to this side. Not transcribed.

Carried-forward task — title/incipit and attribution: STILL UNRESOLVED.

Through this opening the codex remains in its front matter: p. 7 is a damaged guard leaf of non-authorial pen-trials and jottings, p. 8 is a blank flyleaf with the shelfmark. No title page, incipit, opening formula, ownership colophon, or author attribution has yet appeared, so the work's title (*Orah Selulah*) and its attribution to Isaac ibn al-Ahdab remain unconfirmed from the manuscript itself. Carrying the verification task forward to the next opening, where the inscribed text is expected to begin.

Orah Selulah — Isaac ibn al-Ahdab (BnF Hébreu 1086)

PDF page 9 (guard / cataloguer's flyleaf, recto)

[Damage: torn upper-outer corner; the leaf is a parchment guard/flyleaf, blank in its upper third, with a diagonal repair line across the middle.]

[Upper zone — several lines of faded Hebrew cursive jottings in a non-authorial hand (pen-trials / later notes), abraded and largely illegible. A handful of words surface (...הזובחים... שנה... יום... זמנים... היה[?]) but no continuous sense can be recovered. [Illegible: ~8 lines of faded cursive jottings.]]

[Librarian note (cataloguer's Latin, lower half of the leaf):]

[Latin: *Liber Astronomicus Isaaci filii Solomonis Hispani, in quo sunt multae tabulae quae ad calendaria pertinent.*] — "An astronomical book of Isaac son of Solomon the Spaniard, in which there are many tables that pertain to calendars."

[Librarian note: "13" (an older catalog/shelf number, centered).]

[Latin: *Tabulae motuum solis, lunae et reliquorum planetarum ad cyclos Judaicos accommodatae, cum introductione ad canonem unum; autore R. Isaac f. Salomonis f. Tsadik, cognomine Ebn El Ḥaseb Hispano.*] — "Tables of the motions of the sun, moon, and the remaining planets, accommodated to the Jewish cycles, with an introduction to a single canon; by the author R. Isaac son of Solomon son of Tsadik, surnamed Ebn El Ḥaseb [= Ibn al-Aḥḍab] the Spaniard."

[Librarian note: "Cod. 247" (older codex shelfmark, lower center).]

PDF page 10 (incipit — opening of the work, recto)

[Foliation / marks: upper-left margin "[2 =]" ב' and a later "93" at the head; a round red BnF ownership stamp "BIBLIOTHECA REGIA" at the top of the inner column; lower center in a modern hand "Heb. 459" — an older BnF shelfmark superseded by "Hébreu 1086."]

[Librarian note: "Heb. 459" (superseded shelfmark, lower center).]

Two-column page, Sephardic semicursive, read right column first (RTL). The work opens with a large rubricated **display word in gold/red ink**.

[Red/gold ink — decorated opening word:] אָמַר — "Said:"

Right column (opening of the preface):

Said Isaac son of Solomon son of Tsadik, called Ibn al-Aḥḍab[?]:

[The remainder of the preface is a dense, small semicursive. What follows renders the confidently legible clauses; genuinely uncertain words are flagged [?] and unrecoverable spans marked [Illegible].]

the Sefardi[?] [= al-Aḥḍab "the Spaniard"; a prior word read "the Maghribi" was a stray double-read of אלהאב and has been removed]. I saw that the author[?] of the [practice/canon][?], observing[?] [Illegible: ~1 word], composed from the tables in order to know the eclipse of the luminaries and their conjunction[?], and [Illegible] ... he composed there [what is] written[?]. [Illegible: ~1 line] ... for they went to great lengths to make [Illegible] a short and swift way to arrive at their aim[?]. And perhaps their tables were [better/more refined][?] than [those of] the ancients[?], whose words[?] were scattered[?] [yet] straightforward — but [Illegible] ... For when all the tables found in one book of the [books of the][?] ancients are gathered together — to know the conjunction[?] of the luminaries and their eclipse and all that accompanies them — not all of them would fall within the count of their tables. And all the tables and the corrections [rise/are reckoned][?] degree by degree[?]: degrees, minutes, and seconds, and more[?]; and [Illegible] took[?] the corrections and what lies between the [errors/deviations][?] ... [Illegible] ... and the remaining [gradations][?] ...

Left column (preface continues):

[Illegible: opening words] ... to make a table — and so he did, for in the fullness of understanding[?] [Illegible] ... there being warnings[?] upon its back[?] to set right the time for the sun[?] [Illegible] ... the fifth[?], and it does not serve[?]; also perhaps [Illegible] ... For the rule of the moon and the rule of the [Illegible][?] ... and the rule of these tables[?] [is] fixed[?] each[?], and [Illegible] ... the stars[?] their revolutions[?] always[?] ... and in the eclipse of the sun[?] — how many tables! — yet they are used only in that [region/West][?] [Illegible].

And at the request of a faithful friend of mine[?] I investigated and composed[?] tables for all these matters, [so that] they might be usable in the many latitudes[?] of the inhabited world[?]; ... they would be shorter[?] by far than those they [now have][?]. And the tables of the ancients I arranged[?] after the manner of the author of the writings [בעל הכתובים][?] — by cycles, years, and months[?] [Illegible] ... those newly worked out[?] in them [Illegible: ~1 line] ...

[Illegible: several clauses giving specific numeric quantities — degrees, minutes, seconds — that I cannot resolve cell-by-cell even under magnification.] ... degrees[?], and together[?] [Illegible] degrees and parts[?] and seconds[?]; and the difference[?] that lies between the [Illegible] does not exceed[?] [numeral: ?] minutes[?] [Illegible] ... [it is] easy[?] to know it, and by means of these[?] [Illegible] ... from the corrections; and in their places the many[?] [Illegible] ... and their positions[?] [Illegible] ... and the rule of the moon[?] and the rule of the [deferent/apogee][?] are corrected[?], and the [second/other][?] does not diminish[?] in the rule of the sun and the rule of the moon; and all of this [Illegible] ... in the rule[?] of the sun and the reckoning[?] of the moon[?], and all this [derives from][?] the fact that they are [Illegible].

[Margin (left column, outer margin): a marginal note of ~5 lines in a smaller cursive hand, partly in reddish ink, abraded; a verbatim reading cannot be recovered. Marginal note containing [Illegible: ~5 lines, small cursive].]

[Margin (right column, outer margin): a short marginal note of ~4 lines in reddish/faded ink, largely illegible. Marginal note containing [Illegible: ~4 lines].]

[No tables appear in this opening; the work-text proper (the tables the title announces) has not yet begun on this page. The preface continues beyond this leaf.]

Orah Selulah — Isaac ibn al-Aḥḍab (BnF Hébreu 1086)

Global source pages 11–12. Two-column Sephardic semicursive; read right column then left, top to bottom. This opening carries the close of the author's preface, the rubricated work-title, and the opening of the numbered canons ("Gates"). No tables occur on these two pages.

Page 11 (folio [1v]) — conclusion of the preface

I relied on the tables of al-Battani. I also composed [tables] to correspond to the tables known in the city of Toledo [= Toledo; the Hebrew city-name appears in an abbreviated form on the page, not the full טוליסולה] belonging to Ibn al-Raqqas [בן אלרקס = Ibn al-Raqqam(?), flag] — for the people of that city persisted long [?] in the exile of the kingdom, and they had settled upon these tables from among the many other kinds of tables. [I drew] these tables from among many kinds of tables [set out] in the treatise of מיטלס — treatise/author name, ?]; and I made

known [?] this discrepancy — [the difference] between my own meridian [כרכובי] and that of al-Battani and that of Ibn al-Raqqas [?] — [for] there is a greater discrepancy than this. And for the hours [?], [numeral: ?] of the day, I composed [a means] to [find] the sun [ליד ישמש = "the hand of the sun" (?), flag] in every latitude [מרחב], so as to settle for it how many degrees it holds, and likewise the latitudes. To reckon in a table, the latitudes are known [?], and what one is obliged [to do], together with the taking of the ratio and of what lies between them. And because what lies between them is small, the matter is easy [numeral: ?] to carry out. Likewise I composed two [ב'] tables for the latitudes, by the variation of the aspect [ההבטה]; I took them from the tables of al-Battani, and by their means one knows the variation of aspect [?] for the latitudes [?]. And the [table of the] solar equation [מנת החמה (?), flag] I took from the tables of Ibn al-מאיר — source name, ?. ...[they are] set down [?] with [numeral: ?] [in?] the tables.

[Margin, right column, faded reddish-brown script, several short lines beside the title; reading uncertain:] [Margin: "... / שרפר תא / ק[?]מב / ... הלנוה ... נאמר ... מן / הלנוה ... ק[?]מב / ... שרפר תא / ... שראתני [?] — marginal note; verbatim content and any authority not securely legible]

ארח סללה — *Orah Selulah* ("A Paved Way")

[Red-and-blue rubricated display title]

And so I set out, in gates [שערים], the way by which the guide leads [the reader] to know what is sought concerning it [?]; and the reckoning [המחשב (?)] will come in its proper places [?].

[Red ink header] The Gate [השער] — [the First]

The first: everyone who uses these canons [המשפט בקנטרים] must know five things [הדברים ה], and these are they —

[continues, left column:] — the general rules [הכללים] in every kind of table. First, you must know the ranks of the numbers, which are degrees, and degrees of [minutes/seconds — רקים (?)], and so the rest of the ranks; and know how to gather all of these [values], [combining] their [larger] with their [smaller], and know how to subtract the [smaller] from the [larger]; and recognize how [to read] the tables and their breadth, and how [the numbers] are entered in the tables — taking from them the minutes and the degrees, [reading] degree by degree downward and upward [from below to above]; and when they are [set] with the

degrees [?], [taking] the minutes [רקיס], or the seconds [?] besides them [?]; and know how to take the portion proper to them from the table — what one degree adds over the one following it, or [what] it lacks [?] — from the tables; and know how to [reckon] a concealed [value] [מסתר], and to take the ratio proper to it.

[Red ink header] The Gate [השער] — [the Second]

The second: the Gate of the Motions [המהלכים], which throughout all the tables are set upon the meridian of the West [קטו המערב]; and every day begins from noon [reckoned] according to the [Sultani(?)] convention — as though [the reckoner] says: "day one begins from noon [Sultani], and ends at noon of the day following it," and day two begins from noon [?] and ends at noon following it, and so on. And because all the tables are grounded [ניסדים] in motions [reckoned] over cycles [מחזורים(?)], truly and finely [?] — according to the [conjunction-reckoning] by which the children of Israel [reckon], let [the reckoner] not [depart(?)] from [taking] their beginning [of the day] on day one, near the molad known as Baharad [מולד בהר"ד], which is called the molad of Tohu [מולד התהו]. That is [ל] on Monday night [ליל ב'], 5 hours and 204 parts [5 = ח' שעות ו' חלקים = 5 = 204p] [Baharad molad; the remaining conversion figures on the next lines — "... 14 [equal] hours ... 2 seconds..." — are not securely legible: numeral: ?] from the [mean reckoning?]; and they are [numeral: ?] equal hours [רקיס] and [numeral: ?] seconds [?]; and the [places?] which are upon [?]...

Page 12 (folio "2") — the Second Gate continues

the calculation [החשבון] was far [distant] [?] from [it]; the meridian [is offset] for the West by [numeral: ?] — for [in] that year [?] there are [numeral: ?] degrees [and] [numeral: ?] minutes [and] [numeral: ?] seconds, and behold [numeral: ?]. And this [is] from the meridian of the West, [numeral: ?] degrees [and] [numeral: ?]... And [something] comes out for the tables directly [מדויק]; the city [is at] [ב'] [numeral: ?] degrees from the West meridian, and between them [there are] [numeral: ?] degrees. [I set] the equated [values of] the places which are upon [it] [?] to be reckoned [?] in the [land], in every [reckoning] near to those [?]. And truly [ואולי] the place of R. Samuel — for he was expert in the motions of the heavens and to know [them] — [as it is said], [Aramaic: שבילי דשמיא כשבילי — "the paths of the heavens are as clear to me as the paths of Nehardea"]; and by their means [?] one knows the [computation?]...

And with these [?] I have investigated [?], and [I have set right] the head [beginning] of the year [ראש השנה] with certainty [ברור], and moreover [numeral: ?], according to what [I have] arranged [?], so that the conjunction [הדבוק] falls in

its place directly [מדויק]; and were it in the mean [reckoning] of the world [?] it would be [numeral: ?]. There is nothing [?] [on] Monday night [ליל ב'], [numeral: ?] hours, [numeral: ?] parts, [numeral: ?] seconds [?]. And because the mean conjunction of the world [was] at [numeral: ?], and it was [set] for the West; and the hour [was] [numeral: ?], the true conjunction [הדבוק ההוא] being reckoned [דמוי] upon the meridian [קצה] of the West [only] [numeral: ?] parts. Nothing [?] [on] Monday night [ליל ב'], [numeral: ?]; [numeral: ?] hours [numeral: ?] parts, [numeral: ?] seconds, at the head [beginning] [numeral: ?]. And according to what I have said, that the beginning [reckoned] from noon [?] — the [preceding?] day being the sign [סימן] of that conjunction — and in the reckoning [בחקה] of the West it was so; and moreover [numeral: ?], and this was in [its?] [middle?], to be [set] for [it] in its place [?] [numeral: ?] degrees directly [מדויק], opposite [numeral: ?] degrees; and [numeral: ?] seconds, the conjunction [being] written in the tables in the [new-moon reckoning]; new [months] of Tishrei [חדש תשרי] in the places of the conjunction. And [there is] the motion [חק] of the moon [הירח] and the motion [חק] of the breadth [הרחב], and the motion of the sun [חק] [החמה]; and the true conjunction [הדבוק] is written in the [tables?] for the month of Tishrei [חדש תשרי]. In the reckoning [במקוה] of the conjunction: and [there is] the motion [חק] of the breadth [הרחב]; the motion of the moon [חק הירח] and the motion of the sun [חק החמה], and the time [זמן] [numeral: ?]; every [reckoning] [is set] to be [taken] in the conjunction; and so all [numeral: ?] the twelve [signs — עשר] months anew [?]; another [reckoning?]... were required [?], or as those written [previously?]; and therefore all [?] the roots [שרשי] of the mean [motion — מיצע] to add to the [numeral: ?] [ב'].

upon them the motions, to know the things sought after [הדברים הנבקשים], and the [oppositions?], and all that is written in the table of the cycles [המחזורים]. And the sense [is] that they are the motions to be added upon the [places] [?]. And in the month of Elul [חדש אלול], at the end [בסופו] of [numeral: ?] days before Tishrei [קודם תשרי] the world was created [נברא העולם] — [there is] the mean position [נעימת] of the [rising?], the [best?] of [?] — their beginning [was] Tohu [תהו], and after them [כמו] [?]; and all the motions that are within the [span of] the tables are according to the sphere of the sun [גלגל השמש]; and these are the near [ones] — the motions of the heavens [מהלכי שמים]; and those that are according to the ninth sphere [הגלגל התשיעי] — [something] [?]; a second [?] [?].

[Red ink header] The Gate [השער] — [the Third]

The third: according to the motion of the mean [מהלך המיצע], to know the conjunction [הדבוק] and the oppositions [הנכחות]; and the [values] come out set

[in order]: the motion [חק] of the sun [חמה] and the motion [חק] of the moon [לבנה]. The motion [חק] of the breadth [הרחב] is written in the tables. First [take] the motion of the sun [חק חמה], and after it [that of] the moon [לבנה], and after it the motion [חק] of the breadth [הרחב]; and they are entered [והכנס] in the table of the cycles [המחזורים]. And as it was [transmitted] from our transmitters [ממסרינו], the holy ones [הקדושים] and the pure ones [הטהורים], take [וקח] the [value] that comes out [opposite it] [numeral: ?] of that cycle [המחזור], and it is written each [?]; take [it] in [the reckoning of] the year [?] [numeral: ?]. And take the [value] that comes out opposite it [כנגדה] in the table of the [year?], and write [every kind of value] that comes out [opposite it], and write [it]. Moreover, enter [the table] in the table of the new [moons] in the month you seek [?]; take the [value] that comes out opposite it and write [it], all [numeral: ?] of a kind [?]. And [there] comes out set [?] the reckoning, and these are the motions [המהלכים] [reckoned] for the year of the conjunction, [and] the motion [חק] of the moon [הירח]...

*Isaac ben Solomon ibn al-Aḥdab, Orah Selulah (BnF Hébreu 1086). Two-column Sephardic semicursive; red-and-turquoise rubricated Gate headings (השער). This opening is still prose canons — the ruled equation tables have **not** begun in this batch. Reading order is RTL: right column top-to-bottom, then left column, on each page.*

Page 13 (batch page 1)

Right column

*(Continuation of the **Third Gate**, unfinished at the foot of the previous page — on finding the conjunction and the oppositions from the mean motion.)*

for the moon and for the sun the conjunction and the opposition will occur[?]. To know the [mean] motions at the time of the oppositions, enter the small table that serves for the oppositions and take the value found there; it is to be added to the motions that serve for the conjunction[?]. [?] and the position that comes out [?] for the moon[?]; for the sun, add to it [?] and subtract from it [?], and you obtain the position of the moon at the time of the opposition[?].

[Red-ink Gate heading — turquoise-and-red display] **The Gate** (השער)

[The Fourth Gate.] [On] the conjunction and the oppositions that come out by way of the motion of *ha-lemitza'* [Arabic: al-mutawassit, "the mean/middle" — i.e. the mean motion] [?]. At the time[?] of the conjunction and the oppositions, in *ha-luvisk*[?] [an unresolved place- or meridian-term] toward the west, which [pertains] to the meridian for which [these tables] were established[?] — and it is

proper[?] to know this in the other *luvisk*[?] as well. [?] the *luvisk*[?] that lies at the western [end/meridian][?]; and enter, in the table, [with] what lies between the two *luvisk*[?]-points, and take what comes out[?] of the hour[s] and the parts[?], and add it to the hours of the conjunction and of the oppositions.

[Red-ink Gate heading] **The Gate** (השער)

[The Fifth Gate.] To know the time[?] (or: the year[?] — שעת/שנת ambiguous) of the conjunction and the oppositions [and] their days[?]. Enter the table of the sun's argument (*ḥeq ḥamah*) with the mean[?] argument of the sun [*ḥeq ḥamah ha-lemitza*'], at the latitude[?] of the table, and [take] its degrees[?] [?] ...

Left column

(Continuation of the Fifth-Gate procedure.)

add[?] [?] the arguments and the time[?], and the [?] corrected[?], the first one[?]. Afterward take the moon's argument (*ḥeq ha-yareah*), corrected as [for] the first one[?], and enter with it the table of the moon's argument [*luaḥ ḥeq levanah*] [?] at the latitude[?] [?] its degrees[?]; take what is found there, [namely] the [value] of the moon's argument alone[?], and write it beneath[?] the moon's argument alone[?]; you will know from the table [?] whether it is to be added or subtracted[?]. And [take?] the moon's argument corrected for the time[?] of the conjunction and[?] the oppositions; enter it again[?] in the table [?] and take [?] and write it beneath, and from [?] ...

[Red-ink Gate heading] **The Gate** (השער)

[The Sixth Gate.] To know the conjunction and the oppositions — how they fall[?] by day and[?] by night. Enter [the table] in which[?] the conjunction and the oppositions [are found], and with[?] their degrees[?] [?] whether it was by day and[?] by night[?]. Enter[?] with[?] the conjunction and the oppositions [?], and [take] its explanations[?] and its [?] [?] ...

(Sixth-Gate procedure continues onto the next page.)

Page 14 (batch page 2)

[Margin, upper outer corner: "3" — folio/quire number in a later hand.]

Right column

(Continuation of the Sixth-Gate procedure — solar/lunar eclipse timing.)

and divide it by the number[?] of the eclipses[?] that lie between them[?]; it will appear[?] how many parts[?], and add[?] the surplus[?] [?] upon what you first took[?], with[?] the hours[?] [?]. Know that sometimes the eclipse of the sun[?] falls at the [end of the] night and the moon is in eclipse[?], and sometimes it falls by day, [and] the moon['s] eclipse [falls] at [the end of] the night[?]; and sometimes it falls by day and the moon [is seen?] at night[?] [?] — [when] the sun is not eclipsed[?] [?].

[?] and the conjunction falls by day. Enter with the [mean] latitude-argument (*heq ha-merḥav ha-lemitza'*) in the small table for the sun's latitude-argument [*heq roḥav ha-ḥamah*], together with the degrees of latitude[?] [?]. From the [zodiacal] sign[?] [?] the argument [?] its degrees[?] [?]; [?] the eclipse[?] [?] [?].

[Red-ink Gate heading] **The Gate** (השער)

[The Seventh Gate.] When it becomes clear to you [כשיתבאר]: the eclipse of the moon[?] and[?] [?] — enter the table of the lunar eclipse [*luaḥ leqot ha-yareah*] with the [zodiacal] sign, the moon's corrected argument[?] [*heq yareah mesuqan*], at the latitude[?] of the table, and with the degrees of the argument[?] ...

Left column

(Continuation of the Seventh Gate — the extent and duration of the lunar eclipse.)

[the latitude?] [?]; take the measure[?] [?] of[?] the diameter[?] — that is, how much of the moon's diameter[?] is eclipsed[?], and how many hours the half-eclipse [*ḥatzi ha-liquṭ*] [lasts], and the measure of half its passage[?] [?] [?] [?] and the hour of the opposition[?] [?]. [?] the eclipse always[?]; and the amount you subtract[?] from the hours[?] will be, for the moon[?], the beginning[?] of the eclipse[?], and the amount you add[?] to it [gives] [?] [?] the end[?] of the eclipse[?] [?] ...

(Text of the left column ends about mid-page; the remainder of the leaf is blank parchment. The transition to the ruled equation tables has not yet occurred in this opening.)

**

Orah Selulah — Isaac ibn al-Ahdab (BnF Hébreu 1086)

Sephardic semicursive, two-column prose on the recto (page 15); the ruled tables begin on the verso (page 16, foliated "4"). The canon prose here is hard, small semicursive; individual technical clauses are flagged [?] where a reading cannot be committed glyph by glyph.

Page 15 (recto) — two columns

[Red-and-turquoise rubric] השער ("The Gate") — the ordinal stands in faded ink beside the rubric and is not legibly recoverable [?]; by position it is the Eighth Gate (the Seventh ended in the prior opening). `.]

Hear: when you wish to determine the eclipse of the sun, take from the roots the corrected conjunction [?], and set it out so as to enter [the table] with the corrected argument of the moon, and [also] from the conjunction and its place, and the corrected argument of latitude for that year. Know that you are to work the argument of the day for this moon [?], [taking] the distance of the year of the conjunction from the corrected [mean] [?] for the two [?] — and after it [?] — and enter the table of the eclipse of the observation [?]. [The remaining clauses of this passage — the interpolation between the entry for latitude and the entry "next to it" in the column of the table, and the taking of the found value from the degrees of the length and the breadth — are legible only in part and are rendered below with flags:] enter with it opposite [?] the value in the column [?] of the table, and by the distance of the year of the conjunction from the corrected [mean] [?] in the length of the table [?]; and interpolate [?] the value, [where] the found value [?] [gives] the interpolated value [?]. Take what is found there from the degrees of the length and the breadth, and the degrees of the length and the breadth are corrected according to the latitude of the moon at that place [?]. Then enter with the corrected argument of the moon into the small table of the eclipse [?], in the column of the argument by breadth [?], [and] in the length; take what is found there and multiply it [?] by [?] the degrees of the eclipse of the observation, [derived] from the length and from the breadth [?].

And to make the observation [i.e. the parallax] easier, I have drawn up for you a table [?] — this is the table of the observation. Enter it with [?] the [given] argument [?] of the eclipse in the breadth of the table, so that [?] the degrees of the eclipse of the observation come out [?] in the length; and if the found values [?] are not [directly given] [?], take them in [?] their place [?] — gather them

together, and what is in excess [?] add [?] (and what falls short [?], subtract) to correct the divisions [?], so that you obtain the corrected divisions [?]. In this manner: write the degrees of the corrected breadth apart [?] and keep them [?]; and the degrees of the corrected length [?].

[continuation of the preceding gate:]...enter beneath the degrees of the argument of the moon, and beneath the degrees of the [entry] [?] from the conjunction, and beneath the degrees of the argument of [the] gold [?] (i.e. of the sun) [?]; and afterwards [?] double [?]... and enter beneath the degrees, and from the conjunction [?]... in the table of the sun [?] in the column of the conjunction, at the length [?] of the table, and interpolate [?] in its breadth, and take the found value there from what is interpolated [?]; and the interpolation [?] shall be as much as is interpolated [?]. Interpolate [?] the distance of the sun on those days [?] for the two [?] — and after it — and the value of the conjunction [?] opposite [?] the position of the sun [?], subtract [?] what you interpolated [?] from the degrees of the length by the eclipse of the observation [?]; the [corrected] divisions are understood [?], and [where] the values fall short [?], subtract them [?]. And [where] at the time of the conjunction after it [?] the sun [?] adds [?] upon them, and [thus] the position [?] [gives] the corrected time of the conjunction [?]; and the divisions are corrected for that moon [?].

[Red-and-turquoise rubric] **השער התשיעי** ("The Ninth Gate").

The Ninth [Gate]: enter with the corrected argument of latitude of the conjunction [?] — the sighted [one] [?] — into the table of the latitude of the moon [?]. [The gate continues into the top of the verso.]

Page 16 (verso) — foliated "4" at the top-left margin

[so that] you may check [?] the latitude of the moon accurately in the length of the table, and its total [?] [gives] the found [value], however much [?] from the [total] [?] the eclipse [amounts to]. The eclipse of the sun [is] twelve [digits] from the [total] [?], [reckoned] by degrees [?], and up to [?] the degrees [?]... the moving [?] moon, the found [?] measure — and from the eclipse [?], subtract them from the position [?] of the conjunction, the [given] [?] position that was the position [determined] [?] for the middle of the eclipse [?]; and it will be the length [?] of the position of the beginning of the eclipse [?]; and what is in excess [?], add to them [?]... so there comes out for you the position of the end of the eclipse [?].

[Red rubric] **הבט** ("Observe" / "the sighting") [?]. [Prose block, small semicursive, largely not resolvable at this resolution — a note attached to the

observation/parallax procedure; verbatim reading not committed. Rendered content withheld and flagged [?] rather than reconstructed.]

Table (verso, spanning full width) — planetary-hours / hemerological table

[Heading, black ink, above the grid:] "Siman — סימן כוכב לילה חמה יום אם כל חי [table]: Mercury — night; Sun — day; *em kol hai*" (the closing phrase *אם כל חי*, "mother of all living," reads as a mnemonic *siman* rather than descriptive text; transcribed verbatim, sense uncertain [?]).

The grid has twelve numbered columns headed א ב ג ד ה ו ז ח ט י יא יב (the twelve hours, 1–12, reading right to left), a rightmost **argument column** (heading read as מספר הטבור / "number of the [argument]" [?]), and roughly fourteen rows labeled by night (ליל) and day (יום) of the seven weekdays. Each interior cell contains a **planet name written diagonally in cursive** (the seven planets: שבת / Saturn, צדק / Jupiter, מאדים / Mars, חמה / Sun, נגה / Venus, כוכב / Mercury, לבנה / Moon). Even under magnification these diagonal single-word cells cannot be resolved glyph by glyph one at a time; the interior is therefore transcribed as [?] throughout. Structure, headers, and row labels are captured below; interior values are **not** pattern-filled from the Chaldean planetary-hour sequence.

[illegible]

Row (arg.)	⸁ (1	⸂ (2	⸃ (3	⸄ (4	⸅ (5	⸆ (6	⸇ (7	⸈ (8	⸉ (9	⸐ (10	⸑ (11	⸒ (12
Day, day 3 (⸁ ⸐) [?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pl ane t: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]
Night, day 4 (⸄ ⸐) [?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pl ane t: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]
Day, day 4 (⸄ ⸐) [?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pl ane t: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]
Night, day 5 (⸄ ⸐) [?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pl ane t: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]
Day, day 5 (⸄ ⸐) [?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pl ane t: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]
Night, day 6 (⸄ ⸐) [?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pl ane t: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]
Day, day 6 (⸄ ⸐) [?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pl ane t: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]
Night, day 7 (⸄ ⸐) [?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pl ane t: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]
Day, day 7 (⸄ ⸐) [?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pl ane t: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]	[pla net: ?]

[Down the far-left margin of the grid runs a column of prose annotations in the same hand — instructions for using the table. At this resolution these marginal lines are only partly legible and are not committed; verbatim reading withheld [?]. The row count (~14) and day-letter labels (⸁-⸒) are read from the far-right argument column and are individually uncertain where noted [?].]

Primary script: hard Sephardic semicursive, black iron-gall body ink with red rubrication for table titles, column headers, and structural row-labels. This

opening carries four distinct tabular/figural structures and interleaved prose canons. Much of the running cursive and the dense numeric grid interiors do not resolve confidently even at high magnification and are flagged [?].

Page 17 (first page of the opening)

1. Planetary / zodiacal correspondence grid (top of page)

A ruled grid whose cells each hold several words — a table of astrological correspondences (ruling planets with their foreign names, plus sign/body-part associations). The hand is a compressed semicursive and most multi-word cells do not resolve confidently. Only the clearly legible tokens are committed below; the remainder are [?]. Logical order preserved right-to-left.

(col 1, R)	(col 2)	(col 3)	(col 4)	(col 5)	(col 6, L)
[?] (header, cut at right margin)	[?] צור/צלב · ערים/עדים · שמאול ("left") [?]	ראגלים (רגלים, "feet") [?] · הליט [?] שמעען [?]	שרש/סרש · ליבד [?] · ובפר [?] [?]	עריה/אריה · ל-אבן [?] [?]	מעולה [?] · וישרג [?]
מורדים/שורד ים [?]	צדק ("Jupiter") · יופיטר [Jupiter, transliterated] ed]	מאדים ("Mars") · אריס [Ares/Mars] · ו לפו [?]	חמה ("Sun") · סול [Latin/Rom ance <i>sol</i> , "sun"] · חלה [?]	כוכב ("Mercury" לינון · [?] [?]	אחדה/לחדה · ל-שאול [?] [?]

The planet-name pairings (Hebrew name + foreign name: "Jupiter," צדק=יופיטר, "Mars," מאדים=אריס, "Sun," חמה=סול, "Mercury" כוכב) are legible and confident; the remaining association-words in each cell are not.

2. Zodiac wheel diagram (middle-lower page)

Diagram. A large radiating "flower"/rose figure: a central small circle with an inked hub-dot and cross-hairs, surrounded by two or three concentric ruled bands carrying fine radial cursive text, and an outer ring of tongue/petal-shaped lobes. Each lobe is captioned in a bold display hand with a zodiac-sign name at its outer end, with finer explanatory cursive filling the lobe and the inner bands. The lobes represent the twelve signs in order around the wheel; only a subset of the display captions resolve confidently, and the fine radial band-text is not resolvable at this resolution.

Legibly-inscribed lobe captions (zodiac display names):

- טלה — Aries (top), clearly inscribed
- שור — Taurus (upper), clearly inscribed
- תאומים — Gemini (lower left), clearly inscribed
- מאזנים — Libra (left), clearly inscribed
- עקרב — Scorpio (left), committed on a second reading of the colour scan under magnification
- קשת — Sagittarius (left), committed on a second reading of the colour scan under magnification
- גדי — Capricorn (right), committed on a second reading of the colour scan under magnification
- דלי — Aquarius (right), committed on a second reading of the colour scan under magnification (first letter ד not ר)
- דגים — Pisces (right), committed on a second reading of the colour scan under magnification (glyph reads ד/ר רגים, cursive)
- אריה — Leo, committed via **witness B** (B&W microfilm sibling orah_selulah_heb1086_microfilm, frame 10; read glyph-by-glyph there and Stage-5-confirmed) — not legibly traceable on the color scan, supplied by the microfilm.
- בתולה — Virgo, committed via **witness B** (microfilm frame 10; ב-ת-ו-ל-ה read there, Stage-5-confirmed) — supplied by the microfilm.
- סרטן Cancer — right-side lobe present but display caption not legibly traceable on either witness [?] (not inferred from position). Wheel lobe count confirmed = 12; **11/12 labels now committed** (9 color + 2 collated from the microfilm witness).

Inner concentric bands: continuous fine radial cursive text around the wheel — present but not legible even under magnification [?].

3. Terms/limits table + canon (foot of page)

Below the wheel, a two-column ruled list. Each row pairs a zodiac sign (left column, display hand) with a phrase of the form "השמש ... עד חתי X לחתי" ("from the limit [ḥadd] of X to the limit of Y the sun ...") — a table of the bounds/terms of the signs. Right column carries the repeated "from the limit ... to the limit ..." formulae; left column the sign names. Legible sign-labels include טלה (Aries), שור (Taurus); the remaining left-column tokens (כאדל , [?] , כאבט [?] , כהרעה [?] , כלאבים [?] , and others) and the bound-names in the right column do not resolve confidently [?]. Structure preserved.

Short prose block to the right of the wheel (foot): "...the sun travels [מהלך] ... [?] ... and it will be [?] ... the sun travels [?] ..." — remainder illegible [?].

Page 18 (second page of the opening)

4. Prose canon (top of page)

A worked-example canon on finding lunar and solar positions from the tables. The running semicursive is only partly legible; committed fragments only, gaps flagged rather than smoothed:

"... to know the position [לדעת מקום] ... it is the moon [היא הלבנה] ... we say [נאמר] ... [?] ... the moon [?] ... we say now [נאמר עתה] ... [?] ... it is the moon [?] ...; and he said [ואמר] ... [?]."

5. Table of the cycles — *Luah ha-Mahzorim* (main table)

[Red ink header: לוח] ("Table") / [Red ink header: המחזורים] ("the Cycles").

A large mean-motion / radix table. Red column-group headers, reading right-to-left:

Group (R→L)	Red header	Sense
1	מקום	position
2	חק חמה	argument (motion) of the sun
3	חק לבנה	argument (motion) of the moon
4	זמן [Interlinear/subhead: המולד]	time (of the molad)
5	מקום	position
6	חק הרחב (glyph חזב הרחב)	argument of latitude
7 (far left, vertical red)	[?] (years of the cycle — the argument column)	

Each group is subdivided into micro-columns (מעלות degrees / דקות minutes / etc.) with small red sub-headers. The **argument column** (far left) carries red year-labels reading downward:

- 277 = רע"ז

- 278 = רע"ח [recte: 278 = רע"ח; written glyph reads 258 = רנ"ח — a scribal slip. Stage-5 independent cold-read confirmed the sequence 277→278→279→280→281→282, so 278 is secure.]
- 279 = רע"ט
- 280 = ר"ף
- 281 = רפ"א
- 282 = רפ"ב
- [Red ink] [?] [Red ink] (special-entry row)
- [Red ink] [?] (likely מותרות, "excesses/remainders") [Red ink] (special-entry row)

A black centered sub-heading spans the grid mid-table: **תקון המחזורים** ("Correction of the Cycles").

Interior numeric cells: the grid is ~15 micro-columns wide of 1–2-letter gematria values. Even at high magnification the interior does not register reliably cell-by-cell; committing values would be pattern-fill. Structure, red headers, and argument column captured; **interior flagged** [?] (not reconstructed from column trend).

6. Lunar latitude-argument table — *Heq roḥab la-Yare'ah*

[Red ink header: חק רחב ליר"ח ("Argument of latitude of the Moon").

Small ruled table. Sub-column labels: מעלות (degrees), דקות (minutes); paired value columns headed red ה and ו. Argument column runs consecutively **א-כט (1)** **(29-)**. Value columns are small black numerals; a minority resolve confidently and the near-linear column must not be pattern-filled. Argument column and header structure committed; value cells flagged [?].

arg	value [?]
(1) א	[numeral: ?]
(2) ב	[numeral: ?]
... (3–28)	[numeral: ?]
(29) כט	[numeral: ?]

7. Solar latitude-argument table — *Heq roḥab la-Ḥamah*

[Red ink header: חק רחב לחמה ("Argument of latitude of the Sun").

Companion small table alongside table 6, same layout (מעלות / דקות sub-labels; red ו / ה value columns; argument column **א-כט, 1-29**). Argument column and structure committed; value cells flagged [?].

arg	value [?]
(1) א	[numeral: ?]
(2) ב	[numeral: ?]
... (3–28)	[numeral: ?]
(29) כט	[numeral: ?]

8. Prose (foot of page 18)

Continuing canon/explanatory prose below and beside the tables (both columns), on applying the latitude arguments. Hard cursive, largely unresolved even under magnification: legible fragments include "...the moon [הלבנה] ... [?] ... the sun [השמש] ... [?] ... degrees [מעלות] ...". Remainder [?].

Two facing table pages of the mean-motion / equation set (continuation of the *Luah ha-Mahzorim* argument tables). Both pages carry the same five red column-group headers; they differ only in their (red) argument column and title. Primary script: hard Sephardic semicursive; rubrication in red iron-gall ink. A prose *canon* (electional-astrology instructions keyed to the position of the moon) runs across the top of p.19 and continues down its right margin, with a two-line footnote-legend beneath the table.

Top canon (full-width, black ink; hard semicursive — partial, heavily flagged)

An electional-astrology canon on acting according to the position of the moon. The legible skeleton recurs on the pattern "...when the moon is [in such a state] ... it is good to [do such-and-such] ... every matter that ...". A confident continuous reading is not achievable at this resolution; the following is a flagged partial transcription, not a smoothed rendering:

- "...טוב [?]. ... [?] מהלכנה [?] ... — "...that the moon was [in?] ... good [?] ..."
- "...[?] כל דבר [?] [?] כדרך [?] להאיר [?] ... — "...to illuminate[?] / to shine, in the manner of[?] ... every matter[?] ... (there is an apparent numeral, possibly 14 = יד [?], mid-line)
- "...טוב להאיר [?] ולעשות כל דבר ש." — "...good to [begin/illuminate?] and to do every matter that ..."
- "...שהיה הו[?] בה [?] כ[?] ל להנה. [?] — [?]
- "...דבר ש[?] רה או ל[?] ש[?] ... והוא ר[?] ל[?] הר[?] ... ל[?] נה מ[?] . — closes with a colon.

[Red ink header banner:] לוח שנות[?] המחזור — Table of the [Years of the?] Cycle

Red group headers, right → left: **חק לבנה** (argument of the sun) · **חק חמה** (argument of the moon) · **זמן** (time) · **מקום** (position) · **חק הרחב** (argument of latitude). Beneath each group is a pair of small red sub-headers (degrees/minutes — for **זמן** the units differ, days/hours-type; the exact per-group sub-column count, 2 vs 3, does not resolve securely on the scan). The red argument column stands at the right edge of the table (numerals 19-1 = א-יט, the years of the cycle), with the prose canon in the margin to its right.

Argument (year of cycle)	חק חמה (arg. sun)	חק לבנה (arg. moon)	זמן (time)	מקום (position)	חק הרחב (arg. latitude)
(1) א	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(2) ב	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(3) ג	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(4) ד	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(5) ה	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(6) ו	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(7) ז	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(8) ח	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(9) ט	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(10) י	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(11) יא	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(12) יב	[numeral: ?]	[numeral: ?]	[nume	[numeral: ?]	[numeral: ?]

Argument (year of cycle)	חק חמה (arg. sun)	חק לבנה (arg. moon)	זמן (time)	מקום (position)	חק הרחב (arg. latitude)
			ral: ?]	?]	
(13) יג	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(14) יד	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(15) טו	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(16) טז	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(17) יז	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(18) יח	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]
(19) יט	[numeral: ?]	[numeral: ?]	[nume ral: ?]	[numeral: ?]	[numeral: ?]

[Each group cell above stands for that group's 2–3 numeric sub-columns; every interior value is flagged rather than committed. Row 1 (argument λ) appears to carry a single repeated glyph across all columns (possibly ι/δ) — noted but not committed, since a constant row is a fabrication signature and must be verified, not assumed.]

Footer legend (below the table, black ink — two lines, partial)

- "...[?] נה[?] : [?] ניכ' [?] [?] העמוד[?]" — a key to a column ("the column..."), abbreviation ניכ' [?] .
- "...[?] זכ'..." — "[?] חמה[?] רוח[?] זכ' [?] : [?] ניכ' (= remember/mark?) ... of the sun[?] ..." — evidently a legend explaining a column abbreviation/sign convention. [?]

[Librarian note: pencil foliation "6" at the top-left of this page.]

[Red ink header banner:] לוח החדשים — Table of the Months

Same five red group headers as p.19, right → left: **חק חמה** (argument of the sun) · **חק לבנה** (argument of the moon) · **זמן** (time) · **מקום** (position) · **חק הרחב** (argument of latitude), each over a pair of small red sub-headers. The red

argument column at the right edge holds the twelve month-names (Tishrei → Elul), with a final red row **נכוחות** ("oppositions"). A red decorative flourish sits above the חק לבנה group.

Argument (month)	חק חמה (arg. sun)	חק לבנה (arg. moon)	זמן (time)	מקום (position)	חק הרחב (arg. latitude)
תשרי (Tishrei)	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
מרחשון (Marḥeshvan)	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
כסלו (Kislev)	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
טבת (Teves)	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
שבט (Shevat)	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
אדר (Adar)	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
ניסן (Nisan)	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
אייר [?] (Iyar)	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
סיון (Sivan)	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
תמוז (Tammuz)	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
אב (Av)	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
אלול (Elul)	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
[Red ink] נכוחות (oppositions)	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]

[The eighth month-label (between Nisan and Sivan) reads as an unclear י"ד-like form; the position in the fixed month-sequence Tishrei→Elul fixes it as Iyar, flagged

[?] because the glyphs themselves are not clearly א"י. Each group cell stands for that group's 2–3 numeric sub-columns; every interior value is flagged rather than committed.]

Script: hard Sephardic semicursive, bicolor (black body / red rubrication). Both pages are dense numeric tables.

At the very top of the leaf, a row of faded red words is visible but not legibly recoverable; most of what shows here is red bleed-through from the verso and cannot be read [Illegible: faded red header, top margin].

Canon (prose instruction, red-brown ink)

[The following canon is in a rapid semicursive and is only partly recoverable; uncertain words are flagged.]

This table is for knowing the motion of the planet [?] ... the great [?] whole [?]. The second procedure [השיטה השניה] [is] the [entry/sign of the] Sun [ש(מש)?] [?], by day and by night, and by which [?] ... [?] it is the value [חיוב?] by day and by night. And likewise, when [?] ... that it will be, and the motion of the Sun which [?] — in the same way, to know the [motion of the] planet. [?]

[Transcription of the recoverable Hebrew, with flags: [?] זה הלוח לדעת תנועת כוכב [?] ... ה[?] הגדול / השיטה השניה ה[?] ש[מש]? [?] יום ולילה ובאיזה ה[?] / [?] יד הוא חיו[ב]? ... [?] יום ולילה. וכן כאשר [?] / שיהיה ותנועת השמש אשר [?] כמו כן לדעת הכוכב

Table (day/night grid)

A ruled grid follows the canon. Structure that is securely legible:

- **Column header row (red, right-to-left):** א · ב · ג · ד · ה · ו · ז · ח · ט · י · יא · יב (12–1; likely the twelve hours).
- **Row structure:** fourteen rows arranged as seven **ליל** (night) / **יום** (day) pairs. The **ליל** rows are written in **black** ink and the **יום** rows in **red** ink (the ink color is the row-type marker; **ליל/יום** labels sit in the right-hand label column).
- **Cell contents:** each interior cell holds a single Hebrew-letter value; a minority of cells are left blank.

The interior single-letter values are individually legible, but their assignment across the twelve columns cannot be committed reliably (the row must be tracked across the full width of the panel, and blank cells break the run). Per the

citation-grade / no-pattern-fill rule the interior is flagged rather than reconstructed.

[illegible]

	1	2	3	4	5			8	9	10	11	12
Row (ink)	(א)	(ב)	(ג)	(ד)	(ה)	6 (ו)	7 (ז)	(ח)	(ט)	(י)	(יא)	(יב)
ליל — pair 5	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]
יום — pair 5	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]
ליל — pair 6	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]
יום — pair 6	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]
ליל — pair 7	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]
יום — pair 7	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]	[nu me ral: ?]

The lower half of the leaf below the table is blank.

At the top-left corner a small mark is visible, likely a foliation or quire numeral. A short vertical marginal note in brown cursive runs alongside the top-right of the right panel; it is not securely legible [Margin: brown cursive, top-right, e.g. "שלמות בעגולה" (?) — reading uncertain].

This leaf carries two side-by-side ruled panels of an equation/correction table (תקון), each with an argument column running 1–30. The securely legible structure:

- **Top boxed header (red, per panel, right-to-left):** **חַק** (Table) · **לֹוּחַ** (argument/anomaly) · **חַמָּה** (Sun). The right panel appears to be for the solar argument (**חַמָּה**); the left panel's column-group header carries **יָרֵחַ** (Moon), so it is likely the lunar counterpart — the **חַמָּה/יָרֵחַ** distinction between the panels is not fully certain [?].
- **Column-group header (red, spanning the numeric columns):** **תְּקוּן חַק** · **תְּקוּן זְמַן** · **תְּקוּן מַעְלוֹת** ("correction of the argument · correction of time · and correction of degrees"), with **יָרֵחַ** ("Moon") beneath on the left panel. [The rubric word reads **תְּקוּן/תַּחֲוִין**; ק/ח ambiguous — transcribed **תְּקוּן**.]
- **Region labels (sign of the correction):** **גִּרַע** ("subtract") in a boxed cell near the top of each panel; **הוֹסֵף** ("add") repeated as a red footer beneath each panel (a fainter **יּוֹסֵף/הוֹסֵף** also shows at the panel feet).
- **Sub-column headers (small red):** paired abbreviated labels (degrees/minutes-type) sit above each numeric column pair; these are small and only partly legible [Red ink header: small paired sub-labels, mostly illegible].
- **Argument column (red, per panel):** the full run (30-1) **א-ל** down the right edge of each panel is legible.
- A narrow far-right column of the right panel carries a red header, reading uncertain [Red ink header: "כלולת מן חלה" (?) — uncertain].

Each interior numeric cell holds a two-letter (sexagesimal) gematria value. The glyphs are individually legible under magnification, but the panels are ~6–8 numeric columns wide with interspersed blank cells, and reliable assignment of each value to its correct sub-header column across the full width of the panel cannot be committed without misalignment risk. Per the no-pattern-fill / citation-grade rule the interior is flagged rather than reconstructed.

Right panel — **לֹוּחַ חַק חַמָּה** (solar argument)

חַק (argument)	תְּקוּן (deg)	תְּקוּן (min)	זְמַן (time)	תְּקוּן (deg)	תְּקוּן (min)	[add'l col.]
(1) א	[numeral: ?]	[numeral: ?]	[numera l: ?]	[numeral: ?]	[numeral: ?]	[numer al: ?]
(2) ב	[numeral: ?]	[numeral: ?]	[numera l: ?]	[numeral: ?]	[numeral: ?]	[numer al: ?]
(3) ג	[numeral: ?]	[numeral: ?]	[numera l: ?]	[numeral: ?]	[numeral: ?]	[numer al: ?]

חֶקֶךְ (argument)	תִּקְוֹן (deg)	תִּקְוֹן (min)	זִמָּן (time)	תִּקְוֹן (deg)	תִּקְוֹן (min)	[add'l col.]
... (4–29)	[numeral: ?]	[numeral: ?]	[numera l: ?]	[numeral: ?]	[numeral: ?]	[numer al: ?]
(30) ל	[numeral: ?]	[numeral: ?]	[numera l: ?]	[numeral: ?]	[numeral: ?]	[numer al: ?]

[Argument rows (30–1) ל–א are all present and legible; interior values flagged rather than committed. The exact number and semantics of the numeric sub-columns do not resolve securely on the scan; the header names above (deg/min/time) are the group rubrics, not confirmed per-column assignments.]

Red footer beneath the right panel: הוֹסֵף ("add").

Left panel — [יֶרֶחַ] לֹחַ חֶקֶךְ (lunar argument)

חֶקֶךְ (argument)	תִּקְוֹן (deg)	תִּקְוֹן (min)	זִמָּן (time)	תִּקְוֹן (deg)	תִּקְוֹן (min)	[add'l col.]
(1) א	[numeral: ?]	[numeral: ?]	[numera l: ?]	[numeral: ?]	[numeral: ?]	[numer al: ?]
(2) ב	[numeral: ?]	[numeral: ?]	[numera l: ?]	[numeral: ?]	[numeral: ?]	[numer al: ?]
(3) ג	[numeral: ?]	[numeral: ?]	[numera l: ?]	[numeral: ?]	[numeral: ?]	[numer al: ?]
... (4–29)	[numeral: ?]	[numeral: ?]	[numera l: ?]	[numeral: ?]	[numeral: ?]	[numer al: ?]
(30) ל	[numeral: ?]	[numeral: ?]	[numera l: ?]	[numeral: ?]	[numeral: ?]	[numer al: ?]

[Argument rows (30–1) ל–א all present and legible; interior values flagged. A red column of letters also runs up the far-left/foot of this panel, consistent with a complementary (reversed-direction) double-entry argument — not resolved here.]

Red footer beneath the left panel: הוֹסֵף ("add"). The blank lower area of the leaf follows the footer row.

Isaac ben Solomon ibn al-Aḥdab, 'Orah Selulah (ארח סללה), BnF Hébreu 1086. Solar/lunar correction tables (*Luah Heq Hamah / Yareah*) — continuation of the dense multi-panel gematria grids begun on the preceding folios.

Both folio sides of this opening are ruled correction tables in the same layout; there is no running prose canon on either side. Primary hand: hard Sephardic semicursive. Bicolor ink: **black** for the interior numeric cells and argument-column values; **red** for the table caption, the group-rubric band, the small vertical sub-column labels, and the גרע / הוסף region markers.

two correction panels (right panel, then left panel)

Each folio side carries **two** panels side by side. In this right-to-left work the right-hand panel is read first. Both panels on this side share one structure:

- **Table caption (red, top):** חמה · חק · לוח — "Table of the argument of the Sun" [חמה read with confidence; see anomaly (a) on the חמה/ירח identity, since ירח appears within the rubric band below].
- **Region marker (red):** גרע ("subtract") at the head of the panel; הוסף ("add") at the foot — a double-region correction table (argument entered from the top for the גרע region, from the foot for the הוסף region).
- **Group-rubric band (red):** — תקון חק · תקון זמן [ירח?] · ותקון מעלות — "correction of the argument · correction of time · and correction of degrees." The word ירח ("moon") stands within this band beneath תקון זמן.
- **Argument column (red, black-outlined):** (30-1) א-ל, the vertical entry-argument at the panel's right edge.
- **Sub-column labels (red, small vertical script) above each correction group:** two ruled numeric sub-columns per group (degrees / minutes — מעלות · דקות), giving several black interior data columns per panel.

Interior data cells — not recovered on this pass. A data row's cells cannot be assigned to their correct sub-columns glyph-by-glyph with confidence. Per the citation-grade no-pattern-fill rule, the interior black numeric cells are **not** transcribed here. The argument column and all red structural rubrics above ARE recovered.

Structural skeleton (right panel; left panel identical in form):

Argument (red)	תקון חק — מעלות	תקון חק — דקות	תקון זמן — מעלות	תקון זמן — דקות	ותקון — מעלות מעלות	ותקון — מעלות דקות
גרע (subtract) region —						
argument ל-א read from top						
(1) א	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]
...	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]
through	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]
...						
(30) ל	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]
הוסף (add) region — foot label הוסף						

two correction panels (right panel, then left panel)

Same layout as p. 23, repeated across two side-by-side panels:

- **Table caption (red):** חמה · חק · לוח [חמה/ירח] identity uncertain — anomaly (a)].
- **Region markers (red):** גרע at head; on this side the left panel additionally shows a red הוסף/הסך region label at its head (the two panels of the opening run complementary add/subtract regions).
- **Group-rubric band (red):** ותקון מעלות · [ירח?] · תקון זמן · חק · תקון זמן — דקות
- **Argument column (red):** ל-א (30-1).
- **Sub-column labels (red):** דקות · מעלות per correction group.

Interior black numeric cells are again withheld for the same reason; structure, rubrics, and argument column recovered.

Argument (red)	תקון חק — מעלות	תקון חק — דקות	תקון זמן — מעלות	תקון זמן — דקות	ותקון — מעלות מעלות	ותקון — מעלות דקות
/ גרע הוסף regions — argument א-ל t						
(1) א	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]
... through	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]
...						
(30) ל	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]
הוסף (add) region — foot label הוסף						

Orah Selulah — Correction (Equation) Tables, continued

*Isaac ben Solomon ibn al-Aḥdab, Orah Selulah (ארח סללה), BnF Hébreu 1086. Batch 013 = source- *

Both folio sides continue the dense ruled correction/equation tables of the preceding pages (*Luah Heq Hamah / Yareah*). No prose canon and no new table type begin here. Each folio side carries **two side-by-side panels** of identical design; the red structural apparatus (captions, group rubrics, region markers, argument scale) is fully recoverable and transcribed verbatim below. The **interior black numeric cells** — roughly six numeric sub-columns × thirty argument rows per panel, of two-letter gematria in a hard Sephardic semicursive — are **not pattern-filled**; they are flagged [numeral: ?] rather than reconstructed.

PDF page 25 (first folio side)

Two panels, identical layout. Red apparatus, per panel, top to bottom:

Caption band (red, RTL, spanning each panel's head): חק ח[מה] (Table) · לוח (motion/argument of the Sun) · לבנה (Moon)

- The caption pairs *חמה* (Sun) and *לבנה* (Moon), while the rubric band below reads *ירח* (moon). This solar/lunar identity tension carries forward unresolved from the prior pages; transcribed verbatim, not normalized. The word after חק is faded/abbreviated — read [חמה] [?].

Panel index letter (red, small, in the band just below the caption):

- Right panel: [Red ink: ג] [?] (a small red letter, possibly אג/אב; not securely resolved)
- Left panel: [Red ink: ?] (small red mark, not resolved)

Head region marker (red): הוסף ("add") — at the head of each panel's data block.

Group rubric band (red, larger semicursive, RTL): תקון חק (correction of the argument) · תקון זמן (correction of time) · תקון מ[עלות] (correction of degrees), with *ירח* ("moon") written below, spanning the band.

- Reading תקון (equation/correction) per the established rubric; the second glyph is ambiguous between ק and ב in this hand. Last group תקון מ[עלות] is abbreviated/cut — [?].

Sub-column headers (red, small semicursive): a row of small red per-column labels sits between the rubric band and the data rows, subdividing each תקון group into degree/minute (מ[עלות]/דקות) columns. The individual small headers do not register securely under magnification — [?].

Argument scale (red):

- **Right panel** — outer (right) edge, top→bottom: א ב ג ד ה ו ז ח ט י יא יב יג (30-1) יד טו יז יח יט כ כא כב כג כד כה כו כז כח כט ל. Directly read from the red sequence (visible ascending run confirmed at head and foot); this is the recovered argument column, not a pattern-fill.
- **Left panel** — outer (left) edge, red, ~30 rows, running in the **reversed/complementary direction** (large values at the head — top cell reads ל/כט [?] — descending toward small values at the foot). Consistent

with a double-entry (complementary) argument. Exact per-row values [numeral: ?].

Foot region marker (red): גרע ("subtract") — beneath each panel.

Panel data grid (both panels): ~6 numeric sub-columns (the three תקון groups × degrees/minutes) × 30 argument rows, black semicursive gematria. **All interior cells** [numeral: ?] — not transcribed cell-by-cell to avoid confabulation of two-letter values in this hand.

Argument	תקון חק (מעלות)	תקון חק (דקות)	תקון זמן (מעלות)	תקון זמן (דקות)	תקון מעלות (מעלות)	תקון מעלות (דקות)
-1) ל-א (30, right panel; complementary scale, left panel	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]

(Column count and sub-labels reflect the visible group structure; the small red sub-headers are unresolved and the exact number of minute/degree columns is not securely confirmable on the scan. All 30 rows × both panels of interior black cells are deferred.)

PDF page 26 (second folio side)

[Librarian note: modern foliation "9" in the upper-left margin]

Identical two-panel layout continuing the same table series. Red apparatus, per panel:

Caption band (red, RTL): לוח · חק ח[מה] [?] · לבנה — as on p. 25 (same Sun/Moon tension).

Panel index letter (red, small, below caption):

- Right panel: [Red ink: ב]
- Left panel: [Red ink: ג]

Head region marker (red): הוסף ("add").

Group rubric band (red): [?] תקון חק · תקון זמן · תקון מ[עלות], with ירח below.

Sub-column headers (red, small): degree/minute subdivisions per group; individual labels unresolved [?].

Argument scale (red):

- **Right panel** — outer (right) edge: א ב ג ד ה ו ז ח ט י יא יב יג יד טו יז יח יט (30-1) כ כא כב כג כד כה כו כז כח כט ל (top→bottom).
- **Left panel** — outer (left) edge, reversed/complementary scale, ~30 rows; exact values [numeral: ?], deferred.

Foot region marker (red): גרע ("subtract") beneath each panel. Small red index letters appear at the foot corners — right panel foot [Red ink: ט] [?], center [Red ink: ח] [?] (pairing with the head index letters ב/ג; uninterpreted).

Panel data grid: as on p. 25 — ~6 numeric sub-columns × 30 rows of black gematria per panel; **all interior cells** [numeral: ?], deferred rather than transcribed.

Argument	תקון חק (מעלות)	תקון חק (דקות)	תקון זמן (מעלות)	תקון זמן (דקות)	תקון מעלות (מעלות)	תקון מעלות (דקות)
-1) א-ל (30, right panel; complementary scale, left panel)	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]

(All interior black cells deferred.)

Orah Selulah — Isaac ibn al-Aḥḍab (BnF Hébreu 1086)

Pages 27–28 — Lunar argument-correction tables (*Luah Heq Levanah*) and a double-entry equation grid

Script: Sephardic semicursive, black body ink with red rubrication (captions, group rubrics, argument columns, add/subtract polarity markers, and row-labels are all in red). Both pages are pure tabular matter; no running prose canon appears in this opening.

two lunar correction panels

The recto carries **two side-by-side correction panels**, each captioned in red • **לוח • חק • לבנה** (*Table of the Lunar Argument*). Both share the red group-rubric triad **תקון חק [ירח] • תקון זמן • תקון מעלות** (*correction of the [lunar] argument • correction of time • correction of degrees*), with **ירח** ("moon") written beneath the first rubric. Each group subdivides into two sub-columns, **מעלות** (degrees) and **דקות** (minutes).

Polarity as observed on this page: both panels read **הוסף** (*add*) as the red band at the **head** (directly beneath the rubric) and **גרע** (*subtract*) as the red marker at the **foot**. This is the reverse of pp. 23–24 and matches pp. 25–26 (head = add, foot = subtract) reported in the prior opening — transcribed as seen, not normalized.

Each panel is headed by a large red group-numeral: the **right panel** = **(4) ד**, the **left panel** = **(5) ה**.

The **right panel** carries its red argument column **(30-1) ל-א = חק** on its right (outer) edge, read downward. The **left panel** carries a red argument column on its left (outer) edge running **descending from (29) כט at the head** — a complementary/reflected argument entry; the exact scheme (30 – n) is [?] and left open.

The black interior gematria of both panels is legible in places, but the interior cells are **flagged** [numeral: ?] **rather than committed** — segmenting the closely-ruled 6-column bands risks a systematic whole-column shift (worse than a single misread). A high [?] rate here is the intended outcome for this grid.

Right panel — Table of the Lunar Argument, group (4) ד

Red caption: **לוח • חק • לבנה** — Red rubric: **תקון חק ירח | תקון זמן | תקון מעלות** — Head: **הוסף** (**add**) — Foot: **גרע** (**subtract**) — Argument column **חק** on outer (right) edge.

חק (arg)	תקון חק ירח — מ	תקון חק ירח — דק	תקון זמן — מ	תקון זמן — דק	תקון מעלות — מ	תקון מעלות — דק
א (1)	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
ב (2)	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
ג	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]

חֶקֶק (ar g)	תִּקְוֹן חֶקֶק יֶרַח — מ	תִּקְוֹן חֶקֶק יֶרַח — דֶּקֶק	תִּקְוֹן זֶמֶן — מ	תִּקְוֹן זֶמֶן — דֶּקֶק	תִּקְוֹן מַעֲלוֹת מ —	תִּקְוֹן מַעֲלוֹת — דֶּקֶק
(3	?	?	: ?]	?	?	?
) ד (4	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
) ה (5	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
) ו (6	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
) ז (7	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
) ח (8	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
) ט (9	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
) י (10	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
) יא (11	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
) יב (12	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
) יג (13	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
) יד (14	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
) טו (15	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
טז (16)	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
(						
) יז (17	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
) יח (18	[numeral: ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
) יט	[numeral:	[numeral:	[numeral	[numeral:	[numeral:	[numeral:

חק (ar g)	תקון חק ירח — מ	תקון חק ירח — דק	תקון זמן — מ	תקון זמן — דק	תקון מעלות מ —	תקון מעלות — דק
(19	?)	?)	: ?]	?)	?)	?)
) כ (20	[numeral: ?)	[numeral: ?)	[numeral : ?]	[numeral: ?)	[numeral: ?)	[numeral: ?)
כא (21)	[numeral: ?)	[numeral: ?)	[numeral : ?]	[numeral: ?)	[numeral: ?)	[numeral: ?)
(						
כב (22)	[numeral: ?)	[numeral: ?)	[numeral : ?]	[numeral: ?)	[numeral: ?)	[numeral: ?)
(						
) כג (23	[numeral: ?)	[numeral: ?)	[numeral : ?]	[numeral: ?)	[numeral: ?)	[numeral: ?)
כד (24)	[numeral: ?)	[numeral: ?)	[numeral : ?]	[numeral: ?)	[numeral: ?)	[numeral: ?)
(						
כה (25)	[numeral: ?)	[numeral: ?)	[numeral : ?]	[numeral: ?)	[numeral: ?)	[numeral: ?)
(						
) כו (26	[numeral: ?)	[numeral: ?)	[numeral : ?]	[numeral: ?)	[numeral: ?)	[numeral: ?)
) כז (27	[numeral: ?)	[numeral: ?)	[numeral : ?]	[numeral: ?)	[numeral: ?)	[numeral: ?)
כח (28)	[numeral: ?)	[numeral: ?)	[numeral : ?]	[numeral: ?)	[numeral: ?)	[numeral: ?)
(						
כט (29)	[numeral: ?)	[numeral: ?)	[numeral : ?]	[numeral: ?)	[numeral: ?)	[numeral: ?)
(						
) ל (30	[numeral: ?)	[numeral: ?)	[numeral : ?]	[numeral: ?)	[numeral: ?)	[numeral: ?)

Foot marker (red, below row 30): **גרע (subtract)**. A red quire/catchword mark stands at the outer foot of the panel `` [?].

Left panel — Table of the Lunar Argument, group (5) ה

Red caption: **תקון חק ירח | תקון זמן | תקון מעלות** — Red rubric: **תקון חק ירח • לוח • חק • לבנה** — Head: **הוסף (add)** — Foot: **גרע (subtract)**. Red argument column on the outer (left) edge runs **descending from (29) כט** (complementary entry; scheme [?]).

חק (arg, outer-left, descendi ng)	תקון חק ירח — מ	תקון חק ירח — דק	תקון זמן — מ	תקון זמן — דק	תקון — מעלות מ	תקון — מעלות דק
(29) כט	[numeral : ?]	[numeral : ?]	[numera l: ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]
(28) כח	[numeral : ?]	[numeral : ?]	[numera l: ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]
[arg: ?]	[numeral : ?]	[numeral : ?]	[numera l: ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]
... (28 further rows, descendi ng)	[numeral : ?]	[numeral : ?]	[numera l: ?]	[numeral : ?]	[numeral : ?]	[numeral : ?]

[The left panel occupies the same 30-row span as the right panel; its outer red argument column and its full black interior are legible only in part under magnification and are not committed here. Structure (7 columns: outer argument + three תקון groups × מעלות/דקות), red caption, rubric triad, and head/foot polarity (add/subtract) are as transcribed above.]

Foot marker (red, below the panel): **גרע (subtract)**.

large double-entry equation grid

The verso is a **single large ruled grid of a different type** from the p. 27 correction panels — no **תקון חק לוח** caption appears. It is a **double-entry (top-and-bottom argument) table**: a red argument row runs across the **top**, a second red row runs immediately beneath it, and a further red argument row runs across the **bottom** (the complementary reading direction). The interior is black gematria throughout.

Right-hand label column (red, outermost right): a repeating cycle of component row-labels. The legible elements are **מעלות** (degrees), **דקות** (minutes,

written דק', מחזור (cycle/return), כפול (double), and חלקי (parts of). They recur as paired דקות / מעלות rows tagged by band as [חלקי] מחזור and [כפול] חלקי — i.e. the table resolves an equation into its *cycle* (מחזור) and *doubled* (כפול) components, each in degrees and minutes. Exact word-by-word wording of the longer labels is [?].

Left margin (red, rotated): red rotated group-rubrics stand at the outer-left edge at the band boundaries [Red ink: rubric rotated, content ?] — not legibly resolvable at this resolution (candidates include a band label such as נכוחות / כפול מחזור, unverified) [?].

The top-left corner bears a pencil page-number "10" [Librarian note: "10"]. Faint purple/pencil marginalia and light bleed-through occupy the wide blank left margin [Later hand: faint marginal jottings, illegible] — ignored for transcription.

The grid's column count could not be established with confidence, so the **interior is not committed**; the structure, the red top/bottom argument bands, and the red right-hand label cycle are captured above. Committing an interior here would require inventing both the column count and the cell values — withheld per the anti-confabulation floor.

(outer-left rubric, red)	← ... double-entry	
	interior (column count ?)	component label (red, outer-right)
[Red ink rubric: ?]	... →	
[Red ink rubric: ?]	[numeral: ?] (top red argument band)	מעלות / דקות
[Red ink rubric: ?]	[numeral: ?]	מעלות / דקות [מחזור]
[Red ink rubric: ?]	[numeral: ?]	מעלות / דקות [כפול]
...	[numeral: ?] (repeating מחזור/כפול bands)	...
[Red ink rubric: ?]	[numeral: ?] (bottom red argument band)	מעלות / דקות

Astronomical tables (BnF Hébreu 1086, ff. —;
foliation "11" on p. 30)

Table 1 — Years and portions for the half-days, in the latitudes

[Red ink header (caption, spanning the top of the page, right-to-left): **לוח שנות** — "Table of years and portions for the half-days, in the latitudes."]

[Red ink, RIGHT (outer) margin: large red block-rubric words + a red argument sub-panel run down the right edge, dividing the grid into horizontal groups of rows. The block words are oversized display cursive and only partly legible under magnification — candidates include a recurring כּלל ("total/rule") and a longer word read variously as אֶלְכֶסוֹן/אֶלְכֶם [?]. Their exact wording remains uncertain.]

[Red ink, LEFT (outer) margin: a mirror set of large red block-rubric words + a red argument sub-panel run down the left edge (partly legible: מלז ,[?] כלל [?], and single red counter-letters). Exact wording is not recovered.]

Structure (native markdown pipe-table below). Columns are given in logical right-to-left order (rightmost Hebrew column = leftmost markdown column). The grid comprises: a red argument sub-panel at the right margin, ~14 black gematria data columns each carrying a two-letter **red** header (the latitude/argument index of that column), and a mirror red argument sub-panel at the left margin. The red column headers form a numeric row read right-to-left; individual header glyphs are small and several are abraded, so each is entered as [Red hdr: ?]. Every interior black data cell is entered as [numeral: ?] — interior values are NOT committed, the narrow gematria columns not resolving reliably cell-by-cell on the scan.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Arg R (red)	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	Arg L (red)
ed	u	u	u	u	u	u	u	u	u	u	u	u	u	u	ed
ar	me	me	me	me	me	me	me	me	me	me	me	me	me	me	ar
g:	ral	ral	ral	ral	ral	ral	ral	ral	ral	ral	ral	ral	ral	ral	g:
?	: ?	: ?	: ?	: ?	: ?	: ?	: ?	: ?	: ?	: ?	: ?	: ?	: ?	: ?	?
[R	[n	[n	[n	[n	[n	[n	[n	[n	[n	[n	[n	[n	[n	[n	[R
ed	u	u	u	u	u	u	u	u	u	u	u	u	u	u	ed
ar	me	me	me	me	me	me	me	me	me	me	me	me	me	me	ar
g:	ral	ral	ral	ral	ral	ral	ral	ral	ral	ral	ral	ral	ral	ral	g:
?	: ?	: ?	: ?	: ?	: ?	: ?	: ?	: ?	: ?	: ?	: ?	: ?	: ?	: ?	?

[Row count on p. 29 is ~28 ruled argument rows (grouped by the red marginal rubrics into blocks of ~6–7); the exact total and the exact data-column count (~14) do not resolve securely on the scan. Table fills the upper ~3/4 of the page; blank parchment below the bottom rule.]

Table 2 — Incidence of the parallax, by zodiacal sign and latitude

[Foliation: **11** (black, upper-left corner of the page.)]

[Red ink header (caption, two lines across the top, right-to-left): line 1 — **לוח חלות ההבטה** ("Table of the incidence of the parallax [ha-habbatah]"); line 2 — **בכ"ק ... וכמרחב ב' ?** ("...by [the ecliptic degree] and by latitude..."; the abbreviation כ"ק and the trailing letters are only partly legible).]

Double-entry (folded) table. The top rubricated sign-row runs Cancer → Sagittarius (right-to-left); the argument descends the right-hand red column to a mid-panel red **חצות** ("midpoint") rubric, at which the table folds; below the fold the same columns serve the complementary signs, whose red sign-row is written along the FOOT of the panel (Gemini → Capricorn, right-to-left). All numeric matter on this page (sign labels, argument, and the tabulated values) is in **red** ink; the interior values are entered as [numeral: ?]. A wide black-ink methodological prose canon runs down the LEFT margin (degraded/foxed — transcribed separately below).

[Red ink header row — TOP signs (logical right-to-left): **סרטן** (Cancer) · **אריה** (Leo) · **בתולה** (Virgo) · **מאזניים** (Libra) · **עקרב** (Scorpio) · **קשת** (Sagittarius).]

[Red ink header row — FOOT / complementary signs (logical right-to-left): **תאומים** (Gemini) [?] · **שור** (Taurus) · **טלה** (Aries) · **דגים** (Pisces) [?] · **דלי** (Aquarius) [?] · **גדי** (Capricorn) [?]. A stray red **סרטן** also appears at the right foot — position/label uncertain.]

Structure below: logical right-to-left order — red argument column, then 6 zodiacal sign columns. Finer ruling is visible WITHIN each sign column (≈ 2 sub-columns per sign, i.e. ~ 12 data columns total — a degrees|minutes or two-latitude split); the exact sub-column count is unresolved and is collapsed to one column per sign here. The **חצות** fold row and the complementary foot-labels are marked in the argument column.

[illegible]

[illegible]

Arg (red)	Cancer	Leo	Virgo	Libra	Scorpio	Sagittarius
[Red arg: ?]	[numer al: ?]	[numer al: ?]	[numer al: ?]	[numer al: ?]	[numer al: ?]	[numeral: ?]
[Red arg: ?]	[numer al: ?]	[numer al: ?]	[numer al: ?]	[numer al: ?]	[numer al: ?]	[numeral: ?]
(foot: complementary signs →)	Gemini [?]	Taurus	Aries	Pisces [?]	Aquarius [?]	Capricorn [?]

[Argument (row) count on p. 30 is ~30 ruled degree-rows folded at **חצות**; exact total and the intra-sign sub-column count (~2 per sign, ~12 data columns) do not resolve securely on the scan.]

Left-margin methodological canon (black ink, p. 30)

[Margin: a continuous black-ink prose canon runs down the full left margin of p. 30 in a small cursive hand, heavily foxed and partly abraded. Only disconnected fragments are legible under magnification; the passage is a methodological note on using the table. Legible fragments (top→bottom), each flanked by illegible spans: "..."; "...לחשוב..."; "...ונאמר..."; "...וכאשר אמר..."; "...ענין..."; "...אחר..."; "...יום..."; "...כמו שיהיה..."; "...הכוכב...". Full recovery of this canon was not possible here. Not further identified.]

Isaac ben Solomon ibn al-Aḥḍab, 'Orah Selulah, BnF Hébreu 1086.

Both pages of this opening continue the folded double-entry **parallax table** (לו"ח חלות ההבטה, "Table of the incidence of parallax/aspect") begun on the preceding page. The tables are set in black ink with **red rubrication** for the caption, the zodiac-sign header band, the red sub-header numeral band, the 7-prefixed complementary-sign band, and the argument counter (including the mid-panel **חצית** [= חצות, "midpoint / noon"] fold). Page 1 additionally carries a separate, very faint **calendrical table** — לו"ח הי"ג מחזורים לדעת סימן השנה ("Table of the 13 cycles, for knowing the character [keviah] of the year") — that wraps the right margin and fills the lower ~40% of the leaf.

Per the batch protocol for this table-dense manuscript, **all interior numeric cells are deferred** and marked [numeral: ?]; the red rubrics, argument counters, and sign headers are transcribed where legible. Exact column/row counts and interior values are not established here. No interior value is pattern-filled.

Parallax table at latitude 45°, with the 13-cycle table in the margin

Table A (main) — לוח חלות ההבטה במרחב מ"ה

[Red ink caption: לוח חלות ההבטה כמרחב מ"ה — "Table of the incidence of parallax [aspect] at latitude 45°" (45 = מ"ה).

Structure (as observed):

- **Top red header band** — zodiac signs, R→L: סרטן (Cancer) · אריה (Leo) · בתולה (Virgo) · מאזניים (Libra) · עקרב (Scorpio) · קשת (Sagittarius) · גדי (Capricorn). (7 sign-groups.)
- **Second red band** — a per-sign numeral row (degree/entry values); mostly illegible even under magnification → [numeral: ?].
- **Third red band** — 7-prefixed complementary-sign abbreviations (e.g. ל...), one per ruled data column; these together with the sign-group band label ~12–14 **finer ruled data sub-columns** in total. Exact sub-column count is not determinable on the scan.
- **Argument counter** — red, in the LEFT-hand column, running downward ... א ג ב א to the mid-panel red fold **חצית**, then continuing below. Approx. 19 ruled rows.
- **Polarity / fold:** the double-entry midpoint fold (חצות =) **חצית**; no explicit rubric on this panel.

Skeleton (argument column + the 7 named sign-groups; interior data deferred; the ~12–14 fine sub-columns collapse under their sign-group here):

Arg. (red)	סרטן Cancer	אריה Leo	בתולה Virgo	מאזניים Libra	עקרב Scorpio	קשת Sagittari us	גדי Caprico rn
[red sub- hdr]	[numeral: ?]	[numeral: ?] ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]
ח [?]	[numeral: ?]	[numeral: ?] ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]
ז [?]	[numeral: ?]	[numeral: ?] ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]	[numeral : ?]	[numeral: ?]

Arg. (red)	סרטן Cancer	אריה Leo	בתולה Virgo	מאזנים Libra	עקרב Scorpio	קשת Sagittari us	גדי Caprico rn
ו	[numer al: ?]	[num eral: ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]
ה	[numer al: ?]	[num eral: ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]
ד	[numer al: ?]	[num eral: ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]
ג	[numer al: ?]	[num eral: ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]
ב	[numer al: ?]	[num eral: ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]
א	[numer al: ?]	[num eral: ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]
חצית (fold)	[numer al: ?]	[num eral: ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]
א	[numer al: ?]	[num eral: ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]
ב	[numer al: ?]	[num eral: ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]
ג	[numer al: ?]	[num eral: ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]
ד	[numer al: ?]	[num eral: ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]
ה	[numer al: ?]	[num eral: ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]

Arg. (red)	סרטן Cancer	אריה Leo	בתולה Virgo	מאזניים Libra	עקרב Scorpio	קשת Sagittari us	גדי Capricor n
	al: ?]	eral: ?]	al: ?]	: ?]	al: ?]	: ?]	al: ?]
ו [?]	[numer al: ?]	[num eral: ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]
ז [?]	[numer al: ?]	[num eral: ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]
ח [?]	[numer al: ?]	[num eral: ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]
[red counter, foot]	[numer al: ?]	[num eral: ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]	[numeral : ?]	[numer al: ?]
..							

Table B (margin + lower leaf) — לוח הי"ג מחזורים לדעת סימן השנה

[Red ink caption: "Table of the 13 cycles, for knowing the character [keviah/סימן] of the year," with a second, largely illegible caption line beneath ([?] ... ונתונים).

This is a faint, brown-ink ruled grid occupying the **right margin of the upper leaf** and the **lower ~40% of the leaf**. Rows are labelled at the right/left edge with the repeating word **מחזור** ("cycle") and a counter — i.e. the thirteen 19-year cycles (מחזור א' ... מחזור י"ג). The cells hold short three-letter **year-signatures (keviyot)** of the form consonant-cluster (e.g. זש"ה, גח"ב type); even under magnification the ink is too pale to read most cells reliably.

מחזור (cycle)	year-signs (keviyot) → 19 columns
מחזור א' [?]	[?] (grid of ~19 keviah cells, largely illegible)
מחזור ב' [?]	[?]
... through	...
מחזור י"ג [?]	[?]

..

Parallax table (double-entry, foot sign-row)

[Red ink caption: [?] ו[חצי?] — "Table of the incidence of parallax [aspect] ...". The qualifier following ההבטה is uncertain (reads roughly ב...ב...ר/בליקת + וחצ); it may name the second parallax component (longitude vs. the latitude of p. 31) or repeat the latitude value — [?], to be confirmed. The upper-left corner bears a modern pencil foliation 12; the lower half of the leaf is blank.

Structure (as observed):

- **Top red header band** — zodiac signs, R→L: סרטן (Cancer) · אריה (Leo) · בתולה (Virgo) · מאזנים (Libra) · עקרב (Scorpio) · קשת (Sagittarius) · גדי (Capricorn).
- **Second red band** — per-sign numeral row → [numeral: ?].
- **Third red band** — 7-prefixed complementary-sign abbreviations, one per ruled data column (~12–14 fine sub-columns total).
- **Argument counter** — red, in the RIGHT-hand column, headed by a red rubric (המרחב [?] ל...), running downward to the mid-panel red fold **חצי** (written here חנות/חצי), then continuing below. Approx. 18–19 ruled rows.
- **Foot band (double-entry)** — a red **complementary sign-row** read from the foot upward, R→L: [?] (Gemini) · שור (Taurus) · טלה (Aries) [?] · דגים (Pisces) [?] · דלי (Aquarius) · גדי (Capricorn) — i.e. the reflected zodiac sequence Cancer→Capricorn taken the short way. A red numeral band sits just above the foot sign-row → [numeral: ?].
- **Polarity / fold:** double-entry midpoint fold **חצי**; top signs read downward, complementary foot signs read upward. No explicit גרע/הוסף rubric.

Skeleton (argument column + the 7 named top sign-groups; complementary foot signs shown as the closing band; interior data deferred):

	סרטן	אריה	בתולה	מאזנים	עקרב	קשת	גדי
Arg. (red)	Cancer	Leo	Virgo	Libra	Scorpi	Sagittar	Capricor
					o	ius	n
[red sub-hdr]	[numera l: ?]	[num eral: ?]	[nume ral: ?]	[numera l: ?]	[nume ral: ?]	[numer al: ?]	[numeral : ?]
ח [?]	[numera	[num	[nume	[numera	[nume	[numer	[numeral

Arg. (red)	סרטן Cancer	אריה Leo	בתולה Virgo	מאזניים Libra	עקרב Scorpi o	קשת Sagittar ius	גדי Capricor n
	ל: ?]	eral: ?]	ral: ?]	ל: ?]	ral: ?]	al: ?]	: ?]
ז [?]	[numera ל: ?]	[num eral: ?]	[nume ral: ?]	[numera ל: ?]	[nume ral: ?]	[numer al: ?]	[numeral : ?]
ז	[numera ל: ?]	[num eral: ?]	[nume ral: ?]	[numera ל: ?]	[nume ral: ?]	[numer al: ?]	[numeral : ?]
ה	[numera ל: ?]	[num eral: ?]	[nume ral: ?]	[numera ל: ?]	[nume ral: ?]	[numer al: ?]	[numeral : ?]
ד	[numera ל: ?]	[num eral: ?]	[nume ral: ?]	[numera ל: ?]	[nume ral: ?]	[numer al: ?]	[numeral : ?]
ג	[numera ל: ?]	[num eral: ?]	[nume ral: ?]	[numera ל: ?]	[nume ral: ?]	[numer al: ?]	[numeral : ?]
ב	[numera ל: ?]	[num eral: ?]	[nume ral: ?]	[numera ל: ?]	[nume ral: ?]	[numer al: ?]	[numeral : ?]
א	[numera ל: ?]	[num eral: ?]	[nume ral: ?]	[numera ל: ?]	[nume ral: ?]	[numer al: ?]	[numeral : ?]
חצית (fold)	[numera ל: ?]	[num eral: ?]	[nume ral: ?]	[numera ל: ?]	[nume ral: ?]	[numer al: ?]	[numeral : ?]
א	[numera ל: ?]	[num eral: ?]	[nume ral: ?]	[numera ל: ?]	[nume ral: ?]	[numer al: ?]	[numeral : ?]
ב	[numera ל: ?]	[num eral: ?]	[nume ral: ?]	[numera ל: ?]	[nume ral: ?]	[numer al: ?]	[numeral : ?]
ג	[numera ל: ?]	[num eral:	[nume ral:	[numera	[nume	[numer	[numeral

Arg. (red)	סרטן Cancer	אריה Leo	בתולה Virgo	מאזנים Libra	עקרב Scorpi o	קשת Sagittar ius	גדי Capricor n
		?)	ral: ?]	l: ?]	ral: ?]	al: ?]	: ?]
ד	[numera l: ?]	[num eral: ?]	[nume ral: ?]	[numera l: ?]	[nume ral: ?]	[numer al: ?]	[numeral : ?]
ה	[numera l: ?]	[num eral: ?]	[nume ral: ?]	[numera l: ?]	[nume ral: ?]	[numer al: ?]	[numeral : ?]
ו	[numera l: ?]	[num eral: ?]	[nume ral: ?]	[numera l: ?]	[nume ral: ?]	[numer al: ?]	[numeral : ?]
ז [?]	[numera l: ?]	[num eral: ?]	[nume ral: ?]	[numera l: ?]	[nume ral: ?]	[numer al: ?]	[numeral : ?]
[red numeral band, foot]	[numera l: ?]	[num eral: ?]	[nume ral: ?]	[numera l: ?]	[nume ral: ?]	[numer al: ?]	[numeral : ?]
foot signs (red) →	תאומים Gemini	שור Taur us	טלה Aries [?]	דגים Pisces [?]	דלי Aquari us	גדי Caprico rn	סרטן/סימ[?]
..							

Orah Selulah — pages 33–34

Isaac ben Solomon ibn al-Aḥḍab, 'Orah Selulah (ארח סללה), BnF Hébreu 1086.

Sephardic semicursive, black text with red (rubricated) headers, group-labels and argument columns.

This opening continues the parallax (*hibbut ha-hibbata*, חלות ההבטה) apparatus. Page 33 (recto) carries a **double-entry parallax table for geographic latitude 35** giving the parallax by zodiacal sign; page 34 (verso, foliated **13**) carries the matching **correction table** (*luah tiqqun*) split into a **גרע** (subtract) panel and a **הוסף** (add) panel.

Per the citation-grade tabular protocol, the complete grid skeleton is transcribed below — every ruled column (right-to-left) and every ruled row, with all red

headers, rubrics, panel-labels and argument columns populated from the scan. Because the ink of the fine data columns is small, **interior data cells are flagged [?] rather than committed** — no interior value is pattern-filled.

Parallax table

[Red ink header (title, R→L):] לוח חלות ההבטה · כאורך ובמרחב [?] · לה "Table of the incidence of parallax — in longitude and in latitude[?]; [latitude] 35 (לה)."]

- The middle word of the title reads *כאורך* ("in longitude") but the first two glyphs are ambiguous (candidate *כמירך*); paired with *ובמרחב* ("and in latitude") it evidently signals that each sign carries **two components** (a longitude-parallax and a latitude-parallax sub-column). The terminal =) **לה** (35 is the geographic latitude, the companion to the latitude-45 (מ"ה) panel of the preceding opening.

Structure. A double-entry grid: an argument column (*hok*, חק) at each edge (red), and **seven zodiacal sign-groups** across the top (red), each divided into **two fine sub-columns** ("a" / "b" — most likely the longitude and latitude components, but the sub-column labels are not securely legible). A red rubric **חצות** ("noon / midpoint") marks the fold between the upper and lower halves. Below the grid a red single-letter summary row is followed by the **complementary sign-row** (red), read for the reversed (upward) argument.

Red header sub-rows (below the sign names, above the data), transcribed as read, values uncertain:

- *Argument-marker row* (red single letters, R→L, per sign): סרטן "ט י" [?] · אריה · "ד ר" [?] · בתולה "ו לה [?] · מאזנים "ו [?] · עקרב "ה [?] · קשת "ד [?] · גדי "ד [?] · [?]
- *Sub-column label row* (red, a single word repeated under every sub-column): reading uncertain — resembles "שלשי" / "לשלי"; not securely resolved. [?]

Sign-group headers (red, R→L): סרטן (Cancer) · אריה (Leo) · בתולה (Virgo) · מאזנים (Libra) · עקרב (Scorpio) · קשת (Sagittarius) · גדי (Capricorn).

Columns below run left→right in the markdown = right→left on the folio (right argument first). Sign sub-columns are marked *a* / *b*.

arg חק (R)	סר טן a	סר טן b	אר יה a	אר יה b	בתו לה a	בתו לה b	מאזנ ים a	מאזנ ים b	ע ק רב a	ע ק רב b	ק ש ת a	ק ש ת b	ג די a	ג די b	חק arg (L)
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	ה
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	ד
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	ג
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	ב
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	א
[Red rubric: חצות (midpoi nt / fold)]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	חצו ת
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	א

arg חק (R)	סר טן a	סר טן b	אר יה a	אר יה b	בתו לה a	בתו לה b	מאזנ ים a	מאזנ ים b	ע ק רב a	ע ק רב b	ק ש ת a	ק ש ת b	ג די a	ג די b	חק arg (L)
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?] ?	[?]	ב
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?] ?	[?]	ג
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?] ?	[?]	ד
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?] ?	[?]	ה
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?] ?	[?]	ו
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?] ?	[?]	ז
[Red summar y row]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?] ?	[?]	[?]

[Red ink footer — complementary sign row (R→L): סרטן (Cancer) · תאומים (Gemini, תאומ') · שור (Taurus) · טלה (Aries) · דגים (Pisces, דג) · דלי (Aquarius, דל') · גדי (Capricorn, גדי) — the reversed-argument labels read upward from the foot.

Polarity: double-entry, folded at the central red **חצות** midpoint (no גרע/הוסף on this panel; the subtract/add correction is applied on the facing verso).

Observed row count of the numeric body ≈ 8 rows above 8 + חצות below; exact enumeration and all interior values are deferred rather than committed.

Correction table

[Librarian/foliation note: "13" (upper margin, brown ink).]

[Red ink header (title, R→L): ההבטה · חלות · תקון · לוח] "Table of the **correction** of the incidence of parallax."

Structure. Two panels side by side, each an argument-plus-three-columns block with its own red *hok* argument column:

- **Right panel** — [Red: גרע ("subtract")]: rightmost red argument column + 3 fine data sub-columns (red single-letter headers, R→L: "ב" · ["?"] · "ד").
- **Left panel** — [Red: הוסף ("add")]: 3 fine data sub-columns (red single-letter headers, R→L: "ג" · ["?"] · "ה"["?"]) + leftmost red argument column.
- The two panel-labels **הוסף** / **גרע** are repeated as a **red footer** at the foot of the grid (גרע at right, הוסף at left).
- Each argument column is headed by a rotated red caption reading מספר חלות ההבטה ("the number/argument of the incidence of parallax")["?"].

Readability caveat: this verso is written in very pale ink and carries **heavy bleed-through** from the dense parallax grid on the recto (faint grey numerals appear above and through the panels); those are ignored. The genuine table begins at the red title band.

Columns run left→right in markdown = right→left on the folio.

arg (R) חק	גרע a	גרע b	c גרע	a הוסף	b הוסף	c הוסף	arg (L) חק
כח[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
כז[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
כו[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
כה[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
[?]	[?]	[?]	[?]	[?]	[?]	[?]	יז[?]
[?]	[?]	[?]	[?]	[?]	[?]	[?]	יח[?]
[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
[?]	[?]	[?]	[?]	[?]	[?]	[?]	כב[?]

arg (R) חק	גרע a	גרע b	גרע c	הוסף a	הוסף b	הוסף c	arg (L) חק
[?]	[?]	[?]	[?]	[?]	[?]	[?]	כד[?]
[?]	[?]	[?]	[?]	[?]	[?]	[?]	כו[?]
כב[?]	[?]	[?]	[?]	[?]	[?]	[?]	כח[?]
כד[?]	[?]	[?]	[?]	[?]	[?]	[?]	ל[?]
כו[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
כח[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
ל[?]	[?]	[?]	[?]	[?]	[?]	[?]	[?]
[Red difference/max row]	[?]	[?]	[?]	[?]	[?]	[?]	[Red diff. row]

[Red ink footer — panel labels repeated (R→L): גרע (right) ... הוסף (left)]

Polarity: explicit **גרע (subtract)** / **הוסף (add)** — the correction is subtracted in the right panel and added in the left, indexed by the shared parallax argument (*hok*). The argument samples the high teens through 30 on the legible (הוסף) side and appears to descend from ~28 on the גרע side; the exact staircase and all interior corrections are deferred rather than committed.

Observed numeric body ≈ 20–21 argument rows plus the red difference/max row; alignment of the bisected fine columns is deferred.

Orah Selulah — Isaac ibn al-Ahdab (BnF Hébreu 1086)

Structural skeleton — pages 35–36

Interior numeral recovery is deferred to a further pass against the microfilm witness. Every ruled column and row is enumerated below; interior data cells carry [numeral: ?]. Titles, the securely-legible red rubric layer, and observed polarity are committed.

Page 35 — mean-motion / positions grid

[Damage: torn upper-right corner; the table's right-hand columns and the top header band are partly lost. Whole grid faded to pale sepia — red rubrics degraded.]

[Margin (far left, rotated 90°, red): גלגל [galgal, "sphere/orb"] [?]; a second, longer rotated red phrase below it — illegible [Red: ?].]

*Layout: a wide multi-column mean-motion grid. Column-name rubrics run in red along the **foot** of the table (rendered as the markdown header row below, but physically at the bottom); a red **ליום אחד** ("for one day") rate band sits just above the foot rubrics. The physical-leftmost gridded column is a red argument/label column. Column count and row count are best-effort readings of a badly faded grid — microfilm cross-check candidate.*

[illegible]

[illegible]

C1 (phys. right — torn)	C2	C3	C4	C5	C6	C7	C8	C9 (phys. left — red arg/lab el)
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[Red: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[Red: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[Red: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[Red: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[Red: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[Red: ?]
[Red: ליום אחד]	[Red: ליום אחד]	[Red: ליום אחד]	[Red: ליום אחד]	[Red: ליום אחד]	[Red: ליום אחד]	[Red: ליום אחד]	[Red: ליום אחד]	[Red: ליום אחד]

[The foot rubric row and the אחד ליום band are physically the two lowest ruled rows; body rows 1–28 sit above them. Below the table the lower half of the folio is blank.]

Page 36 (foliated “14”) — two side-by-side tables + foot prose

Right-hand table — לוח מרחב הירח ("Table of the Moon's latitude")

[Red title, spanning the head of the right table: **לוח מרחב הירח**.]

*Double-entry grid. The physical-**left** red argument column reads as a descending run (...כב כג כד כה כו כז כח כט..., i.e. the argument of latitude counting down); the physical-**right** red argument column is the complementary entry (read upward). Interior latitude values (degrees & minutes, black ink) deferred — [numeral: ?].*

[illegible]

[Right-table argument runs 1–30 by double entry; only the physical-left descending run כב...כט was securely traced. Exact per-row alignment and the physical-right argument column are deferred.]

Left-hand table — לוח ההכאה ("Table of the striking / multiplication")

[Red title, spanning the head of the left table: **לוח ההכאה**.]

*A tall red-and-black grid. Header row is a band of red rubric labels (illegible in detail). The physical-**left** column is a red argument column that appears to run down to **[60 =] o** (its final, lowest cell is a clear red o). Cell entries are single- and two-letter values in mixed red and black ink; all interiors deferred — [numeral: ?].*

[illegible]

C1 (phys. right)	C2	C3	C4	C5	C6	C7	C8	C9 (phys. left — red arg)
ral: ?]	ral: ?]	ral: ?]	ral: ?]	ral: ?]	ral: ?]	ral: ?]	ral: ?]	
[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[Red: ?]
[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[Red: ?]
[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[Red: ?]
[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[Red: ?]
[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[Red: ?]
[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[Red: ?]
[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[Red: ?]
[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[Red: ?]
[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[Red: ?]
[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[60] ס
[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	

[Left-table argument column terminates in a red (60) ס; the intermediate argument values (a sexagesimal/tens progression) were not securely read and are deferred.]

Foot of page 36 — running prose (below the right-hand table)

[The prose band is faded; only isolated, securely-legible fragments are given — not connected sense. Full recovery was not achieved here.]

- ... דרוש ["inquiry / problem"] ... [?]
- ... הירח ["the Moon"] ... [?]
- ... השמש ["the Sun"] ... [?]
- ... אמר ["he said"] ... [?]

- ... התחלת ["the beginning of"] ... [?]
- [A ruled box at the lower-right encloses several further lines of prose; illegible in detail [?].]
- [Marginal jottings run vertically in the far-left and far-right margins of p. 36; illegible [?].]

Isaac ben Solomon ibn al-Aḥdab, Orah Selulah (ארח סללה), BnF Hébreu 1086. Sephardic/Maghribi semicursive; bicolor (black body ink, red rubrication). Both folio sides are astronomical tables. This is a first-pass structural map: the ruled grid, all red apparatus (titles, headers, argument/index columns) and legibly-read argument values are committed; every interior numeral cell is deferred ([numeral: ?]) to a recovery pass against the microfilm witness. Column and row counts are best-effort structural estimates pending that pass.

Page 37 — Table of the velocity of the Moon

[Foliation: red numeral at upper outer corner, [?]] (a low-double-digit folio number).]

Red title (across the head, R→L): לוח · מהירות · הירח — "Table of the velocity of the Moon" (*luḥ mehirut ha-yareaḥ*). A faded secondary red word may follow לוח at the right [?].

Structure: a black-ruled grid set in the right ~60% of the folio (broad blank left margin carrying only faint bleed-through / illegible marginalia — not transcribed). The grid carries a **right argument column** and a mirrored **left argument column** (both red), enclosing **seven data columns** each surmounted by a large red header letter; below the header-letter row runs a red sub-header row of small unit labels (degrees/minutes-type), partly legible [?]. A separate red **footer row** of single letters sits below the data block — the complementary (double-entry) argument. The two side arguments mirror one another, descending by 2 from the top (יח, כ, כב, כד, כו, כח, ...); values below row 6 were not securely legible under magnification and are left [?] rather than pattern-completed. The header-letter row, R→L, reads: ה, ר, [?], נ, [?], ל, ב, א, [?], ד, [?].

(Markdown columns run left→right = physical right→left, i.e. logical reading order; the final data row shown is the red complementary footer.)

[illegible]

קח (right arg.) [Red]	ט [Red] [?]	ז [Red] [?]	ו [Red] [?]	ה [Red] [?]	ד [Red] [?]	ג [Red] [?]	ב [Red] [?]	א [Red] [?]	קח (left arg.) [Red]
[?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[?]
[?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[?]
[?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[?]
[?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[?]
[?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[?]
[?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[?]
[?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[?]
[Red] [?]	[Red nume ral: ?]	[Red nume ral: ?]	[Red nume ral: ?]	[Red nume ral: ?]	[Red nume ral: ?]	[Red nume ral: ?]	[Red nume ral: ?]	[Red nume ral: ?]	[Red] [?]

Polarity note: no explicit גרע/הוסף rubric was legible on this opening; the mirrored side arguments plus the red footer row indicate a **double-entry (fold) table** (top-down + complementary-up). The ink is notably pale across the data block.

Page 38 — Table of the solar eclipse

[Foliation: "15" inked at the upper outer (left) corner. Faint red offset/bleed in the left margin — not transcribed.]

Red title (across the head, R→L): לוח · לקוט · החמה — "Table of the eclipse of the Sun" (*luah likkut ha-ḥammah*).

Structure: a tall, dense black-ruled grid filling most of the folio. It is a **double-entry table** with a red index/argument column on each side (the right argument runs downward, the left index its complement) enclosing a block of data columns. Each data column is surmounted by a red integer-part header (a row of red / 7 7-n cells — the constant tens of the tabulated degrees), and below it a red sub-header row of small unit labels (degrees/minutes-type), partly legible [?]. The interior values increase monotonically down each data column (an eclipse/parallax-type function), consistent with the argument fold; they are deferred here and not pattern-completed. Best-effort count: two red index columns enclosing ten data columns (≈ 12 columns) over ≈ 35 ruled rows — provisional. The right and left index numerals were not securely legible cell-by-cell on the scan ([Red numeral: ?]); the sequence appears to be a one-step monotone degree argument.

(Markdown columns run left→right = physical right→left = logical reading order.)

arg. (right) [Red] [?]	7 [Red d] [?]	7 [Red d] [?]	7 [Red d] [?]	7 [Red d] [?]	7 [Red d] [?]	7 [Red d] [?]	7 [Red d] [?]	7 [Red d] [?]	7 [Red d] [?]	7 [Red d] [?]	index (left) [Red] [?]
[Red numeral : ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[Red numeral : ?]
[Red numeral : ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[Red numeral : ?]
[Red numeral : ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[Red numeral : ?]
[Red numeral : ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[Red numeral : ?]

[illegible]

[illegible]

[illegible]

arg. (right)	ⴌ [Red d] [Red] [?]	ⴌ [Red d] [Red] [?]	ⴌ [Red d] [Red] [?]	ⴌ [Red d] [Red] [?]	ⴌ [Red d] [Red] [?]	ⴌ [Red d] [Red] [?]	ⴌ [Red d] [Red] [?]	ⴌ [Red d] [Red] [?]	ⴌ [Red d] [Red] [?]	ⴌ [Red d] [Red] [?]	index (left) [Red] [?]
	]	?	]	?	]	]	?	]	?	]	
[Red numeral : ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[Red numeral : ?]
[Red numeral : ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[Red numeral : ?]
[Red numeral : ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[Red numeral : ?]
[Red numeral : ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[Red numeral : ?]
[Red numeral : ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[Red numeral : ?]
[Red numeral : ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[Red numeral : ?]
[Red numeral : ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[nu me ral: ?]	[nu mer al: ?]	[Red numeral : ?]

Orah Selulah (ארח סללה) — Isaac ben Solomon ibn al-Aḥḍab

Script: Sephardic semicursive, small hand, black body ink with red rubrication (title, sub-rubric, and column headers). This opening is a single very dense double-entry numeric table (p. 39) followed by an effectively blank / show-through leaf (p. 40).

Rubricated title (red, top of page, verbatim best-effort):

[Red ink header: המרחקים [?]; possibly "the distances"]
[Red ink header: לוח מ"ב שבין המ[?] סקים [?]; possibly "the distances"]
[Red ink header: מקצה מערב עד [?] מערב הנכולם [?]] — i.e. approximately: "Table 42, [giving the distances?] from the western edge to the ... of the inhabited [world]." Several words in the title are small faded red cursive and are genuinely uncertain; transcribe verbatim what is committed above and treat the flagged words as unresolved.

Second rubric line (red, centered, below the title):

[Red ink: במורך [?]; most likely באורך, "in longitude"]

Structure (first-pass structural map — interiors deferred). This is a large double-entry grid. The **argument** is a column of single Hebrew letters running down the **right edge** (mirrored by a second index column at the left edge — the classic double-entry / mirrored-argument layout flagged in the handoff). The interior columns run as repeated coordinate blocks (paired numeric columns) separated by narrow blank spacer columns, each block carrying a small red header. The recurring red headers appear to be directional / coordinate Arabic-tradition terms (candidates read at this resolution include אלשמאלי [al-shamālī, "northern"], אלמערב/אלגרבי ["western"], and a repeating short marker מש"פ [?]), consistent with a longitude/latitude ("west-to-east") geographic table — but none of the column headers can be committed letter-by-letter at this resolution.

Dimensions are approximate. Best estimate: ~16 columns (1 right-edge argument + ~15 data/spacer columns) × **~44 ruled rows**. The right-edge argument was read as single Hebrew letters that appear to repeat every other row and reach roughly the high-teens near the foot (e.g. ... יח, יז, טז, טו, יד), but the exact argument sequence, the exact column count, and every interior value are **not** committed — the narrow gematria columns do not resolve cell-by-cell under magnification. No interior value is pattern-filled.

גרע/הוסף/חצות (subtract/add/midpoint) polarity label was legibly resolved on this table; the double-entry (mirrored right/left argument) polarity is reported as **observed** but its verbal label is unread.

Structural skeleton (R→L logical order; markdown column 1 = argument = physical rightmost column; every ruled row enumerated; ALL interior + argument cells deferred to a further recovery pass against the microfilm witness):

gu	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R
me	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed
nt)	he	he	he	he	he	he	he	he	he	he	he	he	he	he	he
[R	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad
ed	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:
he	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)
ad	(da	(da	(da	(da	(d	(da	(da	(da	(d	(da	(da	(da	(d	(da	(da
er:	ta	ta	ta	ta	ata	ta	ta	ta	ata	ta	ta	ta	ata	ta	ta
?)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)	12)	13)	14)	15)	16)

[illegible][illegible]

[?] [n [n [n [n [n [n [n [n [n [n [n [n [n [n [n
 u u u u u u u u u u u u u u u

gu	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R
me	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed
nt)	he	he	he	he	he	he	he	he	he	he	he	he	he	he	he
[R	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad
ed	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:
he	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)
ad	(da	(da	(da	(da	(d	(da	(da	(da	(d	(da	(da	(da	(d	(da	(da
er:	ta	ta	ta	ta	ata	ta	ta	ta	ata	ta	ta	ta	ata	ta	ta
?)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)	12)	13)	14)	15)	16)

[illegible]

gu	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R
me	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed
nt)	he	he	he	he	he	he	he	he	he	he	he	he	he	he	he
[R	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad
ed	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:
he	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)
ad	(da	(da	(da	(da	(d	(da	(da	(da	(d	(da	(da	(da	(d	(da	(da
er:	ta	ta	ta	ta	ata	ta	ta	ta	ata	ta	ta	ta	ata	ta	ta
?)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)	12)	13)	14)	15)	16)

[illegible]

gu	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R
me	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed
nt)	he	he	he	he	he	he	he	he	he	he	he	he	he	he	he
[R	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad
ed	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:
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er:	ta	ta	ta	ta	ata	ta	ta	ta	ata	ta	ta	ta	ata	ta	ta
?)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)	12)	13)	14)	15)	16)

[illegible]

gu	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R
me	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed
nt)	he	he	he	he	he	he	he	he	he	he	he	he	he	he	he
[R	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad
ed	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:
he	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)
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er:	ta	ta	ta	ta	ata	ta	ta	ta	ata	ta	ta	ta	ata	ta	ta
?)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)	12)	13)	14)	15)	16)

[illegible]

gu	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R
me	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed
nt)	he	he	he	he	he	he	he	he	he	he	he	he	he	he	he
[R	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad
ed	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:
he	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)
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er:	ta	ta	ta	ta	ata	ta	ta	ta	ata	ta	ta	ta	ata	ta	ta
?)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)	12)	13)	14)	15)	16)

[illegible][illegible][illegible][illegible]

[?] [n [n [n [n [n [n [n [n [n [n [n [n [n [n [n
 u u u u u u u u u u u u u u u

gu	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R	[R
me	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed
nt)	he	he	he	he	he	he	he	he	he	he	he	he	he	he	he
[R	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad
ed	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:
he	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)
ad	(da	(da	(da	(da	(d	(da	(da	(da	(d	(da	(da	(da	(d	(da	(da
er:	ta	ta	ta	ta	ata	ta	ta	ta	ata	ta	ta	ta	ata	ta	ta
?)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)	12)	13)	14)	15)	16)

[illegible]

[illegible]

נח															
(ar															
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me	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed	ed
nt)	he	he	he	he	he	he	he	he	he	he	he	he	he	he	he
[R	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad	ad
ed	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:	er:
he	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)	?)
ad	(da	(da	(da	(da	(d	(da	(da	(da	(d	(da	(da	(da	(d	(da	(da
er:	ta	ta	ta	ta	ata	ta	ta	ta	ata	ta	ta	ta	ata	ta	ta
?)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)	12)	13)	14)	15)	16)
	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
	me	me	me	me	me	me	me	me	me	me	me	me	me	me	me
	ral	ral	ral	ral	ral	ral	ral	ral	ral	ral	ral	ral	ral	ral	ral
	: ?]	: ?]	: ?]	: ?]	: ?]	: ?]	: ?]	: ?]	: ?]	: ?]	: ?]	: ?]	: ?]	: ?]	: ?]

PDF page 40

The only primary mark on the camera-facing side is a modern pencil folio number "16" (top-left) — [Librarian note: pencil "16"]. The faint red word and the even gray horizontal bands otherwise visible are **mirror-reversed show-through / offset** from the adjacent leaf, not primary text on this side; per the bleed-through rule they are not transcribed. No prose is securely legible.

Isaac ben Solomon ibn al-Aḥḍab, *Orah Selulah* (ארח סללה). Sephardic semicursive; the tabular folio (p. 42) is written throughout in a pale red-brown iron-gall (rubricating) ink, now oxidized/faded. This is a **first-pass structural map**: the table's column and row apparatus and its red headers are committed; every interior gematria cell is deferred to a further recovery pass against the microfilm witness and carried here as [numeral: ?].

canon prose (two columns), red-and-green rubricated header

Rubricated section header (top of right column), letters alternating red / blue-green ink: [Red/green ink header:] לְהַשְׁכִּיל ("To give insight / to make wise").

Right column — securely-legible fragments (black ink): The passage is continuous instructional prose on computing solar/ecliptic positions from the tables. Legible anchors, in sequence:

- [reading uncertain at line openings] — בינה דרך ... בעשיה ... מהס קודס
- "...the degree(s) (המַעֲלוֹת) of the sign (מַהְמָזֵל) in which the sun (הַשֶּׁמֶשׁ) is..."
- "...what is in your hand upon 15 (ט"ו) and complete (וְהַשְׁלֵם) the degree(s)..."
- "...and always remember (וְזָכַר תָּמִיד)..."
- "...the remainder (הַשְּׁאָרִית) from the [?] to make (לַעֲשׂוֹת) minutes (שְׁנָיִם), thin/fine (דַּק)..."
- "...if they are minutes (דַּקִּים), one degree (מַעֲלָה אֶחָת)..."
- "...set what is in your hand [at?] 29 (כ"ט) ... count/number (מִסְפָּר) from the midpoint of the day (מִחְצֵי הַיּוֹם)..."
- "...take the degree (קַח הַמַּעֲלָה) of the ascensions (הַמַּעֲבָרִים)..." ; "...the ascensions of the ecliptic (מַעְבְּרֵי הַמַּזְלוֹת)..." ; "...the right/direct [ascension] (הַיֹּשֵׁר) ... the ascensions (הַמַּעֲבָרִים)..."

Left column — securely-legible fragments (black ink):

- "...in the [sign?] the [ascension] of the ecliptic (מַעְבְּרֵי הַמַּזְלוֹת) ... take (קַח)..."
- "...the ascension (הַמַּעֲלָה) from opposite (מִהַמּוֹל) that is outside (שֶׁבַחוּץ)..."
- "...and it will be the beginning of house/sign [?] (תְּחִלַּת בֵּית)..."
- "...thereafter (וְאַחֵר) the ascension (הַמַּעֲבָר) in the table (בְּלוּחַ) ..., so also in [?]..."
- Recurrent vocabulary through the column: הַמַּעֲבָרִים (the ascensions), הַמַּעֲלוֹת (the degrees), הַמַּזְלוֹת (the ecliptic/signs), מִסְפָּר (number), הַלּוּחַ (the table), הַשֶּׁמֶשׁ (the sun), חֲצוֹת (midpoint).

folio "17"; tabulated equation/ascension table (pale red-brown ink throughout)

Upper margin bears the numeral "17" (upper area, black ink — foliation or table number; reported verbatim).

Later-hand marginalia (faded brown ink; different, later hand)

[Later hand — top-left margin block, best-effort, largely uncertain:] " לוח / לדעת " כמויה יום [?] / כלם העדבן אלה [?] / ניום מתיה ניום / הס יכסינה [?] ניום / התספקה — followed by a pen-flourish. [Later hand, margin: reading unreliable; microfilm cross-check candidate.]

[Later hand — top-center margin block, best-effort, largely uncertain:] " בהנחתם / נדעת כי הפסקנה / גדולה והפסקנה כנס [?] אה / לגדולים וכאנה כ [?] / א נהעצבן כיזר [?] — with a pen-trial

scribble beside it (letters resembling "abel / lecl", i.e. non-textual pen trials).
[Later hand, margin: reading unreliable; microfilm cross-check candidate.]

Black-ink instructional prose (above and to the right of the table)

Continuation of the canon from p. 41, giving a rule for converting the tabulated argument into zodiacal "houses"/signs (30° = בית sign) with additive correction (הוסף / היסף):

- "...and every part of the parts (חלק מלקי החלקים) is 2 minutes (שניות)..."
- "...take the degree (קח המעלה) that comes out (שנגזרה) in [...]... and it is the beginning of house (תחלת בית)..."
- Rule series (each ~"upon house N ... signs ... and it will be house N+1 ... add"):
- "על בית ב' [...] מנולות ויהיה בית [...] היסף"
- "על בית ג' [...] מנולות ויהיה בית [...] היסף"
- "על בית ד' [...] ויהיה בית ה' [...] היסף"
- "ויהיה בית ו' [...] היסף"; "... בית ז' [...] היסף ..."
- Closing legible clause: "... לשמי הגבירל [...] / ויהיה [...] לעד אמן" (a doxological close; reading uncertain).

The table

Columns are given in logical right-to-left order (rightmost table column first).
Interior data = [numeral: ?]; the recurring cell shorthand-words (e.g. "מיכבדאת/תיכבדאת", "ל דרת", "ל אשיין/ל עשיין", "ינשיין/ינסיון", "אעבריל/אעבדיל") are part of the deferred interior and are not committed.

מפסקנה גדולה [?] ("large equation/corre ction"; deg min)	עברת [?]	תחיה [?]	[?] סייסיאנא	תפסקה נוסאת [?] ("added portion/corre ction")	[?] תגן הברך
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]

מפסקנה גדולה [מ/ת?] ("large equation/corre ction"; deg min)	עברת [?]	תחיה [?]	[?] סיסיאנא	תפסקה נוסאת [?] ("added portion/correct ion")	[?] תגן הברך
	al: ?]	ral: ?]			]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]

The lower-right quadrant of the folio (below the black prose, beside the table) is **blank parchment**; faint show-through from the other side is visible but no primary ink. [Blank: lower-right quadrant, p. 42.]

Orah Selulah (ארח סללה) — Isaac ben Solomon ibn al-Aḥdab. BnF Hébreu 1086. Batch 022 — pages 43–44 (source PDF).

faded near-blank leaf (table skeleton only)

This leaf is heavily oxidized and, to the eye, largely blank parchment. The only primary ink is faint:

- A faded rubric/running-header fragment at the top-right corner. [Illegible: faded cursive header fragment — not securely legible]
- A partial **argument column** of single gematria letters running down the right margin — structurally the right-hand (argument) column of a table whose body cells are empty or abraded. The letters form a degree sequence (an argument of roughly 1–30), but individual glyphs are too faint to commit securely. [Illegible: partial argument column, single letters ~ל-א, faded — values not securely legible]

The remainder of the leaf carries only ghost-gray **show-through** from the other side (mirrored, blurred); it is not primary text and is not transcribed.

right-ascension table

מעברי המזלות במזן הישר — *Ascensions of the zodiacal signs in the right sphere* (right ascension; מזן [Arabic: mīzān, "balance/scale"] הישר = the *straight/direct* balance, i.e. *sphaera recta*, as opposed to the oblique). [Red ink header: title in red, spanning the top of the table.]

Structure (committed): a single ruled panel, **30 data rows** (argument 1–30) × **9 columns**. Visual order on the page is right-to-left: the **red argument column is at the far right**, and the four zodiacal-sign column-groups run leftward from it. Each sign heads a pair of sub-columns (the degrees + minutes value of the ascension). Below is the panel presented argument-first (page-right = table-left here), preserving the logical order.

- **Red apparatus (committed):** title; the four sign names (all red); the argument column numerals 1–30 (red). **Interior data cells are black.**
- **Red sub-column headers (not securely legible):** under each sign name is a small red vertical rubric over each of the two sub-columns. Their most probable reading is מעלות (degrees) / דקות (minutes) of a right-ascension entry, but the cursive is too small/faded to commit — rendered below as ° [?] / '[?]' and flagged for microfilm.
- **Interior values deferred:** the narrow gematria columns do not resolve cell-by-cell on the scan, so every interior data cell is entered as [numeral: ?], pending a reading from the microfilm witness. The visible

interior is black ink of ordinary density (not faded); the deferral is a resolution limit, not damage.

- **No double-entry / no reversed foot argument:** the argument runs 1→30 top-to-bottom and the panel simply ends after row 30 (blank parchment below); there are no complementary sign headers at the foot. No גרע/הוסף (subtract/add) polarity rubric observed.

Column legend (left→right in the table = right→left on the page): °[?] = degrees sub-column, '[?] = minutes sub-column (red sub-rubric provisional).

מעלת המזל (arg. °, red)	גדי ° [?]	גדי '[?]	דלי ° [?]	דלי ' [?]	דגים ° [?]	דגים '[?]	טלה ° [?]	טלה ' [?]
(1) א	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(2) ב	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(3) ג	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(4) ד	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(5) ה	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(6) ו	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(7) ז	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(8) ח	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(9) ט	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]

מעלת המזל (arg. °, red)	גדי ° [?]	גדי '[?]	דלי ° [?]	דלי ' [?]	דגים ° [?]	דגים '[?]	טלה ° [?]	טלה ' [?]
	?]]		?]]				?]]	
(10) י	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]]	[num eral: ?]]
(11) יא	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]]	[num eral: ?]]
(12) יב	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]]	[num eral: ?]]
(13) יג	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]]	[num eral: ?]]
(14) יד	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]]	[num eral: ?]]
(15) טו	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]]	[num eral: ?]]
(16) טז	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]]	[num eral: ?]]
(17) יז	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]]	[num eral: ?]]
(18) יח	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]]	[num eral: ?]]
(19) יט	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]]	[num eral: ?]]
(20) כ	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[num eral: ?]]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]]	[num eral: ?]]

מעלת המזל (arg. °, red)	גדי ° [?]	גדי '[?]	דלי ° [?]	דלי ' [?]	דגים ° [?]	דגים '[?]	טלה ° [?]	טלה ' [?]
(21) כא	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(22) כב	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(23) כג	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(24) כד	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(25) כה	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(26) כו	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(27) כז	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(28) כח	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(29) כט	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]
(30) ל	[num eral: ?]	[num eral: ?]	[num eral: ?]	[num eral: ?]	[nume ral: ?]	[nume ral: ?]	[num eral: ?]	[num eral: ?]

[Librarian note: modern pencil foliation, top-left reads "18" [?] (possibly "28").]

Isaac ben Solomon ibn al-Aḥḍab, Orah Selulah (ארח סללה), BnF Hébreu 1086.

Astronomical tables: **ascensions of the signs in the right sphere** (מעברי המזלות / במיתן הישר / sphaera recta), continuing the sequence begun in the preceding

leaves. Rubrication is bicolor (red apparatus / black data). Script: Sephardic semicursive.

Interior policy for this pass: these are dense gematria grids with very narrow columns. This is a **first-pass structural map** — every ruled column and all 30 argument rows are enumerated; the **red apparatus and argument columns are committed**, and every interior data cell is left as [numeral: ?] for a further recovery pass against the microfilm witness. Apparent clean staircases in the "degrees" sub-columns (e.g. a rightmost column reading like a perfect +1 run) are treated as artifacts of the reading conditions, **not** committed.

Table: Ascensions of the signs in the right sphere (Taurus–Leo)

- The table occupies the upper-left of the leaf; the remainder of the page is **blank parchment** (no show-through of note).
- **Structure:** one **red argument column** on the **outer (left) margin**, values (30-1) ל-א; to its right, **four zodiac-sign groups**, each spanning **two ruled sub-columns** (by layout convention degrees / minutes of ascension; the **red sub-headers are too faded to read** — microfilm cross-check). Sign groups, in physical right-to-left order: **שור** (Taurus), **תאומים** (Gemini), **סרטן** (Cancer), **אריה** (Leo). Total **9 ruled columns × 30 rows**.
- No *חצות* / *הוסף* / *גרע* rubric and no reversed complementary (bottom-up) argument observed; single downward argument 1–30.

Columns below are given in physical **right-to-left** order (leftmost markdown column = rightmost column on the page); the argument column is therefore the last (leftmost on the page). Each sign has two sub-columns, -1 and -2 (red sub-headers illegible; deg./min. by convention).

שור (Taurus) —1	שור 2—	תאומים (Gemini) —1	תאומי 2— ם	סרטן (Cancer) —1	סרטן 2—	אריה (Leo) —1	אריה 2—	חלקי המזל (arg., red א-ל)
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	1
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	2

שור (Taurus) —1	שור 2—	תאומים (Gemini) —1	תאומי 2— ם	סרטן (Cancer) —1	סרטן 2—	אריה (Leo) —1	אריה 2—	חלקי המזל (arg., red ל-א)
	]				]		]	
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	3
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	4
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	5
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	6
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	7
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	8
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	9
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	10
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	11

שור (Taurus) —1	שור 2—	תאומים (Gemini) —1	תאומים 2—	סרטן (Cancer) —1	סרטן 2—	אריה (Leo) —1	אריה 2—	חלקי המזל (arg., red א-ל)
al: ?]	mer al: ?]	?	ral: ?]	l: ?]	mer al: ?]	al: ?]	mer al: ?]	
[numer al: ?]	[nu mer al: ?]	[numeral: ?]	[nume ral: ?]	[numera l: ?]	[nu mer al: ?]	[numer al: ?]	[nu mer al: ?]	12
[numer al: ?]	[nu mer al: ?]	[numeral: ?]	[nume ral: ?]	[numera l: ?]	[nu mer al: ?]	[numer al: ?]	[nu mer al: ?]	13
[numer al: ?]	[nu mer al: ?]	[numeral: ?]	[nume ral: ?]	[numera l: ?]	[nu mer al: ?]	[numer al: ?]	[nu mer al: ?]	14
[numer al: ?]	[nu mer al: ?]	[numeral: ?]	[nume ral: ?]	[numera l: ?]	[nu mer al: ?]	[numer al: ?]	[nu mer al: ?]	15
[numer al: ?]	[nu mer al: ?]	[numeral: ?]	[nume ral: ?]	[numera l: ?]	[nu mer al: ?]	[numer al: ?]	[nu mer al: ?]	16
[numer al: ?]	[nu mer al: ?]	[numeral: ?]	[nume ral: ?]	[numera l: ?]	[nu mer al: ?]	[numer al: ?]	[nu mer al: ?]	17
[numer al: ?]	[nu mer al: ?]	[numeral: ?]	[nume ral: ?]	[numera l: ?]	[nu mer al: ?]	[numer al: ?]	[nu mer al: ?]	18
[numer al: ?]	[nu mer al: ?]	[numeral: ?]	[nume ral: ?]	[numera l: ?]	[nu mer al: ?]	[numer al: ?]	[nu mer al: ?]	19

שור (Taurus) —1	שור 2—	תאומים (Gemini) —1	תאומי 2— ם	סרטן (Cancer) —1	סרטן 2—	אריה (Leo) —1	אריה 2—	חלקי המזל (arg., red ל-א)
	]				]		]	
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	20
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	21
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	22
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	23
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	24
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	25
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	26
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	27
[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	[numeral: ?]	28

שור (Taurus) —1	שור 2—	תאומים (Gemini) —1	תאומים 2—	סרטן (Cancer) —1	סרטן 2—	אריה (Leo) —1	אריה 2—	חלקי המזל (arg., red א-ל)
al: ?]	mer al: ?]	?	ral: ?]	l: ?]	mer al: ?]	al: ?]	mer al: ?]	
[numer al: ?]	[nu mer al: ?]	[numeral: ?]	[nume ral: ?]	[numera l: ?]	[nu mer al: ?]	[numer al: ?]	[nu mer al: ?]	29
[numer al: ?]	[nu mer al: ?]	[numeral: ?]	[nume ral: ?]	[numera l: ?]	[nu mer al: ?]	[numer al: ?]	[nu mer al: ?]	30

Prose (upper-left) + Table: Ascensions of the signs in the right sphere (Virgo–Sagittarius)

[Foliation, upper-left corner, later hand: "19".]

Prose block (upper-left; two short paragraphs, each closed by a horizontal rule)

The upper-left quadrant carries black-ink cursive prose immediately preceding/accompanying the table. Under magnification this hand is faint and partly abraded;

Paragraph 1 (≈ 8 lines): the passage concerns *הדרך* (the method/procedure) and refers to *השור* (Taurus/the sign) and repeats a lead-in of the type *ועוד אמר* ("and he further said") [?]. Several interior lines consist of short, closely-spaced letter groups (aleph/he/nun combinations) that do not resolve into secure words at this resolution. [Lacuna of legibility — remainder illegible; do not smooth.]

Paragraph 2 (≈ 4 lines, below the first rule): opens with *אך תחלה נמצא* ("but first we find...") [?] and closes with a section-ending formula that is not securely legible (a *סליק*-type colophon flourish is likely but cannot be read letter-by-letter). [Illegible: closing formula.]

Table

- **Structure:** mirror of p. 45. One **red argument column** on the **outer (right) margin**, values (30-1) ל-א, with a red vertical column header (reads approximately חלקי המזל, "degrees of the sign" [?]); to its left, **four zodiac-sign groups**, each two ruled sub-columns (red sub-headers faded/illegible). Sign groups, physical right-to-left: **בתולה** (Virgo), **מאזנים** (Libra), **עקרב** (Scorpio), **קשת** (Sagittarius). Total **9 ruled columns × 30 rows**.
- No חצות / הוסף / גרע rubric and no reversed complementary argument observed; single downward argument 1-30.
- The table area is lightly foxed/stippled at the foot but the ruling and red apparatus remain visible; black interior data is legible in places but does not resolve securely column-by-column on the scan → deferred.

Columns in physical **right-to-left** order (argument first = rightmost on the page).

חלקי המזל (arg., red ל-א)	בתולה (Virgo) —1	בתול ה 2	מאזנים (Libra) —1	מאזני מ 2—	עקרב (Scorpio)) —1	עקר ב 2	קשת (Sagittari us) —1	קש ת 2—
1	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
2	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
3	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
4	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
5	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]

חלקי המזל (arg., red ל-א)	בתולה (Virgo) —1	בתול — ה 2	מאזנים (Libra) —1	מאזני 2— ם	עקרב (Scorpio) —1	עקר — ב 2	קשת (Sagittari us) —1	קש ת 2—
		al: ?]		?)		al: ?]		ral: ?)
6	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?)	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?)
7	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?)	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?)
8	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?)	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?)
9	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?)	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?)
10	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?)	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?)
11	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?)	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?)
12	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?)	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?)
13	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?)	[numera l: ?]	[nu mer al: ?	[numera l: ?]	[nu me ral:

חלקי המזל (arg., red ל-א)	בתולה (Virgo) —1	בתול —ה 2	מאזנים (Libra) —1	מאזני 2—ם	עקרב (Scorpio) —1	עקר —ב 2	קשת (Sagittari us) —1	קש ת 2—
						]		?)
14	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
15	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
16	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
17	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
18	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
19	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
20	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
21	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]

חלקי המזל (arg., red ל-א)	בתולה (Virgo) —1	בתול —ה 2	מאזנים (Libra) —1	מאזני 2—ם	עקרב (Scorpio) —1	עקר —ב 2	קשת (Sagittari us) —1	קש ת 2—
22	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
23	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
24	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
25	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
26	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
27	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
28	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
29	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[num eral: ?]	[numera l: ?]	[nu mer al: ?]	[numera l: ?]	[nu me ral: ?]
30	[numera	[nu	[numera	[num	[numera	[nu	[numera	[nu

חלקי המזל (arg., red ל-א)	בתולה (Virgo) —1	בתול ה — 2	מאזנים (Libra) —1	מאזני ם — 2	עקרב (Scorpio) —1	עקר ב — 2	קשת (Sagittari us) —1	קש ת 2—
	l: ?]	mer al: ?]	l: ?]	eral: ?]	l: ?]	mer al: ?]	l: ?]	me ral: ?]

Isaac ben Solomon ibn al-Aḥdab, *Orah Selulah* (ארח סללה), BnF Hébreu 1086.
 Primary script: Sephardic semicursive. Bicolor rubrication (black body ink + red apparatus). Both pages of this opening are ruled numeral tables (calendar/positional apparatus), each with a light-brown auxiliary stepped number-block in the outer prose panel. The interiors do not resolve cell-by-cell on this scan and are deferred to the microfilm witness: argument columns, red apparatus, titles, and structure are committed here; every interior data cell is [numeral: ?].

Page 47 — table: פשוטות ... לזכר לדעת כניסת ("Table to know the entry [of the signs/seasons] ... ordinary years")

Layout: the ruled table occupies the inner (left/center) portion of the page; the argument column (red, single letters 1–30) stands at the **outer (left) margin**; the black prose title and a light-brown auxiliary number-block stand to the right.

Black title (right of table), verbatim:

לזכר לדעת כניסת ... פשוטות

("Table to know the entry ... [in] ordinary years.")

Red apparatus:

- [Red ink, top spanning line (running/group header)]: " ... [?] ... מעבר הגריב [?]" — partly abraded/faded; three-to-four red words, most illegible at this resolution.
- [Red ink, column group sub-headers]: several red words over the data columns, read with low confidence as month-names — " / [?] תמוז / [?] סיון / [?] ניסן / [?] אייר [?]" (i.e. [?] — likely a run of Hebrew month names, unverified).
- [Red ink, argument column, outer-left]: single letters **(30-1) ל-א**, one per row. (Cursive kaf in כד-כט reads samekh-like; read as 24–29.)

Left-margin brown marginalia (outside the table frame): three short words, "יונס / [?] צרליה / [?] כה[?]" — a marginal note; verbatim only, no identification.

Data columns: the ruled grid carries roughly **8 data columns** (right-to-left; provisional count) of 2-letter black gematria values, apparently grouped in pairs under the red month headers. Interiors deferred.

Argument = red source column (1–30). D1...D8 = the black data columns in source **right-to-left** order.

[illegible]

[illegible]

Arg (red)	D1	D2	D3	D4	D5	D6	D7	D8
) 7 (30	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]

Table bottom rule confirmed below row (30) 7; no polarity rubric (גרע/הוסף/חצות) observed. Column count provisional — not securely determinable on the scan. Faded red top header + brown marginalia → microfilm cross-check.

Auxiliary number-block (right prose panel, light-brown ink, faintly ruled): a stepped array of short 1–2 letter values in ~10–12 rows across ~4–6 loose columns (e.g. opening rows read "הו / ... / ה ב ד / ..."). Very pale iron-gall; structure only. Interiors deferred → microfilm.

Page 48 — table (leap years): ... והמועדים / מעוברות ("... and the festivals / leap years")

Foliation: upper-outer margin bears "20" [Later hand / foliation].

Layout mirrors page 47: the ruled table occupies the inner (right/center) portion; the argument column (red, 1–30) stands at the **outer (right) margin** beside the black label **החדשים** ("the months"); the black prose title and a light-brown auxiliary number-block stand to the left.

Black title (left of table), verbatim:

והמועדים ... מעוברות

("... and the festivals / [in] leap years.")

Red apparatus:

- [Red ink, top spanning line]: "החוב ... עיר[?] ... מיטן[?]" — faded, mostly illegible.
- [Red ink, column group sub-headers]: large red words over the data columns, read with low confidence as "... / מיס[?] / גבולה[?] / קיה[?]" — [?] (heavily stained by brown ink-spatter; not month-names as read — unverified).
- [Red ink, column labels (Row B)]: thin vertical red words in each column (positional-order labels, e.g. "חלקים/שניות"-type), illegible individually → [?].
- [Red ink, argument column, outer-right]: single letters **(30-1) א-ז**, one per row.

- [Black label, far outer-right]: החדשים ("the months").

Data columns: a **wider** grid than page 47 — the interior alternates 3-letter black values (7-prefixed ~100–150 and 7-prefixed ~250–275; one column runs an ascending ~77→77 sequence) with 2-letter black values, apparently in **degree+fraction pairs**. Provisional count ~8–9 **data columns** (right-to-left). Interiors deferred (per mandate the ascending 7-column especially must NOT be committed from its apparent staircase). D1...D8 = black data columns in source **right-to-left** order.

[illegible]

[illegible]

Arg (red)	D1	D2	D3	D4	D5	D6	D7	D8
) 7 (30	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]	[nume ral: ?]

Table bottom rule confirmed below row (30) 7; no polarity rubric (גרע/הוסף/חצות) observed. Column count provisional — not securely determinable on the scan. Heavy brown ink-spatter across the red headers and upper cells → microfilm cross-check.

Auxiliary number-block (left prose panel, light-brown ink, faintly ruled): a stepped array of short values in ~12+ rows across ~5 loose columns, headed by the black title lines מעוברות / והמועדים. Very pale; structure only, interiors deferred → microfilm.

[Librarian note: circular BnF ownership stamp (red/pink), lower-right of page 48.]

Orah Selulah (ארח סללה) — Isaac ibn al-Aḥdab (BnF Hébreu 1086)

This opening is the recto of a leaf carrying two ruled astronomical/calendrical tables side by side, in black ink with red rubrication, plus a personal-name inscription at the foot; its verso is blank. Per the first-pass structural mandate, the tables below are laid out **complete** (every ruled column and row enumerated), with the red apparatus and argument columns committed and **every interior data cell deferred as [numeral: ?]** — the narrow gematria columns do not resolve cell-by-cell on this scan, so the interiors are reserved for the microfilm witness.

PDF p. 49 (recto)

Top prose caption (black ink, above/right of the tables)

A short black-ink instructional caption sits in the upper right, above the right-hand table. It is faded and abraded; only fragments are securely legible. Verbatim securely-legible fragments: לוח ... ("table of ...") ... הרחוק ... [?] המסקנות ("the distance") ... ד' רבע וחצי חלק [?] ("4, a quarter, and half a part" — reading uncertain). The remainder is not securely recoverable under magnification.

[Red ink title, degraded — spanning the head of the left-hand table: "... ניר?
"מיטיבים" / "חינוב?" — reading not secure, flag for microfilm.]

Table 1 — left-hand table (degrees/minutes; red argument at left edge)

Structure as observed. A ruled grid running the full height of the page (~30 rows). The **argument column is red and sits on the left edge**, running as a clean sequential numeral series (transcribed 1–30). To its right are black data columns that group as **(degrees, minutes) pairs** — four value ranges are distinguishable across the width (roughly 260s, 310s, 330s–340s, and 345–370s, all ascending down the column), i.e. four degree columns each followed by a narrow minutes column. A **red column-header row** (four legible red labels, degraded) crowns the grid; the leftmost legible red header reads *גמט* [?], the other three are not securely recoverable. A second, **red numeral column with non-sequential values** (e.g. *ג, לז, כב, ו, נא, לה, יט, יב, ?/מ, ל...*) appears near the center rule — possibly a secondary/complementary argument (double-entry) — flagged as unconfirmed.

Columns below are given in physical left-to-right order (argument first, at the left edge). Red column-headers are [?]; interior degree/minute cells are all [numeral: ?].

[illegible]

[illegible]

[illegible]

Table 2 — right-hand table (מֵרֵצֵן columns; date-type entries)

Structure as observed. A ruled grid in the upper-right of the page, shorter than Table 1 (approximately 20 data rows; ruled cells continue empty below the last data row to the table's bottom rule). Seven data columns are each headed מֵרָצָה [?] with a sequential Hebrew-letter index (7-1) ז, ו, ה, ד, ג, ב, א, read right-to-left. A narrow argument column sits at the far-right (outer) edge; its numerals are not securely legible under magnification ([numeral: ?]). The interior cells are **not pure numerals**: each holds a *number + month token*, e.g. ... אֶמְרִיל [Abril = April] and a recurring ... גֶּרֶת... / לֶרֶת [?] token (a second Romance/calendar month abbreviation — reading not secure). All interior cells are deferred as [numeral: ?]; the observed content type is recorded here.

Columns in logical right-to-left order (argument first):

[illegible]

[illegible]

Foot of p. 49 — personal-name inscription (brown/faded ink)

Below the tables, in faded brown ink, a cluster of personal names is written (not a formal dated scribal colophon; no *תם ונשלם* formula or date is securely present). Securely-legible names (Stage-5 A/P1 re-read confirmed, glyph-verified), laid out in **two horizontal registers** — top: **שמואל** (Samuel) ... **אברהם** (Abraham) ... **שתחיה** (honorific, "may he live"); bottom: **עזריה** (Azariah) ... **ויצחק** (and Isaac) ... **אלעזר** (Eleazar). The connective filiation markers (בן, "son of") are **not** legibly present, so patronymic-vs-sibling structure is unresolved [?]. A further faded line runs beneath (fragments only, not securely recoverable: ... *יבריעא? ... יברוטקמוט? ... ט...?*). A large free-drawn decorative 7 hook/flourish appears in the lower-left field; what a prior pass reported as "two Stars of David" reads on re-examination as **pen flourishes plus white paper-loss spots**, not confirmed hexagrams [?]. The red circular device is the **BnF royal-library stamp** (archival, not inscription). **No date word and no place-name is legibly present** — the suggested Sicilian/Italian-family provenance therefore stays **unconfirmed, not asserted**.

[Librarian note: red circular BnF/Bibliothèque royale ownership stamp ("BIBLIOTHECA REGIA") impressed in the lower-left margin; faded pencil shelf annotations in the left margin.]

PDF p. 50 (verso)

The verso is blank cream parchment carrying no primary ink. Faint **red show-through** (mirrored, from the recto's red rubrication / an adjacent leaf) runs as a vertical dotted column along the gutter (right) edge; a faint pen-drawn Star-of-David doodle is visible near the lower gutter. No transcribable primary text.

Orah Selulah (BnF Hébreu 1086) — pages 51–52

Isaac ben Solomon ibn al-Aḥḍab, Orah Selulah (ארח סללה). End-matter leaves at the close of the codex.

Both leaves in this opening are blank. The astronomical tables have ended before this point; no ruled table, argument column, red rubric, prose, colophon, or inscription appears on either side. No formal dated colophon (*תם ונשלם* / scribe name / place) is present here.

Unruled, unwritten parchment across the whole leaf. Surface shows ordinary fiber flecks, light foxing specks, and a few faint pinkish/violet smudges near the top center, but no primary ink and no ruled grid. The right-hand (outer) edge is

torn/chipped at the top corner; the left (gutter) edge shows the binding fold. No text, no rubrication, no marginalia.

Unruled, unwritten parchment across the whole leaf. The dark mottled brown band along the left edge and the bottom edge is the binding board / leather turn-in of the rear cover (this leaf sits against the back board — a rear flyleaf / pastedown position). A horizontal zone of tan discoloration crosses the upper third — an offset/glue-and-damp stain, with very faint show-through ghosting of table ink from an earlier leaf; this is show-through, not primary ink on this side. No primary text, no ruled grid, no rubrication, no colophon, no ownership or pen-trial inscription. A binding-cord/sewing-station mark is visible at the outer edge.

[End of the codex's written content: the tables close before this opening, and these two leaves are the terminal blanks against the rear board. No colophon was executed. Classification of these blanks — end-of-work vs. binder's flyleaf — remains open.]

Orah Selulah (BnF Hébreu 1086) — pages 53–54

Both frames in this opening are codicological photographs of the binding at the very tail of the codex, not leaves of the manuscript text. No manuscript writing, colophon, closing formula, ownership inscription, or pen-trial is present on either. What follows records the physical state and the binding/library marks that are legible.

heavily stained terminal leaf / binding board

A flat surface entirely covered by dense dark-brown foxing and mold/water staining, with a mottled "leopard-spot" pattern across the whole field. Along the left edge runs the cream-colored edge of a binding board / pastedown turn-in; a small white paper repair tab (with an indistinct dark mark, not legible Hebrew) is adhered near the lower-left corner. No ink writing, ruling, or figure is present anywhere on the surface — the dark blotching is staining, not text or show-through of text.

spine of the binding

A photograph of the book's spine, shown vertically. The spine bears a tooled/lettered title running up its length, plus paper shelf-mark labels lower down. No manuscript text.

The tooled spine title reads:

[Binding: spine title, tooled] **LE SENTIER APLANI**. [French: "The Leveled Path" — the modern binder's rendering of the Hebrew title *Orah Selulah* (אורח סלולה)]

Below the title, on paper spine labels:

[Librarian note: spine shelf-mark label(s), printed/inked] "[HÉ]BR." over "...86[?]" — the Bibliothèque nationale de France shelfmark, Hébreu 1086. Leading digits of the number are cut off / not fully within frame; the visible digits read "86[?]".

No colophon, scribal name, date, place, or closing formula appears on this frame; all lettering is binding tooling and library shelf-marking.