A popular calendar

The calendar is essential for Jewish religious life, and it was important for every medieval Jewish community to have one. The standard Rabbinic calendar is fixed by a calculation, which must be performed on a regular basis. This calculation, although well-known, involves complex arithmetical operations beyond the numerical proficiency of most medieval Jews.

An ingenious calendar scheme was developed that allowed people with little calendar knowledge to be able to set the calendar. This scheme is based on the assumption that the calendar repeats itself exactly every 247 years. The attraction of this cycle is that it can be calculated once and used forever; its danger – that it diverges from the standard calendar for a few years every century. By using the 247-year calendar even those communities that did not have a calendar-maker could, for most years, follow the correct Jewish calendar. In those years when the 247-year cycle produced false results, its users ran the risk of celebrating major religious holidays at the wrong times, eating leavened bread on Passover or not fasting on the Day of Atonement.

The oldest traceable 247-year calendar cycles are found in the Cairo Genizah and appear to have been put together in the middle of the 10th century. They are attributed to Josiah b. Mevorakh al-ʿĀqūlī (or ibn al-ʿĀqūlī), a little-known scholar of Babylonian descent who was still alive in 1009. His *nisba* al-ʿĀqūlī may refer to ʿĀqūlā, a pre-islamic (Syriac) name of Kūfa, or to Dayr al-ʿĀqūl, a town on the Tigris southeast of Baghdad.

Josiah b. Mevorakh al-ʿĀqūlī's work on the calendar consists of an introduction followed by fourteen chapters, each dedicated to one of the fourteen possible courses of the Jewish year. The introduction has been fully preserved in T-S 10K20.2.

בשׁ רחׁ

קאל יאשיהו בן מבורך בן אלעאקולי רצׁי

אללה ענה אדא ארדת תערף רווס אל

שהור ואלאעיאד פכד סני אלאסכנדר

מע אלמטלובה ואסקט מנהא אלף סנה

ומא יתבקי אסקטה רׁמׁ רׁמׁ ואלדי

יבקי מע[ך] בעד דלך אטלבה עלי הדה

אלאלואח אלת[י] בין [י]דיך אדא וגדתה תקרא

תחת אללוח תגׁד אלשהור ואלאעיאד צחיחה

כמא תשתהי אן שא אללה תעאלי

In the name of God

Josiah b. Mevorakh b. al-ʿĀqūlī, may God be pleased with him, said: if you want to know the beginnings of months and the festivals, take the years of Alexander including the required (year), deduct from them 1000 years,

and cast out 247s from what remains. What is left after this, look it up in the tables that you have before you, and when you find it, read what is under the table and you will find the correct months and festivals as you wanted, God willing.

Each chapter of Josiah b. Mevorakh al-ʿĀqūlī's calendar is made up of three elements: 1) a set of numbers, 2) the main calendrical characteristics of the year described in that chapter, and 3) a fuller description of the calendar, including the beginning of months, festivals and fasts. An example from the best-preserved booklet T-S K2.8 is:

קי̇ח קל̇ב לל̇ב לד̇ כ יז̇ י יג̇
ז̇ לז̇ מ̇ סז̇ סד̇
סא̇ מז̇ מד̇ עד̇ פה̇ צא̇
פח̇ קט̇ו קי̇ב קח̇ קה̇
צד̇ קל̇ה קל̇ט קמ̇ב קמ̇ה
קנ̇ט קס̇ב קס̇ה קס̇ט
קפ̇ג קפ̇ו ר̇טז ר̇ל ר̇י
ר̇יג ק̇צו ר̇ג קפ̇ט
ר̇לז ר̇מ ר̇מג
כסדרן פשוטה

תשרי ה̇ יום הכפורים ז̇
סוכה ושמיני עצרת ה̇
ערבה ד̇ מרחשון ו̇ה̇ כסלו א̇ ....

118, 132, 34, 20, 17, 10, 13
7, 37, 40, 67, 64
61, 47, 44, 74, 85, 91
88, 115, 112, 108, 105
94, 135, 139, 142, 145,
159, 162, 165, 169,
183, 186, 216, 230, 210,
213, 196, 203, 189,
237, 240, 243
regular, plain

Tišri: Thursday; day of Atonement: Sabbath;
Sukkot and Šemini ʿAṣeret: Thursday;
(day of the) Willow: Wednesday; Marḥešvan: Friday and Sabbath; Kislev: Sunday

In order to use Josiah b. Mevorakh al-ʿĀqūlī's calendar in any given year, all one needs to know is that year's Seleucid date. One takes the date and determines the year's position within the 247-year cycle by following the algorithm described in the introduction. One then looks for it within the sets of numbers given in each of the fourteen chapters. The chapter that lists the relevant number will describe the correct course of the year for that date. Take, for example, the current year 5778 AM. Its Seleucid date is 2329 SE, and its number according to Josiah b. Mevorakh al-ʿĀqūlī's algorithm is 94. The number 94 can be found on the list of numbers edited above. This means that in 2329 SE (5778 AM) the month of Tišri will start on a Thursday, the first day of Sukkot as well as Šemini ʿAṣeret will fall on a Thursday, the Day of Atonement will be on a Sabbath, and so on.

This cycle was popular in every sense of the word: it was accessible to the general public and was widely used. T-S NS 98.2, a fragment on the history of calendar, reports:

> We saw that people often rely on the calendar of R. Josiah b. Mevorakh of blessed memory because it is simple and easy to grasp. We intentionally collated many versions of it and found them significantly different and there is not among them a correct one.

The surviving fragments themselves furnish evidence of having been used in practice. In T-S K2.41, fol. 3r a user remarked "this is our blessed year" (הדה סנתנא אלמבארכה) and, switching to Arabic characters, wished the year to be happy (سعيدة). His year happened to follow the same course as the one that began this month and we join the medieval writer in hoping that this year will be happy and blessed!

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