

RESPONSA

The Jewish Calendar and Biblical Chronology

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Q. Could you provide me with some assistance in answering the following questions pertaining to Hebrew chronology:

- (1) I am trying to find the Hebrew equivalent to the date July 15, 1871. According to my computation, it would be 26 Tammuz, 5631 (which began on the evening of July 14). Could you please check my computation, and let me know whether it is correct?
- (2) In the Hebrew year 5631, did the month Adar occur once or twice?
- (3) Is there any accepted date in Hebrew chronology for the Biblical flood (Genesis, Chap. 7, etc.)?
- (4) Is there any accepted date in Hebrew chronology for the first Passover (Exodus 12:29)?
- (5) Could you refer me to some reliable reference source (book, encyclopedia, etc.) which deals with Hebrew chronology?

A. The clarity of our correspondent's questions all but obviated the need to conduct an extensive reference interview. Indeed, to borrow a baseball metaphor, his questions were the reference librarian's equivalent of a "lob."

"Calendar questions" are a not-infrequent feature of the Judaica reference librarian's daily chores. Often, the questioner seeks calendar information while preparing text for a gravestone, or in order to establish dates—according to either the Jewish or civil calendars—for a *yortsayt* (the anniversary of the Jewish date of an individual's death), a child's bar or bat mitzvah (which preferably coincides with the reading of the first Torah portion after the child's birthday), or an ancestor's birthday. There are many variations on these particular themes, which are rooted in Jewish religious traditions, for example, celebrating the *yortsayt* of a Hasidic rebbe.

On the other hand, it would not surprise me to learn that many of my colleagues have had Jewish calendar questions di-

rected at them by fundamentalist Christians interested in establishing the precise birth date (according to the Jewish calendar) of Jesus of Nazareth, or the date of his crucifixion. Such questions, posed in a number of guises, have crossed my desk on several occasions. It is unclear to me into which, if any, of these categories the correspondent who is responsible for this issue's lengthy column falls.

The correspondent who sent this inquiry to YIVO was doubtless unaware that the nameless Library Administrator to whom his letter was addressed is also responsible for preparing this Responsa column. In any case, the subject matter of his questions provides an excellent opportunity to dwell on some practical issues relating to the Jewish calendar and Biblical chronology.

The answers to our correspondent's questions were provided within a couple of days of his letter's arrival. They are now shared with the readers of this column, in the same sequence as they were asked, but with explanations and a considerable number of emendations (not all of which were provided in my direct response to the inquirer).

1. Comparative Jewish and Civil Calendars

The Hebrew date for July 15, 1871 was indeed 26 Tammuz, 5631. One source for this information is the *Corresponding Date Calendar and Family Record*, compiled by Rabbi S. W. Freund, which, as its subtitle states, provides "corresponding dates of the Hebrew and civil calendar for 216 years (1784 to 2000)." This particular comparative calendar is arranged according to the days of the Jewish year, from 1 Tishri to 29 Elul. Each page lists, in several columns (and minuscule print), the equivalent civil dates—in the 216-year period of coverage—for each date of the Jewish year. The civil date is given in German (at least in the edition at my disposal at YIVO), e.g., "26 Thamus [5]631/Samstag 15 Juli 1871."

All civil equivalents to Jewish dates are provided in this work according to the *Gregorian* calendar that is currently in use, rather than the *Julian* calendar. The Julian calendar, with its "tropical," or solar year of 365-and- $\frac{1}{4}$ days, was adopted by the ancient Romans at the request of Julius Caesar, in whose time it was becoming obvious that the calendar previously in use had grown out of "sync" with the seasons. "The Julian calendar year of 365.25 days was too long, since the correct value for the tropical year is 365.242199 days. This error of 11 minutes 14 seconds per year amounted to almost one-and-a-half days in two centuries, and seven days in 1,000 years. Once again the calendar became increasingly out of phase with the seasons" ("Calendar," in *Encyclopaedia Britannica*, 15th ed., *Macropaedia*, vol. 3, p. 602). Accordingly, in February 1582, Pope Gregory XIII issued a bull under which the calendar was recalculated in order to reflect the true length of the solar year. The Gregorian, or New Style calendar was immediately adopted in Catholic countries, but not in Protestant or Eastern Orthodox domains.

Britain, for example, did not adopt the New Style calendar until 1752—which means that George Washington, whose birthday is now celebrated on February 22nd, was born on February 11, 1732, according to the Julian calendar then in force in the English colonies. As for Russia, whence the majority of today's American Jews' ancestors hail, it did not adopt the New Style calendar until February 1918, by which time there was a 13-day difference between the Julian and Gregorian calendars. This explains why the Soviets currently celebrate the anniversary of the "October Revolution" on November 7th (under the Old Style calendar the Bolshevik coup took place on October 25, 1917).

Thus, if one is attempting to find the Hebrew equivalent of a civil date—July 15, 1871, for example—it is important to know whether it is the Julian or the Gregorian calendar that is being referred to. Conceivably, our

correspondent may have been working from a pre-revolutionary Russian document (e.g., an ancestor's birth certificate), in which case the Hebrew equivalent of the Julian date of July 15, 1871 would not have been 26 Tammuz, 5631, but (according to my calculations) the more portentous 9th of Av of the same year—the Gregorian date being July 27th. (In 1871 there was a 12-day difference between the two calendars.)

Besides the *Corresponding Date Calendar and Family Record*, there are other calendars that provide equivalent Jewish and civil dates, though few extend their coverage earlier than 1900 C.E. Two that do are:

(a) A highly schematic 1,000-year calendar in the *Jewish Encyclopedia*, covering the millennium from 4761 to 5760/1001 C.E.—2000 C.E. ("Calendar," vol. 3, pp. 505–507), and

(b) *Calendar for 6000 Years . . . From the Creation Until the End of the Sixth Millennium*, devised by A.A. Akavia and published in Jerusalem about 15 years ago. This Hebrew-language source is not easy to use, but is among the most sophisticated tools for the purpose of comparing Hebrew and civil dates. Here, as in the 1,000-year comparative calendar contained in the *JE*, the civil, or Christian calendar takes into account changes arising from the adoption of the Gregorian calendar (prior to 1582, civil dates are given according to the Julian calendar, and subsequently, according to the Gregorian). In addition, it includes equivalent dates according to the Muslim calendar. The Akavia calendar also contains introductions devoted to the Karaite and Samaritan calendars.

Most comparative calendars unfortunately do not cover the period in question here. *The Comprehensive Hebrew Calendar*, by Arthur Spier, for example, covers only the years 5660–5760/1900–2000. (An updated, third edition, published in 1986, covers the years 5660–5860/1900–2100.) The Spier calendar is arranged by Hebrew year (each year covers two pages of printed text), with civil and Hebrew calendars for each week placed side by side. The Torah portion for each week is given, as well. This calendar includes historical background on the Hebrew calendar, along with a useful appendix, "Elements of the Calendar Calculation," which deals with such topics as common and leap years (discussed in the next section), traditional chronology (discussed in sections 3 and 4), and astronomical calculations.

There is a "Hundred-Year Jewish Calendar, 1920–2020" in the oft-overlooked Index Volume to the *Encyclopaedia Judaica* (vol. 1, pp. 109–159). Unfortunately, like Spier's book, this calendar does not include the year sought by our correspondent. The arrangement is chronological by civil year (according to the Gregorian calendar), with each year covering roughly half a page. As in the Spier calendar, the weekly Torah portion is indicated under each Sabbath. Additional comparative calendars are listed in section 5, Bibliography.

2. The Jewish Leap Year

In the Jewish year 5631, the month of Adar occurred once, not twice. According to the *Corresponding Date Calendar and Family Record*, 5631 was *not* a leap year, though 5630 and 5632 *were*. This leads us naturally into a discussion of how the Jewish leap year is calculated.

The Jewish calendar is a lunar calendar, with each month based on the cycle of the moon. *Rosh hodesh*, literally "the head of the month," may be celebrated for one or two days. In the former pattern, it is marked on the first day of a month, and in the latter, on the final day of the previous month and the first day of the new one. *Rosh hodesh* takes place when the moon is scarcely visible from Earth, or in its "new" phase. Therefore, one cannot simply add a day per year, every now and again, in order to make the seasons balance out over time. During a Jewish leap year, an entire *month* must be added to the calendar. In such cases, the month of Adar repeats itself as Adar Rishon and Adar Sheni. (The two months are also referred to as Adar Alef/Adar I and Adar Bet/Adar II. In addition, Adar Sheni is known as *ve-Adar*—or *veyoder*, in Yiddish.) During a leap year, the Purim holiday occurs in Adar Sheni. In Spier's words:

Years are grouped in cycles of 19, of which 12 have 12 lunar months, and 7 have 13 lunar months. Therefore the 19-year cycle, called the "small *Mahzor*," has 235 months. After each cycle of 19 years the solar and lunar years are balanced. . . .

The seven leap years, each consisting of 13 months, are distributed within the *Mahzor* of 19 years as follows: The 3rd, 6th, 8th, 11th, 14th, 17th and 19th year in each *Mahzor* are leap years; the others, common years. If the Hebrew year number is divided by 19, the quotient indicates the number of cycles that have passed.

(Spier, 1952, p. 218)

One comparative Hebrew calendar that is divided into cycles is contained in the general reference source *The Book of Calendars*, edited by Frank Parise. This Hebrew-civil calendar starts with the first year of the 199th cycle of the Hebrew calendar (1 Tishri 3763, or September 23, 2 C.E.) and concludes with the 19th year of the 314th cycle (which begins on 1 Tishri 5966, or Sept. 16, 2205 C.E.) (Parise, 1982, pp. 12–43). A common year may have 353, 354 or 355 days; a leap year, 383, 384 or 385 days. Spier delineates these year types as follows:

- a. 354 days, i.e., 12 months, alternately having 30 and 29 days.
 - b. 353 days, i.e., 12 months, alternately having 30 and 29 days, except Kislev, with 29 instead of 30 days.
 - c. 355 days, i.e., 12 months, alternately having 30 and 29 days, except Heshvan, with 30 instead of 29 days.
 - d. 384 days, i.e., 12 months, alternately having 30 and 29 days, with 1 additional month of 30 days: Adar I.
 - e. 383 days, 12 months, alternately having 30 and 29 days, except Kislev, with 29 days instead of 30, and one additional month of 30 days: Adar I.
 - f. 385 days, 12 months, alternately having 30 and 29 days, except Heshvan, with 30 days instead of 29, and one additional month, Adar I, with 30 days.
- a and d are called regular years.
b and e are called defective years.
c and f are called excessive years.
a, b, c, are common years; d, e, f, leap years.
(Spier, 1952, p. 219)

(Spier here adopts confusing terminology, by referring to the month that is normally called Adar I as Adar, and to the leap month of Adar II as Adar I.)

In addition to their *lengths*, both common and leap years are set according to the days of the week on which the first day of Rosh Hashanah is permitted to occur. (According to *halakhah*, Rosh Hashanah may not occur on a Sunday, Wednesday or Friday, in order that Yom Kippur not fall immediately before or after the Sabbath.) These variations are called *kevi'ot*, of which there are 14 possibilities: 7 for common years, 7 for leap years. In the comparative calendars contained in *The Book of Calendars*, each Jewish year is assigned a number from 1 to 14, according to its respective *kevi'ah*.

In any single 19-year cycle, fewer than 14 *kevi'ot* are normally used, with individual *kevi'ot* sometimes assigned two or more times within the cycle. Thus, during the present cycle (5739–5757), three "excessive" common years (i.e., years that are 355 days in length) begin on a Sabbath: 5743 (1982/83), 5747 (1986/87), and 5750

(1989/90). During this cycle only 12 of the 14 possible *kevi'ot* are assigned; two are not assigned at all.

The computations for the *kevi'ot* are quite intricate (far beyond the comprehension of this columnist, at any rate); readers are referred to Spier for their explication and practical application. In addition to Spier, discussions of the Jewish leap year can be found in the *Jewish Encyclopedia* (under "Calendar"), the *Encyclopaedia Judaica* (under "Leap Year"), and the *Encyclopaedia Britannica* (15th edition, *Macropaedia*, under "Calendar"), to name but a few handy reference sources.

3. Biblical Chronology: The Flood

In light of the diversity of opinion prevailing among traditional and non-traditional Jewish Biblical scholars, one cannot state that there is a universally accepted date in Hebrew chronology for the Biblical Flood. One recently published book, *The Jewish Time Line Encyclopedia*, by Mattis Kantor, posits that the Flood took place in the Hebrew year 1656 (2105 B.C.E.). This is a date that the article on "Chronology" contained in the *Jewish Encyclopedia* (JE) does not dispute, even as it refers to the period preceding the Exodus as "non-chronological" and "mythical," as far as the numbering of years and generations is concerned.

In the JE article, three graphs outlining the chronology of the antediluvian period are reproduced, and in them the Deluge is posited as having taken place in the 1656th year of creation, prompting the author, Jules Oppert, to comment: "An exact scrutiny of the figures as they are found in the present form of the [Biblical] text provides the basis for very singular and awkward results, of which Biblical tradition compels acceptance, and which have during many centuries caused numerous falsifications and discussions" (*Jewish Encyclopedia*, vol. 4, p. 67). One senses, perhaps, a slight note of skepticism on the part of the Parisian professor regarding traditional Biblical chronology. (Further discussion on the Jewish calendar and on ancient Jewish chronology is contained in the following section.)

4. Biblical Chronology: The Exodus

Mattis Kantor, in *The Jewish Time Line Encyclopedia*, places the Exodus (coinciding with the first Passover) in the Hebrew year 2448 (1313 B.C.E.); in Spier's *Comprehensive Hebrew Calendar*, the date of the event is given as Hebrew year 2449. By

contrast, Oppert, in the *Jewish Encyclopedia*—referring to this event as the beginning of "real chronology"—puts the Exodus at 1492 B.C.E., even as he adds:

The first part [of the era from the Exodus to the destruction of the First Temple], the four centuries between the Exodus and David (1492–1047), can not be fixed with certainty. The duration of the several judges' reigns is involved in doubt, and arguments can not be advanced with the slightest hope of success; for the needed documents are wanting. With David commences a sound and really historical chronology.

(*Jewish Encyclopedia*, vol. 4, p. 68)

Kantor, writing "from the perspective of a traditional Jew," (as the dust-jacket states) relies on the Bible and Talmud both for ascertaining the historical veracity of Biblical events and for fixing their dates.

One of the regrettable features of Kantor's book is that, while he gives Jewish and civil year equivalents, he does not note equivalent dates in Jewish history. To take a relatively recent example, under the year 5699/1939 Kantor writes, "By the time German troops invaded Poland on the 17th Elul (which started World War II) . . ." (p. 258)—neglecting to provide the far more commonly used equivalent date, September 1st. In using *The Jewish Time Line Encyclopedia*, it is therefore also necessary to have access to a comparative calendar, such as Spier's, whenever one wants to know the civil equivalent of a specific date on the Jewish calendar as supplied by Kantor. (Curiously, the only year of publication given by the publisher for this book is 1989; the Jewish equivalent is lacking. Anecdotal evidence, however—this columnist's recollection of having received the book in the summer of 1989—would argue for its having been published in 5749, rather than 5750.)

The lack of consensus in Judaic reference sources regarding the precise date of the first Passover and of the Exodus is reflected in the *Encyclopaedia Judaica* (EJ). Bustanay Oded, the author of the EJ article on the Exodus, places that event "in the first half of the 13th century" B.C.E. (*Encyclopaedia Judaica*, vol. 6, col. 1047), basing his conclusion on archaeological research, but declining to specify exactly in which year the event took place.

A cursory glance at the Bible reveals that the ancient Hebrew calendar differed in certain basic ways from the Jewish calendar currently in use. The most striking difference, perhaps, is that in Biblical times the year began in the month of what would

later be called Nisan: "And in the first month, on the fourteenth day of the month, is the Lord's Passover" (*Numbers* 28:16). "The history of the Jewish calendar may be divided into three periods—the Biblical, the Talmudic, and the post-Talmudic," writes Cyrus Adler, in the *Jewish Encyclopedia*. "The Talmud (Yerushalmi, Rosh ha-Shanah i.1)," he continues, "correctly states that the Jews got the names of the months at the time of the Babylonian exile" ("Calendar, History of," in *Jewish Encyclopedia*, vol. 3, pp. 498–501). Indeed, as these remarks imply, the form that the Jewish calendar eventually took was a product of millennia of calculations and refinement. The degree of mathematical sophistication according to which the 19-year cycles are calculated, the month in which the year begins, the very names of the months—all these have changed over time.

Jewish chronology has also not been immune from this evolutionary process. Present-day Jewish chronological reckoning is referred to by Spier as "World or Mundane Era" chronology. According to the "World Era" calendar, Day One refers, in Spier's words, to

the creation of man according to Biblical chronology. The World Era came into general use only during the 10th or 11th century [C.E.]. Before that time various eras were used in documents. The Bible counts years either from the exodus from Egypt, or the years of the reigning kings. Later on, the Seleucid or Greek Era was in vogue, and for a short time there were a so-called Era of the Maccabees and an era dating from the destruction of the Temple. Finally the World Era, which is in use today, was generally accepted. (Spier, 1952, p. 218)

This does not mean that the fundamental principles of the lunar calendar were not worked out until roughly 1,000 years ago—only that the World Era system, with its chronology beginning at Creation, was not definitively adopted until then.

Jewish dating systems did not end with the introduction of the World Era. In a throwback to an earlier system of reckoning, an early work by Eliezer Ben Yehuda, *Milon ha-lashon ha-ivrit ba-zeman ha-zeh*, is dated "Tamuz 1832 le-galutenu" (1832 [years] of our exile, i.e., since the destruction of the Second Temple, in 70 C.E.), or 5662/1902 C.E. The first volume of Ben Yehuda's *Milon ha-lashon ha-ivrit ha-yeshanah veka-hadashah* uses the same system of reckoning, but different nomenclature: "1840 la-hurban" (1840 [years] since the destruction [of the Temple]) = 5670/1910. Yet another dating system is employed in the first volume of Ben

Yehuda's collected writings, published posthumously in the year "27 *letitsharat* [i.e., *hatsharat?*] *Balfur*" (27 years since the Balfour Declaration; verso of t.p.: 1943). Of the making of Jewish chronologies there is, it seems, no end.

5. Bibliography

A number of sources dealing with the Jewish calendar and ancient Hebrew chronology have been mentioned in the course of this column, and these—together with other suggested readings—are cited in this section, in a more systematic manner. This bibliography is arranged as follows: (a) Encyclopedias, (b) Comparative calendars, and (c) Monographs.* As such, it may be considered a mini-pathfinder for those interested in the Jewish calendar and ancient chronology.

Materials dealing with the Jewish calendar and with Jewish chronology are listed in library catalogs under the following Library of Congress subject headings:

Calendar, Jewish Chronology, Jewish

*According to Rabbi Stuart Klammer of the Young Israel of Astor Gardens (Bronx, NY), much information relating to the Jewish calendar is also accessible on computer through The Institute of Research for Biblical Talmudic Law. We would like to take this opportunity to gratefully acknowledge Rabbi Klammer's careful review of this column.

(a) Encyclopedias:

Encyclopaedia Britannica. 15th edition. Chicago: 1974. 30 vols. See *Macropaedia*: "Calendar," "Chronology."

Encyclopaedia Judaica. Jerusalem: Keter, 1972. 16 vols. See: "Calendar," "Leap Year," "Yahrzeit."

Jewish Encyclopedia. New York: Funk & Wagnalls, 1901–1906. 12 vols. See: "Calendar," "Calendar, History of," "Chronology."

Kantor, Mattis, *The Jewish Time Line Encyclopedia*. Northvale, NJ: Jason Aronson, 1989.¹

(b) Comparative Jewish and Civil Calendars:

Akavia, A. A. *Luaḥ le-sheshet alafim shanah: luaḥ hashva'ah la-minyanim ha-shonim mi-beriat ha-olam ad sof ha-elef ha-shishi mi-yesodo shel A"l Akavya* [English t.p.: *Calendar For 6000 Years: Comparative Calendar of All Chronological Tables, From the Creation Until the End of the Sixth Millennium, as Devised by the Late A. A. Akavia*]. Tables and introductions prepared by Nathan Fried; edited by David Zakai. Jerusalem: Mossad Harav Kook, 5736 [1975/76].²

Encyclopaedia Judaica, vol. 1 (Index volume), pp. 109–159: "Hundred-Year Jewish Calendar, 1920–2020."

Freund, S. W., comp. *Corresponding Date Calendar and Family Record: Corresponding Dates of the Hebrew and Civil Calendar for 216 Years (1784 to 2000)*. New York: Hebrew Publishing Co., [19—].³

Jewish Encyclopedia, vol. 3, pp. 505–507. (1,000-year calendar, covering the years 4761–5760/1001–2000.)

Parise, Frank, ed. *The Book of Calendars*. New York: Facts On File, 1982. ("Hebrew Calendar": pp. 12–43, covers the years 3763–5966/2 C.E.–2205.)

Reiss, Fred, ed. *The Standard Guide to the Jewish and Civil Calendars: a Parallel Jewish and Civil Calendar from 1899–2050*. New York: Behrman House, 1986.

Spier, Arthur. *The Comprehensive Hebrew Calendar: Its Structure, History, and One Hundred Years of Corresponding Dates 5660–5760 1900–2000*. New York: Behrman House, 1952. See also the 3rd, revised edition: *The Comprehensive Hebrew Calendar: Twentieth to Twenty Second Century 5660–5869 1900–2100*. Jerusalem: Feldheim, 1986.

Note: This list by no means exhausts the comparative calendar genre, but rather is intended to give a sample of titles that are likely to be widely available in libraries.

(c) Monographs:

Basnizki, Ludwig. *Der jüdische Kalender: Entstehung und Aufbau*. Königstein/TS: Jüdischer Verlag bei Athenäum, 1986. Reprint of the 1938 edition (Frankfurt am Main: J. Kauffmann). Reissued by the authors' daughters.

Burnaby, Sherrard Beaumont. *Elements of the Jewish and Muhammadan Calendars: With Rules and Tables and Explanatory Notes on the Julian and Gregorian Calendars*. New York: Gordon Press Publications, 1976. Reprint of the 1901 edition (London: George Bell & Sons). Detailed survey of the history and structure of the Hebrew and Muslim calendars. Includes comparative Hebrew-civil calendars (e.g., "A.D. 610 to 3003").

Bushwick, Nathan. *Understanding the Jewish Calendar*. New York—Jerusalem: Moznaim Publishing Corporation, 1989.

Frank, Edgar. *Talmudic and Rabbinical Chronology*. Spring Valley, NY: Feldheim, 1978.

Mahler, Eduard. *Handbuch der jüdischen Chronologie*. Leipzig: G. Fock, 1916. In addition to extensive text, includes comparative calendars and 14 "Festkalender," corresponding to the *kevi'ot*.

Stioui, Roger. *Yesod ha-'ibur = Le calendrier hébraïque*. Paris: Colbo, 1988. Survey, in simple French. Includes flowcharts illustrating features of the Hebrew calendar; a microcomputer program written in BASIC, "valid from Year 1 of Creation for an unlimited period"; and a comparative calendar from 1931 to 2050.⁴

Hebrew Bibliographic Data

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2 עקביא, א. א. לוח לששת אלפים שנה: לוח השוואה למנינים השונים מבריאת העולם עד סוף האלף הששי, מיסודו של א"א עקביא ז"ל. הלוחות והמבואות הוכנו בידי נתן פריד; ערך דוד זכאי. ירושלים: מוסד הרב קוק, תשל"ז.

3 פארגלייך-קאלענדאר און פאמיליען רעקארד פיר געבורטען, חתונות און יארצייטען פאר 216 יאר (פון תקמ"ה ביז תש"ס).

4 יסוד העיבור.

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