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 directed 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-⅓ days, was adopted by the ancient Romans at the request of Julius Caesar, in whose time it became 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, 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 Karaita 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, 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 kivi’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 kivi’ah.

In any single 19-year cycle, fewer than 14 kivi’ot are normally used, with individual kivi’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
3. Biblical Chronology: The Flood

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, per Oppert, that the flood of misinformation about the Deluge has crossed the centuries, 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.

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), Butsanay Oded, the author of the EJ article on the Exodus, places the 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. 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 of 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 5749, rather than 5750.)

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* (1839), was 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* (1917) 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 letlitsharat [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:


(b) Comparative Jewish and Civil Calendars:

Akavia, A. A. Luah le-sheshet alafim shannah: luah hashva’ah la-minyanim ha-shonim mi-beriat ha-olam ‘ad sof ha-elef ha-shishi mi-yesodo shel ‘A’A 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


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., [19–13].

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


(c) Monographs:


Stioui, Roger. Yesod ha-‘ibur = Le calendrier hébraique. 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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