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## THE CALCULATION OF THE JEWISH CALENDAR

### THE FIXING OF ANY JEWISH YEAR CONSISTS OF THE FOLLOWING STEPS:

- 1) Based on certain established data the molad for the month of Tishri, the seventh month, is calculated. The "molad" is a reference to the new moon conjunction.
- 2) Once the molad of Tishri is known, then this date is checked against all the accepted postponement rules to see whether that day should become the Day of Trumpets, or whether the Day of Trumpets needs to be postponed by one or possibly by two days.
- 3) Once the day for the Day of Trumpets has been established, then the other Holy Days for the year can be calculated.
- 4) Since a year can have one of six possible lengths (353, 354, 355, 383, 384 or 385 days), therefore the molad of Tishri for the next year must also be calculated and evaluated against the postponement rules. Only once the date for the next Day of Trumpets has also been firmly fixed is the length of the present year known. Only then is the length of Heshvan (the 8th month) and Kislev (the 9th month) fixed for the year under consideration. If the year is "perfect" (355 or 385 days), then both these months receive 30 days each. If the year is "defective" (353 or 383 days), then both these months receive 29 days each. If the year is "regular" (354 or 384 days), then Heshvan receives 29 days and Kislev receives 30 days.
- 5) When a year requires a 13th month, then an extra month of 30 days is inserted between the 11th month (Shevat) and the 12th month (Adar). Many people think that in a Jewish leap year a 13th month is simply added to the end of the year. But that is not so!

The ancient book "AL-BIRUNI, ATHAR-UL-BAKIYA" which was written in about A.D. 1000, and for which the English translation of the MS was made by Dr. C. E. Sachau, under the title "The Chronology of the Ancient Nations, or Vestiges of the Past", and which was published in London in 1879 for The Oriental Translation Fund, states the following on page 63 (of the translation):

"They added these days as a complete month [i.e. thirty days], which they called the First Adhar, whilst they called the original month of this name the Second Adhar, because of its following immediately behind its namesake." (quoted by Burnaby on page 30)

In ordinary years the month Adar has 29 days. In a leap year this month of 29 days becomes Adar II. In front of it is inserted the embolismic month Adar I which has 30 days. The proof for this is very easy to see: all the religious days which in ordinary years are observed in the month of Adar, in a leap year are observed in Adar II and NOT in Adar I. No religious days of any kind are observed in Adar I, just like February 29 in the Julian calendar has no specific feasts attached to it.

People who believe that Adar II is the added month will have to reason as follows:

- A) A month of 30 days, i.e. Adar II, is added to the end of the year.
- B) Then 1 day is taken away from this added month and given to the previous month, which normally

only has 29 days.

C) Then this previous month, Adar I, is stripped of any and all its religious festivals. These festivals are then instead transferred to the added month, Adar II.

However, it doesn't make sense to elevate an added month to great religious significance (Adar 13 = fast of Esther; Adar 14 = Purim; Adar 15 = 2nd Purim) at the expense of the month which regularly carries this significance.

It should be clear that Adar I is the added month and that the name of the month normally called Adar is simply changed to Adar II.

6) It is the same with our Roman calendar. In a leap year the month of February receives an extra day. Most of us assume that February 29 IS that extra day! But that is not what Sosigenes planned back in 45 B.C.. As I mentioned earlier, he planned that ... "dies sextus ante Kalends Martias" (i.e. February 24) would in effect be duplicated. The result is that February will have 29 days. There is a parallel between this method of intercalation and the intercalation of the 30-day long Adar I in a Jewish leap year.

#### THE CALCULATION OF THE MOLAD OF TISHRI ITSELF PROCEEDS AS FOLLOWS:

1) The time elapsed from a specific and fixed known starting point (the molad of Tishri in 3761 B.C.) to the desired year is calculated.

2) First the day of the week and the exact time of the day on which the molad for the desired year will fall is calculated.

3) Next the day of the month in the Julian or Gregorian calendar, and also the exact time of the day, for the new molad is calculated. For years before 1582 the date is normally calculated according to the Julian calendar. For dates since then it is calculated in the Gregorian calendar.

4) The exact time of day in both calculations (the day of the week calculation and the day of the month calculation) must be the same. In the days before computers and electronic calculators this provided a very useful way of verifying the accuracy of the calculations; since the actual data involved is so diverse even the smallest mistake in either calculation ensured that no compatible answers would be obtained.

5) As far as the exact time of the starting molad in 3761 B.C. is concerned, this is fixed at Day 2, Hour 5, Parts 204 (D2 H5 P204). This is equivalent to Sunday evening, 204 Parts after 11 p.m..

6) The Jewish scholar of the Middle ages, Moses Maimonides, who died in 1204 A.D., discusses the calendar at great length in his work "Kiddusch hachodesch". Maimonides explains the starting molad as follows:

"For God gathered together the earth out of which He formed the first man during the first (thirteenth) hour. Since, therefore, from the time of the first foundation of the world to that of the perfected man there had elapsed five whole days and fourteen hours of the sixth day, we must make it our business to know both the month to which those days and hours belong, and also the first New Moon of that year to which the month belongs. From the time therefore of that New Moon, which occurred when the second (fourteenth) hour of the sixth day was ending, there must be subtracted four days, eight hours and 876 chalakim (4d. 8h. 876 ch.), which is the excess of a Common Lunar year of twelve months above an exact number of weeks; and we find that THE FIRST NEW MOON OF THE YEAR WHICH PRECEDED THE CREATION OF MAN occurred on the second day of the week, when five hours and 204 chalakim of its night had elapsed. (Maimonides here means: D6 H14 P0 MINUS 4D 8H 876P = D2 H5 P204, or

Sunday evening, just after 11:00 p.m..) Its character [molad] is therefore 2d. 5h. 204 ch. And certainly, by computing those years which have elapsed since the creation of the world, this anticipative year may be determined."

(This is quoted from page 43 of Burnaby's "Jewish and Muhammadan Calendars", and Burnaby himself has translated a quotation from the Latin version of Maimonides by L. de Compiegne de Veil, which was published in London in 1683 under the title "Tractatus de Consecratione Calendarum, et de Ratione Intercalandi".)

7) Note carefully! While later writers may deny that the year 3760 B.C. is supposed to represent the year of the creation of Adam, Maimonides VERY PLAINLY believed that it WAS the time of Adam's creation! And Maimonides was clearly wrong in this belief.

8) Much of our information about the calendar reform by Hillel II in the 350's A.D. is from Maimonides, from his "Kiddusch hachodesch". (Another author who wrote a classic treatise on the calendar is Abraham Savasorda. He wrote in 1122 A.D., about 60 years or so before Maimonides.) Therefore I have quoted the above section in full to illustrate the totally fictitious character of the starting molad in 3761 B.C.. It did not involve any divine revelation! It involves a supposed knowledge of the assumed new moon BEFORE the creation of Adam, an impossibility.

It also makes clear that it is based PURELY on reasoning from assumed premises. It should also make clear that the starting date of 3761 B.C., as originally conceived, was indeed intended to represent the molad of Tishri before the creation of Adam and Eve. This we know quite well is not the case! The year 3760 B.C. was certainly not the time of Adam's creation.

9) It should be quite obvious that the molad of Tishri for 3761 B.C. was arrived at by extrapolating back from known molads at the time of Hillel in the 350's A.D.. I mentioned earlier that the Jewish calculations for one lunation only contain a very small error, in the order of 1 day for every 13100 years. This means that if Hillel II extrapolated back to 3761 B.C. from any correctly known molad during his own time, then the error, as far as the molad is concerned, would involve no more than 7 hours 31 minutes and 47 seconds for those 4110 years.

Furthermore, from Hillel's time to our time (taking the year 2000 A.D.) the error would only involve 3 hours 1 minute and 22 seconds, also nothing to be unduly concerned about.

10) As far as the molad supposedly representing the conjunction according to the Jerusalem meridian is concerned, this is also pure speculation. Maimonides states that the molad must represent Jerusalem time, not because it was originally calculated at Jerusalem, but because Maimonides felt that Isaiah 2:3 ("... for out of Zion shall go forth the law") implied that the molad had to be based on Jerusalem time.

Thus the idea of the molad representing Jerusalem time was never based on any observations made at Jerusalem, but purely on THE INTERPRETATION OF A SPECIFIC STATEMENT IN SCRIPTURE. Now I don't question that Jerusalem time SHOULD be the standard to judge by, but that does not mean that Jerusalem time was ever used in establishing the calculations for the molads.

11) From modern astronomy we know that the calculated molads of Tishri are never accurate reflections of the new moon conjunctions they are supposed to represent. It is well-known that the Jewish molad calculations may give us times that are as much as 4 hours BEFORE the actual new moon conjunction, to times that are almost 15 hours AFTER the actual new moon conjunction. It is not uncommon for the actual new moon conjunction to be on the day before the date of the Jewish molad.

12) Anyway, once the molad of Tishri has been calculated, then we come to the postponement rules,

which are the subject of the next article.

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