

INTERCALATING THE YEAR AND THE NEW MOON

Literature: Schamroth, Julian, *A Glimpse of Light: A discussion on the Hebrew Calendar and Judaic Astronomy* (Targum Press, Ltd.: Israel, © 1998). Feldman, W. M., *Rabbinical Mathematics And Astronomy* (M.L. Cailingold: London, 1931). Spier, Arthur, *The Comprehensive Hebrew Calendar* (Feldheim Publishers: Jerusalem, Israel; 3rd edition, © 1986). Peter Duffett-Smith, *Practical Astronomy with your calculator* (Cambridge University Press: Cambridge, © 1979, 1981, 2nd edition). Gregg, Daniel, *The Astronomical Almanac of Biblical Feasts* (Self Published: Riverside California, © 1993). Software: Gregg, Daniel, "The Calendar of Israel" (© 1995). Smart, W.M., *Textbook on Spherical Astronomy* (Cambridge University Press: © 1977, 6th edition). Sinnott, Roger W., *Sky & Telescope*, New Moons 2007, pages 65-66; Also *S&T*: Feb 2004, pg. 102.

The first month in the year is in the spring (Hebrew: Aviv) (Exodus 12:2; Deut. 16:1) which is when the barley ripens (Exodus 9:31). Therefore, we can conclude that the creation was in the springtime (see page 18) The natural year is determined by the motions of the sun (Gen. 1:14), and begins 'at the circuit of the year' (2nd Chron. 24:23, Hebrew text), which is equivalent to the 'circuit of the days' (1st Sam 1:20, Hebrew text). This is the point when day and night are approximately equal in length, and is called the spring (Aviv) equinox, about March 20th in the Gregorian calendar.

The sacred year begins in the fall of the natural year with the new moon of the seventh month. This is the point from which the sabbatical and jubilee years are determined. The two types of year, then, are the sacred year and the natural year (See Figure 218.16). The one begins in the spring and the other in the fall. The natural year is solar, and the sacred year is lunar.

According to Exodus 23:14-16: "Three times thou shall keep a feast unto me in the year. Thou shall keep the feast of unleavened bread: (thou shall eat unleavened bread seven days, as I commanded thee, in the time appointed of the month the aviv [spring]; for in it thou camest out from Egypt: and none shall appear before me empty:) And the feast of harvest, the firstfruits of thy labours, which thou hast sown in the field, and the feast of ingathering, (when goes forth the year — when you gather your work from the field)." This last phrase, which I have put in () applies to the whole cycle of the feasts. "When goes forth the year" refers to the beginning of the new year at the spring equinox, because this is when they begin to gather the work from the fields, starting with the barley harvest, and moving on to the wheat harvest, and then other products. To render the text 'when you have gathered your work' and refer it to tabernacles only, as if it had been completed by tabernacles does not make any sense. Harvesting was not normally complete by tabernacles. The olive harvest could continue as late as November. Indeed the Gezer calendar allots months 7-8 for the olive harvest [Sept/Oct] & [Oct/Nov] (Finegan §58).

Furthermore, the 'going forth of the year' is the same as the 'circuit of the year'; These phrases are in parallel passages (Exodus 23 & 34); it refers to the beginning of the natural year in the spring at the equinox. This is the literal definition of 'year,' and the precept requires the feasts to be kept in

one year, so that Passover should not be celebrated in the old year before the equinox.

The following phrases are equivalent and refer to the natural year beginning at the equinox:

- (1) 'circuit of the year' (Exodus 34:22; 2Chron. 24:23)
- (2) 'going forth of the year' (Exodus 23:16)
- (3) 'return of the year' (2Sam 11:1; 1K 20:22; 20:26; 1Chron. 20:1; 2Chron. 36:10)
- (4) 'circuit of the days' (1Sam. 1:20)

Most of these phrases are misunderstood one way or another, but I have given the literal Hebrew above.⁵ In every case, the context points to the spring. According to Genesis 1:14, the 'sun' is a sign for the year, and also for 'set times'; The only way this can work is if we assume the year has a beginning point. The most natural phenomenon by which to begin and end a year is by noticing the change in the length of its days, and noting when the length changes make a full cycle. The easiest way to do this was to note when the day length equaled the night length by observing the point of the sunrise on the horizon and the point of the sunset. When these two points made a 1/2 circle or 180 degrees, then you knew that the day was equal to the night since the length of the orbit of night was equal to the length of the sun's orbit in the day (from a earth bound perspective). This point in time was the 'circuit of the year,' or 'the circuit of the days,' since the equinox point was determined by changes in the day length cycle. The year 'returns' at this point, or 'goes forth' from this point in time.

The month of Passover is the first month of the year. Since there were varying ways of defining 'first,' two criteria were given to remove the ambiguity. (1) Passover should be lined up with the normal peak of the first edible barley, the Aviv, from which the first month gets its name. Since the Aviv normally appears before the equinox, this rule keeps Passover from falling too late in the new year. On the other hand, rule (2) that the three feasts occur in the year, and not one in the old year and two in the new year keep Passover after the equinox.

Some Karaite calendar errors are as follows:

- (1) Making barley the only criteria when Gen. 1:14 requires the sun to have a role.
- (2) Refusing to see that the literal definition of 'year' is a circuit of the sun.
- (3) Assuming that 'Observe the month of the aviv' means to compute averages of aviv in fields in each year separately, when it could be 'Guard the month of the aviv,' and mean adjusting the month according to when you know the aviv normally appears, i.e. before the equinox. Furthermore, "aviv" means "spring," yet we would officially begin "spring" with the equinox, and not with the springing of plants before the equinox.

⁵ See Feldman, W. M., *Rabbinical Mathematics And Astronomy* (M.L. Cailingold: London, 1931).