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To: Dr. Herman L. Hoeh

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Department: Dean of Faculties

Subject: The 2300-year Cycle

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If the 2300-day prophecy of Daniel is to be considered also to be a 2300-year period, it is rather remarkable to find that this period is a calendar cycle (where a whole number of synodic months is very close in length to a whole number of tropical years). The Ancient Past of Mexico by Alma M. Reed, p. 85.

What is even more remarkable is that this length is achieved by adding a single synodic month to an eclipse cycle (where a whole (or half) number of eclipse years is equal to a whole number of synodic months). And that the number of anomalistic months is also near unity, thus a total eclipse is followed by a very similar total eclipse 2300 years minus 30 days later.

And by subtracting 12 synodic months from the 2300-year calendar cycle, another eclipse cycle is obtained. This one is the length of 121 Metonic cycles! While the Metonic cycle is normally only good for a sequence of 4 or 5 eclipses 19 years apart, this 2299-year cycle is achieved by the addition of 2.5 eclipse years to 121×20 . The .5 of an eclipse year shifts the eclipse to the opposite node.

Note this shorter of the 3 cycles first. It contains 121 Metonic cycles:

$(121 \times 20) + 2.5 =$	2,422.5	eclipse years	839,687.0250975	days
(121×19)	2,299	tropical years	839,691.8148113	
(121×235)	<u>28,435</u>	<u>synodic months</u>	<u>839,702.28600795</u>	
	2,299	Julian calendar years	839,709.75	

The length of the lunar period is 10.47 days longer than the solar period. By adding a 12-month year this inequality is brought into close alignment for a calendar cycle of 2300 years. But first note the shorter eclipse cycle and its features which resemble the 18 year 11 1/3 day Saros cycle:

<u>Length Used</u>		2,300 tropical years -30 days	840,027.0571	days
29.53058857	x	<u>28,446 synodic months</u>	<u>840,027.12248222</u>	
27.55455	x	30,486 anomalistic months	840,028.01130	
346.620031	x	2,423.5 eclipse years	840,033.6451285	
365.2421987	x	2,300 tropical years	840,057.0571	

By adding a single synodic month the above eclipse cycle, it becomes a very useful calendar cycle, a "12-synodic-month year" longer than 121 Metonic cycles.

$(121 \times 235) + 12 =$	<u>28,447</u>	<u>synodic months</u>	<u>840,056.65307079</u>	days
$(121 \times 19) + 1$	2,300	tropical years	840,057.0571	
	2,300	Julian calendar years	840,075.00	

The latter is a calendar cycle, the first two are eclipse cycles, the middle one is the best eclipse cycle, but the first is a multiple of the Metonic cycle. Like the Metonic cycle it might be divided into fifths and still function, the number of tropical years being 459.8 rather than whole.

The length of the solar period is only .40 of a day longer than the lunar period for a cycle longer than two millenniums. This calendar cycle bears the same relationship to the previous eclipse cycle that the Metonic cycle does to the Saros, a single synodic month longer.

What is most thought provoking is that a 2300-day period is mentioned in Daniel's prophecy. If considered also to have a 2300-year fulfillment, then are we to conclude that the choice was deliberate, that the Author counts time in millenniums as we count it in days, that the 2300-year period is a Great Metonic Cycle correcting the inequality of the regular Metonic cycle?

Using the exceptional, total solar eclipse of June 8, 1937 (Gregorian date) as a base, both 2299 years and 2300 years less 30 days are shown to be eclipse cycles.

Gregorian calendar date	June 8, 1937		2,428,693	t*
		28,435 synodic months	- 839,702.286	
Julian calendar date	June 3, -362		1,588,991	p

By using 121 Metonic cycles we are able to predict an eclipse, yet starting with the total eclipse of 1937 we have arrived at only a partial eclipse of 363 B.C.

Gregorian calendar date	June 8, 1937		2,428,693	t*
		28,446 synodic months	- 840,027.12	
Julian calendar date	July 13, -363		1,588,666	t*

The 11-month longer cycle arrives at a total eclipse in 364 B.C. (-363 is the astronomer's notation, the difference being due to the use of a year "0") because the period is very close to a whole number of anomalistic months.

That the 28,437-month calendar cycle is not an eclipse predictor, can be readily seen by the following tabulation from Oppolzer's Cannon of Eclipses:

Julian calendar date	May 24, -361		1,589,346	t*
			-354	
	June 3, -362		1,588,991	p
			-325	
	July 13, -363		1,588,666	t*
			-355	
	July 23, -364		1,588,311	r-t*
			-354	
	August 4, -365		1,587,957	p

The Gregoriana, a calendar-eclipse cycle, though not divisible by nineteen.

		372 tropical years	135,870.0959164
365.2425	x	372 Gregorian calendar years	135,870.21
		4601 <u>synodic months</u>	135,870.23801057
		4935 <u>anomalistic months</u>	135,871.48605
365.25	x	372 Julian calendar years	135,873.00
		392 eclipse years	135,875.052152