Plato, the Neolithic Calendar, and the Evidence for Catastrophism.

Summary*: Plato's Atlantis myth holds a passing reference to a religious festival held by the ancient kings at alternate 5 and 6 year intervals. This may be evidence of an ancient calendar unrecognised even by Plato. The author has reconstructed this calendar and compares it with extant evidence of the calendar of the Druids. The preservation of a practical calendar within the Atlantis myth suggests that it has come through from a genuine ancient source; and that other aspects of the story, including the references to a flood catastrophe in the Atlantic, may be historical*

For students of catastrophism in human prehistory, Plato's story of Atlantis will always be a primary source text. According to Plato, the myth of an island in the Atlantic Ocean, which disappeared beneath the waves in a single day and night, was an ancient Egyptian story transmitted to Greece, via Solon, who visited Egypt at some time around 590BC.

Classical scholars however, insist on treating the story as the invention of Plato himself, and would seek to compare it only with other areas of Greek mythology. The possibility that it might truly have come from Egypt; and that it may contain a memory of a real flood catastrophe that befell the Atlantic coast of Europe, is left to more unconventional investigators to pursue. If it were possible to prove that one part of the story is true, then it would strengthen the arguments that other parts of it may be historical; and that it may hold a memory of a real ancient cataclysm.

When researching mythology, the present author's method is to look for 'mythological fossils'. These are pieces of detail that are not strictly needed to tell the main story. They may be references that can be independently checked, or which may have survived unchanged through generations of oral repetition of the myth.

One such vital piece of evidence is hidden within Plato's *Critias*.[1] Here he tells us that, at a remote period, before the catastrophic sinking of the island, the kings of the various parts of their empire gathered together at the temple of Poseidon:

> …every fifth and every sixth year alternately, thus giving equal honour to the odd and to the even number.[2]

I first investigated this statement in my book *The Atlantis Researches* in 1995.[3] Why did Plato need to introduce these alternated five and six-year periods into his narrative? A fictional storyteller could simply have said that the ancient kings gathered together every few years to discuss policy. Why bother to be so precise?

It is common sense that in order for kings from the outlying provinces to gather on a prescribed feast day they would all need to be using a similar calendar and be able to measure the year to sufficient accuracy. We have here a piece of numerate evidence that can be checked by science. We can investigate whether it is possible to construct a real calendar that works on the principle of alternated five-year and six-year periods.

There is no reason to believe that such a calendar is either Greek or Egyptian, The Greeks of Solon's day, used a lunar calendar based on an eight-year cycle, the *octaeteris*. Egyptian calendars, as understood by Egyptologists, offer no evidence of either five or six year devices. A cycle of five-plus-six years implies a lunisolar calendar based on an *eleven-year* intercalation cycle, requiring four intercalary months. It is important to appreciate that 11-years is a *real* intercalation cycle, indeed it is slightly better for the purpose than the octaeteris.

The importance of intercalation cycles is that a precise number of months and years will repeat, with the smallest cumulative error, to reconcile the lunar year of 354 days (12 x 29.5-day lunar months) with the solar year. The insertion of intercalary months requires that some calendar years must have 13 months. The half-day in the lunar

cycle requires that all calendars must combine both 29-day and 30-day months; and since even this is not exact, a variable month is always needed so that sun and moon can be regulated according to easily-understood rules.

The accuracy of various intercalation cycles

intercalation cycle (y)	intercalated months	synodic month	no of months (x)	days in x months	tropical year	days in y years	discrepancy (days)
3	1	29.530589	37	1092.6318	365.2422	1095.7266	3.094807
8	3	29.530589	99	2923.5283	365.2422	2921.9376	-1.590711
11	4	29.530589	136	4016.1601	365.2422	4017.6642	1.504096
19	7	29.530589	235	6939.6884	365.2422	6939.6018	-0.086615
22	8	29.530589	272	8032.3202	365.2422	8035.3284	3.008192
30	11	29.530589	371	10955.849	365.2422	10957.266	1.417481
57	21	29.530589	705	20819.065	365.2422	20818.805	-0.259845
76	28	29.530589	940	27758.754	365.2422	27758.407	-0.34646
84	31	29.530589	1039	30682.282	365.2422	30680.345	-1.937171

No calendar is known to have been based upon the 11-year intercalation cycle. The 19-year cycle was introduced to Greece from Babylon by Meton in 432 and forms the basis of modern Jewish and Muslim calendars. A 19-year cycle is out by only about two hours, whereas an 11-year cycle would be out by more than one and a half days.

So, if the Atlantis myth were merely Plato's fiction, then why would he go to so much trouble to invent a completely new calendar based upon a real eleven-year intercalation cycle? Moreover, why does Plato not mention the five-plus-six-year calendar in any of his other astronomical works? I believe that Plato never recognised this detail for what it is. It is evidence of a *real* ancient European calendar, carried through as a 'mythological fossil', surviving intact through language changes to

Egyptian, Greek, and on into modern English. So far as I know, no researcher has investigated this until I did so in *The Atlantis Researches*.[4]

The same mythological fossil may be found within one of the songs of the Finnish epic *Kalevala*.[5] Here we find a story about the maid Marjatta who laments the passage of a long period of years as, "for five or six of summers". The use of this five and six year formula in Finno-Ugrian oral tradition gives us a strong clue that the 11-year cycle has its origin in prehistoric Europe.[6]

Another place where we encounter a five-year calendar cycle is in Celtic Gaul. In Julius Caesar's commentaries of his Gallic wars, between the years 58 and 51 BC, we find a brief account of the activities of the Gaulish Druids. Caesar apart, we find only a few passing references to their science in the works of other classical writers such as Pliny. Caesar tells us that the Druids were capable astronomers who debated the size of the Earth and the movements of the planets.[7]

The Romans ruthlessly suppressed the Druids in Gaul, especially during the reigns of Tiberius and Claudius and we must presume that they also persecuted them within their British province. Indeed the Druids' continuing influence in Gaul may have been a principal motive behind the Claudian conquest of AD 43. Caesar again, tells us that the order originated in Britain; and that a Druids College existed there.[8]

Evidence of how the Gaulish calendar operated is preserved in the Coligny calendar, which was discovered in a vineyard near Bourg-en-Bresse in 1897. The extant calendar consists of several fragments, constituting some three-fifths of a bronze tablet, which appears to have been deliberately broken-up and buried. The reconstituted calendar shows annotation in the extinct Gaulish language, using the Roman alphabet; and this has been used to date it approximately to the reign of

Augustus. The mechanism of the calendar however, shows no Roman influence and must therefore belong to the final period of native Gallic culture. A less well preserved fragment found near Villards d'Héria is thought to date from the second century AD, but it adds little to our knowledge.[9]

Although most commentators on the Coligny Calendar have treated it as a purely Gaulish artefact no older than the Roman era, it is important to appreciate that all calendars evolve gradually from ancient roots. The first-century Gaulish Druids did not invent the Coligny Calendar. Take as an example the Gregorian calendar that hangs on your own wall; the days and weeks are pagan Germanic; the months are named from Roman months that predate Caesar's reforms and must be at least 2500 years old! The Coligny fragment may similarly hold evidence of astronomy that was performed in western Europe thousands of years before Roman times. Caesar's comment that Druidism was 'found existing in Britain' would suggest that we should look to the British Isles for the origin of the Celtic calendar.

The Coligny tablet holds notation for five years; set out in sixteen columns. Each column holds the notation for four named months; the exception being the first and the ninth columns, which hold an intercalary month, followed by two normal months. The intercalations are therefore positioned at the beginning of the five-year cycle and in the middle of the third year. Hence, it may be seen that the intercalations were spaced at intervals of two-and-a-half years.

With a single exception, the length of each month is always either 29 or 30 days. Each month is marked-out in days, listing their various festivals; and with a peg-hole to mark each date. Since the average period of the lunar month is 29.53 days, any lunar calendar must incorporate alternating 29 and 30-day months. Furthermore, one of the months must also be variable to regulate the correspondence with the real

Moon. The 30-day months are each suffixed as 'good', whereas the 29-day months are styled 'not-good'. As the month Equos ('horse-month') was similarly 'not-good', this indicates that it was not considered an ordinary thirty-day month and scholars have concluded that it was the variable month. It may have alternated in length between 28 and 30 days.

The extant fragment contains notation for only sixty-two months and covers a period of approximately five solar years. Sixty-two lunar months contain 1831 days; whereas five solar years require only 1826 days. The sixty-two months exhibit notation for a possible 1835 days. Therefore, if the Coligny fragment were to constitute the entire calendar then, by strict lunar reckoning, it would suffer a cumulative error of four days in every five years; and an error of nine days by solar reckoning. A five-year intercalation cycle simply does not work! Such a huge error defeats the purpose of the intercalary months. There must therefore have been a correction mechanism or another, missing, cycle alternated with this one, in order to pull back the divergence.

For a calendar to be of use to the general population, it must be organised according to simple rules that everyone will remember. The best way to do this would be to use one of the self-correcting intercalation cycles. A theory that the Celtic calendar was based upon the nineteen-year Meton cycle was proposed by Fotheringham and Rhys, some of the first scholars to investigate the Coligny calendar.[10] However, there is no historical evidence that such a cycle was ever used by the ancient Celts, either in Gaul or in the British Isles. Later commentators such as Olmsted have proposed a theoretical 25-year cycle, but he suggests that this replaced an earlier 30-year cycle. However, while there is evidence for a five-year festival, there is no textual evidence for the existence of a 25-year cycle in ancient Gaul.[11]

The reconstruction given here is based upon the principle of alternated five and six year periods and preserves all the known rules of the Coligny fragment. Within the six-year cycle the intercalary months are spaced every 3 years, to give the required 4 intercalations in 11 years. An extra day has been added to the variable month in the first eleven-year cycle and two days to the second eleven-year cycle. One consequence of this configuration is that the start of a month falls behind the real Moon by 3 days every 22 years. After 44 years it would therefore give the situation described by Pliny, who tells us that the Druids' month began on the sixth day after new moon.[12]

If this 3-day slippage is designed into the calendar then the lunar cycle is held naturally in balance with the solar cycle over twenty-two years, with a discrepancy of only about twelve minutes. This compares most favourably with the two-hour discrepancy of the Meton cycle over nineteen years. The arrangement shown in the reconstruction is at least an improvement on the Greek *octaeteris*.[13] Certainly, it is greatly superior to the unreformed Roman calendar. A further advantage is that a simple cycle of 5 + 6 years repeats indefinitely, with no complex rules to remember.

However, if the eleven-year cycle is required to repeat with the 30-year Druid ages then a long-cycle of 330 years (30 x 11) must elapse before the two cycles will mesh. In my earlier work I suggested that a double Druid cycle of 60-years may have been employed – and indeed many such reconstructions are possible without violating the rules of the extant 5-year cycle. However, I am now satisfied that the simple 5+6 year formula given by Plato, repeated indefinitely, is all that is required.[14]

The present author's hypothesis would suggest that, in addition to the extant five-year cycle of the Coligny calendar, there should also be a 'lost' cycle of six years. However, until hard evidence of a missing six-year cycle comes to light from

somewhere in the Celtic regions, there can be no conclusive proof that the Coligny Calendar actually operated this way.

The mechanism proposed is therefore an eleven-year lunisolar cycle of 4017/4018 days that was allowed to wander alongside a thirty-year cycle based on the observation of Saturn. This cycle actually requires less intervention than the Metonic cycle over two eleven-year cycles. The lunisolar difference over eleven years is almost exactly a day and a half, so doubling this:

Sun:	2 x 4017.6642 =	8035.3284 days
Moon:	2 x 4016.1601 =	8032.3202 days
Difference	=	3.0082 days

This slippage would explain why the Celtic months began on the *sixth* day of the moon at the era when Pliny recorded it.

Thus we see revealed the remarkable accuracy hidden within Plato's Atlantis calendar. The calendar as reconstructed here is beautifully simple. Given the realities of astronomy, constrained by the extant Coligny fragment, we can be confident that any real calendar based upon alternating five- and six-year periods must work in a similar way. I would invite any scholar to put this mechanism into their own spreadsheets and satisfy themselves that this so.

The mention of this 5+6 year formula within Plato's narrative *is too great a coincidence* for it to be mere fiction. This passage has always convinced the present author of the authenticity of the Atlantis myth. The preservation of the 5-year cycle by the Druids, and its mention independently in a Finno-Ugrian myth, suggests that a real calendar of this kind may have been used by the kings of ancient Europe just as is recorded in the *Critias*. This further raises the question of whether other aspects of Plato's Atlantis narrative deserve more respect as a record of history.

[1] Plato, Critias, 119 (translation by Benjamin Jowett)

[2] Within the *Timaeus*, Platos says that the empire extended to the whole island and also to the continent: Europe as far as Tyrrhenia and Libya. However, he refers to only one specific sub-king who ruled over a peninsula of the island. By analogy with the later empires of Rome and Napoleon's Europe, we may posit that tributary kings also ruled over the conquered territories of Europe.

[3] Dunbavin, P. The Atlantis Researches – the Earth's Rotation in Mythology and Prehistory, Third Millennium Publishing, Nottingham (1995)

[4] Dunbavin , P. Atlantis of the West – The Case for Britain's Drowned Megalithic Civilisation. Constable & Robinson, London (2003)

[5] W.F. Kirby (London 1907) Kalevala: the Land of Heroes, (republished by the Athlone Press, 1985); see Runo L, p 634.

[6] It should be recorded that when the author attempted to publish a similar article on the 5+6 year calendar in a journal of astronomical history, the *Kalevala* reference was dismissed as 'a patently solar reference' having no place in a discussion of a lunisolar calendar. Indeed, the very mention of Plato's *Critias* as the primary source for the calendar evidence produced a dismissive negative reaction. Hence the article was revised for publication here.

[7] Caesar, The Gallic War, VI.xiii-xiv; VI.xviii.

[8] Caesar, The Gallic War, VI,Xiii

[9] Duval, P.-M & Pinault, G Recueil des *Inscriptions Gauloises, 3: Les calendriers (Coligny, Villards d'Heria)*. Paris: Supplement a Gallia 45 (1986)

[10] Mac Neill, E. On the Notation and Calligraphy of the Calendar of Coligny, Eriu, X, pp1-67 (1928)

[11] Olmsted, G. *The Gaulish Calendar*, Dr Rudolph Habelt GMBH, Bonn (1992)

[12] Pliny, Natural History, XXX.xiii

[13] Geminus, Elementa Astronomiae, C.8.

[14] Dunbavin, P. Under Ancient Skies: Ancient Astronomy and Terrestrial Catastrophism, Third Millennium Publishing, Nottingham (2005)

A Reconstruction of the 'Celtic' Calender based on a pure 11-year cycle

Year No.	Inter-calary month	Month 1 SAMON (JUN)	Month 2 DVMANN (JUL)	Month 3 RIVROS (AUG)	Month 4 ANAG'NT (SEP)	Month 5 OGRON (OCT)	Month 6 CVTIOS (NOV)	Inter-calary month	Month 7 GIAMON (DEC)	Month 8 SIMIVIS (JAN)	**Month 9 EQVOS (FEB)**	Month 10 ELEMBIV (MAR)	Month 11 EDRIN (APR)	Month 12 CANTLOS (MAY)	Days/ year	Days/ period	Mths/ period
1	30	30	29	30	29	30	30		29	30	**30**	29	30	29	385		
2		30	29	30	29	30	30		29	30	**29**	29	30	29	354		
3		30	29	30	29	30	30	30	29	30	**30**	29	30	29	385		
4		30	29	30	29	30	30		29	30	**29**	29	30	29	354		
5		30	29	30	29	30	30		29	30	**30**	29	30	29	355	1833	62.071
6	30	30	29	30	29	30	30		29	30	**29**	29	30	29	384		
7		30	29	30	29	30	30		29	30	**29**	29	30	29	354		
8		30	29	30	29	30	30		29	30	**29**	29	30	29	354		
9	30	30	29	30	29	30	30		29	30	**29**	29	30	29	384		
10		30	29	30	29	30	30		29	30	**29**	29	30	29	354		
11		30	29	30	29	30	30		29	30	**29**	29	30	29	354	2184	73.957
12	30	30	29	30	29	30	30		29	30	**30**	29	30	29	385		
13		30	29	30	29	30	30		29	30	**29**	29	30	29	354		
14		30	29	30	29	30	30	30	29	30	**30**	29	30	29	385		
15		30	29	30	29	30	30		29	30	**30**	29	30	29	355		
16		30	29	30	29	30	30		29	30	**30**	29	30	29	355	1834	62.105
17	30	30	29	30	29	30	30		29	30	**29**	29	30	29	384		
18		30	29	30	29	30	30		29	30	**29**	29	30	29	354		
19		30	29	30	29	30	30		29	30	**29**	29	30	29	354		
20	30	30	29	30	29	30	30		29	30	**29**	29	30	29	384		
21		30	29	30	29	30	30		29	30	**29**	29	30	29	354		
22		30	29	30	29	30	30		29	30	**29**	29	30	29	354	2184	73.957

First 11 year cycle: 1833+2184 = **4017** days

Second 11 year cycle 1834+2184 = **4018** days

Totals of 22 year cycle = **8035** **272.091**

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Lunar solar difference: 22 years less 272 months = **3.00819** days