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Recovering the Lost World,
A Saturnian Cosmology -- Jno Cook
Appendix I: The Canopus Decree.

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Contents of this Appendix: [The Canopus Decree] [Sothic Dating] [Venus Rising] [Sirius Rising] [Implications] [Further notes] [Endnotes]

The Canopus Decree

The *Canopus Decree* was found engraved on a block of stone, in two languages (and in three scripts), at Tanis in the delta of Egypt, dating to the year 239 BC. The *Canopus Decree* was introduced by the Greek pharaoh Ptolemy III, even though it reads as if mandated by the priests. It records an order to add one day every four years to the civil calendar, but the decree was never implemented.

The Egyptians at that time used a civil calendar of 365 days -- composed of 12 months of 30 days with 5 days added at the end. In addition, an observational lunar calendar was kept, alternating 29 and 30 days (averaging 29.5 days, the synodic period of the Moon), which was intercalated periodically, since it ran 11 days short of the solar year. A third seasonal calendar was also kept, starting sometime in July or August with the inundation, or expected inundation, of the Nile.

The *Canopus Decree* of 239 BC first introduces a new feast day honoring the pharaoh, then states when the New Year is celebrated, and that the rising of "Sothis" moves one day every four years.

> *"At present it occurs in this 9th year* [of the reign of the pharaoh Ptolemy III] *on the first day of Payni, in which month is celebrated the festival of New Year... . But as the case will occur, that the rise of Sothis advances to another day in every 4 years, the day of the celebration of this feast, shall not pass along but it shall be celebrated on first day of Payni and the feast shall be celebrated as in the ninth year."*

The decree then states that one day will be added to the civil calendar every four years:

> *"But that these feast days shall be celebrated in definite seasons for them to keep for ever, and after the plan of the heaven established on this day and that the case shall not occur, that all the Egyptian festivals, now celebrated in winter, shall not be celebrated some time or other in*

summer, on account of the precession of the rising of the Divine Sothis by one day in the course of 4 years, and other festivals celebrated in the summer, in this country, shall not be celebrated in winter, as has occasionally occurred in past times, therefore it shall be, that the year of 360 days and the 5 days added to their end, so one day as feast of Benevolent Gods [the pharaoh and family] *be from this day after every 4 years added to the 5 epagomenae before the New Year, whereby all men shall learn, that what was a little defective in the order as regards the seasons and the year, as also the opinions which are contained in the rules of the learned on the heavenly orbits, are now corrected and improved by the Benevolent Gods."*
[note 1]

"Sothis" in this translation (from the Egyptian text) is used both for the planet Venus as well as the star Sirius. "Sothis" means "brilliant" or "blazing," and could be applied to Sirius as well as Venus. Venus at this time no longer had a visible tail. The Greek text clearly reads "the star of Isis" for "Sothis." It has been suggested that this use of "Sothis" refers to Venus, especially since the Egyptian text reads "the divine Sothis." But the Greek text was primary, since the decree was composed by the pharaoh's staff, who were Greek. The Alexandrian Greeks never seriously learned hieroglyphics. I doubt, anyway, that Venus was meant.

Velikovsky states that Pliny identifies "the star of Sothis" as Venus. The identification of the star Sirius as "the star of Isis" is an equation found already in the Persian *Zend-Avesta* of the seventh century BC. References to Sothis occur in the earliest Egyptian funeral texts, dating back to 2345 BC. What relationship does Sirius, a star, have with Venus, a planet?

The misidentification of "Sothis" with the star Sirius, which many archaeologists and historians have made, when it could equally refer to Venus, should be apparent from the context of the text of the decree. Venus moves one day in its heliacal rising every four years. Sirius does not move "one day every four years." Sirius is a fixed star and does not move.

On the other hand, seen from the vantage point of the Egyptian 365-day calendar, Venus did not move in the calendar. Sirius moved a day every four years, as did all the other stars, and even the solstices and the equinoxes. They moved, that is, in the 365-day calendar.

Sothic Dating

In AD 1904 Eduard Meyer of the Berlin School of Egyptology devised a theory of Egyptian chronology based on the 360-plus-5-day Egyptian calendar and the star Sirius. Meyer proposed that the *Canopus Decree* spoke solely to Sirius, the Dog Star, and proposed that the Canopus Decree directed the use of the heliacal rising of Sirius as a New Year day, abandoning the practice of a short 365-day year which slipped backwards against the seasons.

This was correct, but Meyer further proposed that in the past the Egyptians had used a 365-day civil calendar which moved a quarter of a day every year with respect to the previous year, so that after 1460 years it would be back in the season and on the day (and seen against the same background of stars) that it started to drift from (if the year also had remained at 365.24 days). The 1460-year period became the "great year" of the Sothic cycle. Meyer's theory of Sothic dating depended on off-hand comments written 500 and 600 years later than the Canopus Decree.

I should point out that there was a notion of a "great year" current in Roman times. But no one seems to know what a "great year" was, how long it was, or where it came from. My guess is that the concept of a "great year" dates from the astronomical year 684 BC when all the planets were in the sky at the date of the vernal equinox. This has nothing to do with Meyer's Sothic cycle.

Sirius Rising

> *"... a veritable linch-pin of his Sothic theory was the combined classical evidence of Theon of Alexandria (5th century AD), and the Roman author, Censorinus (3rd century AD)."*
>
> *"Meyer believed that the development of a significant relationship between the heliacal rising of Sirius, and the historical dates, had become possible due to a statement made by Censorinus (in AD 238) that New Year's Day for the Egyptians in circa 139 AD had fallen on the 21st of July. It was on that day that the bright star Sothis was supposed to have made its annual appearance."*

This is from Damien F. Mackey, "The Sothic Star Theory of the Egyptian Calendar" (1995), originally at specialtyinterests.net/sothic_star.html.

The "evidence" of Theon of Alexandria is a remark that a "great year" ends in AD 27. In fact, an ephemeris will show that on January 23 of AD 27, Julian, a "Great Year" is signaled by having all the planets appear in the sky at the same time. This happens frequently, but it was not the "great year" Meyer had in mind. Other researchers have claimed that a "great year" is simply a lunar calendar year of 13 months -- the observational lunar calendar with one additional intercalated month. But for Meyer the mention of a "great year" suggested the completion of a 1460-year period. Meyer thought that any mention in Egyptian records of the remote past of "Sothis rising" could be used to accurately date events.

Censorinus does mention a period of 1460 years, but does not relate it to the annual appearance of the star Sirius. Instead he ties it to a supposed "Supreme Year" of Aristotle, when all the planets return to their starting locations in the sky. This is said to signal a major catastrophe on Earth.

Some have identified the date in question in 239 BC as July 17-19 Gregorian, and others are certain that Sirius should have risen heliacally on July 21, Julian.

Sirius is the brightest star in the sky, but it is unlikely that the heliacal rising of Sirius, or, for that matter, any other star, could be used as a clear marker of the start of a calendar. During heliacal rising Sirius only achieves a magnitude of 4.5 at the horizon -- a very dim star at best. It is much brighter a few days (and degrees of elevation) later. Once it is some ten degrees away from the horizon, it reaches its magnitude of 1.9 -- shining then as the brightest star in the sky, with only Jupiter and Venus being brighter yet.

The Egyptians were also hindered from seeing the east horizon from the Nile valley by the highlands bordering the river. "Heliacal rising" is not well defined as a result, and never easily detected. The Egyptians, in fact, never took much interest in rising stars, although they charted three-dozen groups of stars for the purpose of timekeeping during the night.

The Sothic Dating theory has been abandoned in practice, for it simply makes no sense as a calendar for a people, but not before finding its way into many textbooks where it has become solidly ensconced as indisputable fact. Meyer's attitude in 1904 is a remnant of the medieval European confidence in "the wisdom of the ancients." Meanwhile, it has made a mess of Egyptian dating.

Victor Clube and Bill Napier write, in *The Cosmic Serpent* (1982):

> [p 228] *"... although archaeologists have come to depend totally on the validity of the* [Sothic] *cycle, it remains to this day a very disturbing fact that there is no known reference to the Sothic cycle in Egyptian texts."*

Except, of course, for the occasional reference to the rising of Sothis. Peter James writes, at [www.centuries.co.uk]:

> *"The Sothic theory depends on a number of assumptions which do not stand up to close scrutiny. Since our first published criticisms (James, et alii, 1987, 71-74) there has been a sea-change in opinion as to the reliability of this astronomical dating."*
>
> *"As there are no longer any reliable astronomical fixes, Egyptologists have, by and large, abandoned their reliance on Sothic dating - although they have been rather slow in admitting it in public."*

I would suggest that Sothic dating never existed. The Egyptian 365-day calendar, used at a time when the year was 365.24 days long, could only have been in effect since 747 BC, or perhaps adopted after 685 BC or some other date. It was designed to keep the risings and settings of Venus perfectly in tune with the religious calendar, even though all other celestial events would slip into the future. The 365-day calendar included 12 "months" of 30 days, which had nothing to do with the period of the moon, and five days which were not in any month. The basis of its use was in the previous calendar, in effect before 747 BC, when the year was 360 days and the month was 30 days long. The rising of Venus on its 8-year cycle, and the yearly rising of Sirius, and all other stars, and even the equinox and solstice dates, kept perfectly in sync with the 360-day calendar.

The Egyptians, and apparently other people of the Eastern Mediterranean, had long ago developed a concept that every God and every being was represented by a star. The star of Venus was Sirius. Both Venus and Sirius were the most brilliant objects in the sky. Sirius was also important because it traveled in an arc across the southern skies, framing the Nile which flows from the center of the arc. Before 685 BC, the travel of Sirius along this arc would have started almost directly east and ended almost directly west. It was the major marker for navigation of the Mediterranean -- easy to see and easy to use.

After 685 BC Sirius rose in the southeast instead, and rose late in July. Its appearance in the mornings before sunrise signaled the flood of the Nile, which started sometime in late July or early August. Considering that the start of the inundation of the Nile was the major event of the Egyptian agricultural calendar, the rising of Sirius in late July would be a significant marker date for a calendar -- at least, for an agricultural calendar.

Sirius would rise about July 17 (Gregorian), first seen along the eastern horizon, and rise earlier each night thereafter (seen higher in the sky at nightfall). By December 11 Sirius would rise in the east a few hours after sunset and reach the western horizon just as the Sun was rising in the east. Over the next five months Sirius would be seen progressively further west in the sky at nightfall and set in the west earlier. [note 2]

Venus rising

Venus is seen above the eastern horizon before sunrise as the brightest object in the sky for a period of about 8 to 9 months -- five times out of every eight Earth years (and similarly five times in the west). At first Venus becomes visible just before sunrise. Over the following weeks it is seen earlier and higher up in the sky, but never more than about 40 degrees from the horizon. After climbing in the sky for 4 months, it would start to appear lower, to eventually disappear behind the rising Sun, and then (after 50 days) appear in the west for about 9 months, following the same sequence of initially appearing at the horizon, and then appearing higher in the sky every night. After disappearing in front of the setting Sun, it would reappear in the east again after about 8 days. The five periods of eastern and western visibility rotate through the year, only to repeat exactly at the end of 8 years, but displaced by two days on the seasonal calendar. That's how things happen today. [note 3]

Before 685 BC Venus had looked much brighter on its heliacal rising than Sirius ever would (but no longer in 239 BC), because of the spreading plasma tail which was directed towards Earth as Venus was passing in front of the Sun, making it probably half the size of the Moon. Before 685 BC the rising of Venus could not have been missed. It would also have been much more brilliant than any star in the sky. Using a Venus calendar (which a number of other nations also used) made sense. Every 8 years Venus would rise in the east against a backdrop of the same stars as 8 years earlier, but two days earlier in a seasonal calendar.

[*Image: Heliacal rising of Venus in antiquity. Image in public domain.*]

As it moved past the Sun, the brilliant tail would swing from pointing directly toward Earth (or parallel to the horizon) to point directly up -- the "going up of Sothis," as Egyptian texts describe a phenomenon which we tend to interpret as "heliacal rising," and using the feminine ending for Sothis ("spd.t") to signify Isis, that is, Venus. Over the following days the tail would grow in length and become visible earlier before sunrise while Venus rose higher in the sky. If the ancients needed a spectacular periodic sign for the regulation of the year, which would they select? It is true that at the time of the Canopus Decree the tail had possibly not been seen since 685 BC and certainly Venus

was much reduced in brilliance from the remote past. Perhaps it was time for a change.

Velikovsky offered the suggestion (I think correctly so) that the first reading of "Sothis" is indeed "Venus," but that later references are to Sirius, and suggested that the priests were attempting to nail the calendar to the rising of Sirius.

The earlier 360-day calendar was most likely related to the Venus cycles, for before 747 BC the synodic period of Venus had been 600 days. That means that the heliacal rising of Venus would fall on the same days of the seasons, and, although the rising and setting dates would vary during this period, every 8 years the same cycle would repeat. This was true even though Venus may still have been on an elliptical orbit, as was the Earth, because ellipticity does not affect the orbital period. Before 747 BC, the New Year's Day of the 360-day calendar might have been initiated, not by observation of the equinox, but by the heliacal rising of Venus -- on an 8-year cycle. The count of days, or, more likely, the count of 12 months of 30 days, would bring New Year's Day around again.

Already in the first dynasty, Venus was called "Opener of the year" and "Lady of the new year." It could be suggested that at that time Earth and Venus would have identical synodic periods. Venus had always been used as a calendar marker.

Implications

It should also be obvious that it really does not matter. It makes no difference if the original calendar was timed to the heliacal rising of Venus or not. In either case the Egyptians were burdened with a shifting administrative (civil and religious) calendar -- a calendar which did not account for leap years. The Zapotecs, Inca, and Maya used the same Venus calendar, but the Zapotecs and Inca added a leap day every four years. The Maya, like the Egyptians, did not. Julius Caesar added a leap day to the Roman calendar in 40 BC.

By the way, as Velikovsky points out, in later years the pharaohs were required, before accession, to swear not to change the calendar or add a day, in a ceremony performed, significantly, in the temple of Isis (Venus). This makes it look as if the calendar reform was rejected by the caucus of priests and perhaps especially those outside of the delta. It was not a matter of calendars; it was about disturbing the sacred feast days. Historians seem to forget the importance of religious celebrations -- the very heart of calendars.

The imposition of the Julian calendar by Augustus in 23 BC resolved the issue, and in effect implemented the *Canopus Decree*. With the Julian calendar the year in Egypt started on August 29 (Augustus's birthday). This date was close enough to the start of the less formal agricultural calendar, and close to the intent of the *Canopus Decree* in 239 BC, to satisfy nearly everyone. Upper Egypt, outside of the control of the Romans of the delta, retained the Venus calendar for an additional six hundred years.

The old Roman calendar had run into the same slippage because it was also based on an exact count of days, and was additionally altered by the Roman Senate for tax collection purposes. Caesar resolved the discrepancies in 40 BC by moving the starting date back two months (supposedly to the date of the culmination or heliacal setting of Sirius), and introducing a leap day to be added every four years. When Rome took over Egypt, Augustus was faced in 23 BC with the same problem with the Egyptian calendar, which had slipped an additional 54 days since the *Canopus Decree* had been rejected in 239 BC. The year now started at the beginning of May. The selection of August 29 as the starting date, lopped a full four months off the Egyptian calendar in the transition year. What Julius Caesar had done, Augustus could

do also.

Further Notes

If we can use the year 239 BC with an ephemeris, without making the adjustment for the error of Eastern Mediterranean chronology, then in 239 BC at the vernal equinox, Venus rose with the Sun. Indeed, the year 239 BC would have completed a "Great Sothic Year" as devised by Eduard Meyer -- if only Venus were to be understood as representing Sothis, and a "Great Year" as representing 1460 solar years. It was an auspicious year to request a change in the calendar.

But it was not so. The year 239 BC in Eastern Mediterranean chronology is actually 244 BC (-243 astronomical), and nothing of the sort happened. Instead, Venus set with the Sun at or close to the solstice. It would reappear in the west, just after sunset, 90 days later, in time with the autumnal equinox.

The decree was released on 7 Apellaios, a Macedonian name for March, says the translator S. Birch, in *Records of the Past* (1876), which he further identifies as 17 March. The phrase "after the plan of the heaven established on this day," says as much. Velikovsky read that phrase in the *Canopus Decree* as meaning, "the change in the skies since 747 BC," but I don't think so.

It might mean, specifically, and as developed in the speculation below, that only in this year -- 239 BC, actually 244 BC -- would New Year's day fall on a significant day of the calendar which would allow an easy change. The significant day would be the autumnal equinox, the day when the New Year had been celebrated in remote antiquity.

The suggestion, from the text of the *Canopus Decree,* that New Year had previously fallen in winter in the past needs also to be considered. This could only have happened after 747 BC, if the Egyptians had failed to add 5 days to the civil calendar, and had retained the 360-day calendar. This leads to a completely different analysis of the intent of the *Canopus Decree.*

We could, for example, assume that the Egyptians had stubbornly continued to use a 360-day calendar after 747 BC, losing **(747 - 685) * 5.24 = 324.88 days** up to the time of the Assyrian occupation, or **(747 - 525) * 5.24 = 1163.28 days** up to the Persian occupation -- more than three years in the last case. For either case, this certainly would suggest that the feast days had shifted around the year, as the *Canopus Decree* claims -- "as has occasionally occurred in past times." I'm using uncorrected calendar years here because it does not matter to use these for this example.

It is, in fact, altogether typical of all people to not correct their calendars. Even in modern times, after AD 1582, many modern European nations refused to adopt the Gregorian calendar for up to 341 years (Greece, in 1923) -- much longer than the Egyptians had avoided an update. For the Egyptians the failure to amend the calendar would mean that the calendar fell behind 5.24 days every year, so that the calendar would rotate through a complete year every 70 years. Although that may have happened in the past (the statement in the *Canopus Decree* could be hyperbole), by 239 BC the Egyptians were apparently using a 365-day calendar (rather than a 360-day calendar), which only fell 1/4 day behind every year.

That means that at some time after 747 BC the five days were added, but not the last quarter day. It may have been the Assyrians who brought the extra five days during their occupation in circa 685 BC, or the Persians in 525 BC. The Egyptians, whose civil and religious calendar assigned significant feast days to every one of the 360 days, were stuck initially, and made the decision to honor the birthdays of the five

primary Gods on the extra five days.

The month "Payni" is the 10th month of the year, part of our June and July (mid-June to mid-July). That places the end of the 12th month (and the end of the calendar year) in mid-September. This suggests that in the past (before 239 BC) the autumnal equinox was used as the start of the year. That is not unusual, for nearly every nation on Earth had celebrated the New Year at the autumnal equinox since 2349 BC. [note 4]

The *Canopus Decree* suggests celebrating the extra day on the first day of Payni (after the five days which follow the end of the 360-day year). The first day of Payni (since it would fall in mid-June) would likely be the summer solstice, June 15 plus 5 days -- and thus about 90 days had slipped since the calendar was correct at the time of the fall equinox.

Whatever the extent of the shift was after 747 BC, it seems likely that the Egyptian religious calendar added the extra five days, but not the quarter day, directly after 685 BC, so that the New Year was again celebrated at the fall equinox, which before 685 BC fell on September 6th, and after 685 fell on September 21st (see my previous text on this shift). It is possible, however, that the Egyptians celebrated New Year at the culmination of the Pleiades, as many other nations did, which would have fallen on the Gregorian equivalent day of September 8th before the summer of 685 BC, and on October 8th after 685 BC.

At any rate, counting from 685 BC, when I think a revised calendar was likely imposed by the Assyrians, and adjusted for the change in the autumnal equinox in 685 BC (in the opposite direction), the slipped days to 244 BC (the year of the Canopus Decree), is **(685 - 244) * .24 - 15 = 90.84 days**. This is very nearly equal to the assumed 90-day lag mentioned above, placing New Year's Day on or near the solstice, and is close to or equal to the actual number of days between the solstice and the fall equinox -- 92 days from June 21 to September 21.

The fact that the New Year's day was celebrated at the summer solstice in 239 BC (244 BC), and would continue to be if the leap day was added, is likely what was meant by "after the plan of the heaven established on this day." Although actually, what was probably meant was that the first month of the year would start in mid-September -- as it had always been -- even though the 5 or 6 adjusted days fell in mid-June, and New Year as a result was celebrated at that time. Note that the Guatemalan Chiapas also add the 5 extra days at an odd time of the calendar year, after their third 20-day month, with New Year at the winter solstice.
[note 5]

Endnotes

Note 1 --

S. Birch *Records of the Past,* Series 1, Vol.VIII, (1876) (text at http://nefertiti.iwebland.com/texts/canopus_decree.htm), translated from the hieroglyphic version. [return to text]

Note 2 --

In 239 BC, July 17, Gregorian, is July 21, Julian.

Since 685 BC, and until AD 400 or 600, Sirius had appeared red, since it fell behind the last band of the Absu at a culmination of 43 degrees. However, on first rising Sirius would miss being placed behind this equatorial ring, and thus appear white, but also very dim. Before 685 BC it traveled well above the Absu, just below the equatorial. At that time it would have been the brightest star in the sky, and white.
[return to text]

Note 3 --

For example, in the period starting with the year 2001, the following sequence of eastern rising will happen. After 8 years Venus rises in the east 2 days earlier in the calendar. Westerly appearances are not listed.

date of eastern visibility of Venus	
year 0	2001 March 22 – 2002 January 11
year 1	2002 November 1 – 2003 August 19
year 2	
year 3	2004 June 8 – 2005 March 25
year 4	
year 5	2006 January 11 – 2006 October 28
year 6	2007 August 19 – 2008 June 9
year 7	
year 8	2009 March 20 – 2010 January 9

[return to text]

Note 4 --

On the order of God, after 1492 BC the Israelites moved the celebration of the start of the liturgical year from the fall equinox, as it had been under Egyptian rule (and where the start of the civil year remained), to the spring equinox, or rather to the first full moon after. The Babylonians followed suit after 747 or 685 BC.
[return to text]

Note 5 --

Report on a talk by John Fermor, "A Revised Chronology for Egypt," given at "New Directions in Ancient History" Conference in London, September 1980, sponsored by the SIS, and quoted in *SIS Review* Vol. V Number 1 1980/81.

"He started from the proposition that in the 3rd century BC the Egyptians had a 365-day calendar although the natural year was 365 and 1/4 days. In 26 BC the Julian calendar of 365 1/4 days was introduced into Egypt but the Alexandrian calendar of 365 days remained in use. By AD 139 there was a discrepancy of 41 days between the Julian and Alexandrian calendars for the date of 1 Thot, the Egyptian New Year's Day. In 165 years, there had been a shift of 1/4 day a year, as one would expect. On 1 Thot AD 139 the star Sirius rose heliacally; in 238 BC this event occurred on 1 Payni - a shift of 95 days in the Egyptian calendar in 377 years, again

at the rate of 1/4 day a year. This correlation, Fermor argues, can be shown to hold good as far back as 521 BC, before which things become uncertain."

The calendar years are uncorrected for the 4-year discrepancy. so that Sirius did not rise on 1 Thot in AD 139.
[return to text]

Calculations are in Unix bc notation, where ^ denotes exponentiation; the functions a(rctangent), s(ine), and c(osine) use radians; angle conversions to radians or degrees by the divisors rad=.017+ and deg=57.2+; other functions are shown as f( ); tan( )=s( )/c( )
units: million == 1,000,000; billion == 1,000,000,000;
AU == 93,000,000 miles.

Special thanks to C Vitale for questioning the earlier text.

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