Ecclesiastes

Bible Study #3

(please read chapters 7-9)

Question presented was about the history and recording of time to determine Biblical years and define the ages of those in the Old Testament.

Primitive societies make do with a broad concept, counting the year as starting when leaves sprout on a particular tree or describing someone as having lived through a certain number of harvests.

The only simple yet accurate way of measuring a year is in relation to the stars (though structures such as the passage grave at Newgrange can record an annual position of the sun, at a considerable cost in effort). The stars appear in the night sky at different times and places depending on where the earth is in its orbit round the sun. A star observed in a given place - on the horizon at dawn, for example - will be there again exactly a year later.

In Egypt the temple priests derived much of their prestige from close attention to the stars, enabling them to give the impression of predicting natural events. The best example is their use of Sirius, the Dog Star. It rises above the horizon just before dawn at the time of year when the all-important flooding of the Nile is about to occur. Priests who could foretell this great event were powerful soothsayers.

This observation of Sirius also enabled the Egyptians to become the first people to move from a lunar to a solar calendar.

Lunar and solar years

In Mesopotamia, where the Babylonians were the leading astronomers, the calendar was a simple lunar one. So probably was the first Egyptian calendar. And a lunar calendar is still in use today in Islam. But such a calendar has one major disadvantage.

The length of a lunar month, from one new moon to the next, is 29.5 days. So twelve lunar months are 354 days, approximately 11 days short of a solar year. In a lunar year each of the twelve months slips steadily back through the seasons (as happens now with the Muslim calendar), returning to its original position only after 32 years.

In some lunar calendars an extra month is inserted from time to time to keep in step with the solar year. This happened in Mesopotamia and in republican Rome, and it remains the case today in the Jewish calendar.

But the Egyptian priests' observation of Sirius enabled them to count the number of days in a solar year. They made it 365. They then very logically adjusted the twelve months of the lunar year, making each of them 30 days long and adding 5 extra days at the end of the year. Compared to anybody else's calendar at the time this was very satisfactory. But there was a snag.

The priests cannot have failed to notice that every four years Sirius appears one day later. The reason is that the solar year is more exactly 365 days and 6 hours. The Egyptians made no adjustment for this, with the result that their calendar slid backwards through the seasons just like a lunar one but much more slowly. Instead of 32 years with the moon, it is 1460 years before Sirius rises again on the first day of the first month.

It is known from the records that in AD 139 Sirius rose on the first day of the first Egyptian month. This makes it certain that the Egyptian calendar was introduced one or two full cycles (1460 or 2920 years) earlier, either in 1321 or 2781 BC - with the earlier date considered more probable.

Julian and Mayan calendars: 1st century BC

The Roman calendar introduced by Julius Caesar, and subsequently known as the Julian calendar, gets far closer to the solar year than any predecessor. By the 1st century BC reform in Rome had become an evident necessity. The existing calendar was a lunar one with extra months slipped in from to time in an attempt to adjust it. In Caesar's time this calendar was three months out in relation to the seasons.

On the advice of Sosigenes, a learned astronomer from Alexandria, Caesar added ninety days to the year 46 BC and starts a new calendar on 1 January 45.

Sosigenes advised Caesar that the length of the solar year was 365 days and six hours. The natural solution was to add a day every fourth year - introducing the concept of the leap year. The extra day was added to February, the shortest of the Roman months.

Spread through the Roman empire, and later throughout Christendom, this calendar proved very effective for many centuries. Only much later did a flaw yet again appear. The reason is that the solar year is not 365 days and 6 hours but 365 days, 5 hours, 48 minutes and 46 seconds. The difference amounts to only one day in 130 years. But over the span of history even that begins to show. Another adjustment would eventually be necessary.

While Julius Caesar was improving on the solar calendar of 365 days, a similar calendar was independently arrived at on the other side of the Atlantic. Devised originally by the Olmecs of central America, it was perfected in about the 1st century AD by the Maya.

The Maya, establishing that there are 365 days in the year, divided them into 18 months of 20 days. Like the Egyptians (who had 12 months of 30 days), they completed the year by adding 5 extra days at the end - days which were considered to be extremely unlucky for any undertaking. An

unusual aspect of the Mayan system is the Calendar Round, a 52-year cycle in which no two days have the same name.

Jewish and Muslim calendars

The Jewish calendar combines lunar and solar cycles. It was given its present form in 921 after a great debate between supporters of two slightly different systems.

In origin the calendar goes back to the captivity in Babylon, when the Jews adopted the Babylonians' calendar and their names for the months. They were lunar months of 30 or 29 days. In every second or third year an extra month of 30 days was added to keep the calendar in approximate step with the solar year. This constitutes a crucial difference between the Jewish and Muslim systems.

The Muslim calendar is the only one in widespread use to be based uncompromisingly on lunar months, with no adjustments to bring the years into balance with the solar cycle.

The twelve months are alternately 29 and 30 days long (the lunar cycle is approximately 29.5 days), giving a year of 354 days. There are two significant results. Muslim months bear no relation to the seasons, and Muslim years do not coincide with those of other chronologies. There are about 103 lunar years in a solar century. By the millennium there will have been 1421 lunar years but only 1378 solar years from the start of Muslim chronology in AH1 or 622. The year AH 1421 will be 2000.

The working week

Unlike the day, the month or the year, the week is an entirely artificial period of time. It was probably first made necessary by the demands of trade. Hunter-gatherers and primitive farmers had no need of such a concept, but commerce benefited from regularity. The original weeks were almost certainly the gaps between market days.

Weeks of this kind varied from four days among some African tribes to ten days in the Inca civilization and in China. In ancient China a five-day week set the working pattern for the Confucian civil service, every fifth day being a 'bath and hair-washing day'. Later this was extended to a ten-day week, with the three periods of each month known as the first, middle and last bath.

There are two possible sources for the seven-day week. One is the biblical creation story. From those times the Israelites had a week of this length, with the seventh day reserved for rest and worship (a pattern reflected in the Bible's account of creation).

The other and more likely source is Rome, where the equivalent of the modern week was adopted in about the 1st century AD - a time and a place where the Jewish tradition would have little

influence. The number of days in the week derived probably, through astrology, from the seven known planets - which also provided the names of the days.

Gregorian calendar: 1582-1917

By the 16th century the seemingly minor error in the Julian calendar (estimating the solar year to be 11 minutes and 14 seconds shorter than it actually is) had accumulated to a ten-day discrepancy between the calendar and reality. It was most noticeable on occasions such as the equinox, that now occurred ten days earlier than the correct calendar dates of March 21 and September 23.

Pope Gregory XIII employed a German Jesuit and astronomer, Christopher Clavius, to find a solution. Calculating that the error amounted to three days in 400 years, Clavius suggested an ingenious adjustment.

His proposal, which became the basis of the calendar known after the commissioning pope as Gregorian, is that century years (or those ending in '00') should only be leap years if divisible by 400. This eliminated three leap years in every four centuries and neatly solved the problem. The result, in the centuries since the reform, wa that 1600 and 2000 are normal leap years, but the intervening 1700, 1800 and 1900 do not include February 29.

Gregory put the proposal into immediate effect in the papal states, announcing that the day after October 4 in 1582 would be October 15 - thus saving the lost ten days.

The pope's lead was followed in the same year by Spain, Portugal, France and most Italian states. The German-speaking Roman Catholic states complied in 1583.

Other Christian realms dragged their feet on the issue, reluctant to admit that the pope in Rome had a point. The Lutheran states of Germany changed in 1700. Great Britain delayed until 1752, by which time the gap was eleven days. Some of the British proved exceptionally dim over the issue, fearing that their lives were being shortened and in places even rioted for the return of the missing days. Imperial Russia never made the change; it was introduced after the revolution, in 1918. (Potentially confusing dates, near the change-over years, are identified by historians with the codes OS or Old Style for the Julian version and NS or New Style for the Gregorian equivalent.)

More precise measurements in the 20th century have introduced a further refinement of the Gregorian calendar, though not one of immediate significance. As adjusted for pope Gregory, the present system adds one day in every 3,323 years. The accepted solution is that years divisible by 4000 will not be leap years.

February 29 will therefore be dropped unexpectedly in 2000 years' time. In 4000, even though the year is divisible by 400, March 1 will follow February 28 in the normal way. Julius Caesar and Sosigenes would no doubt be impressed by this ultimate refinement of their system, making it accurate to within one day in 20,000 years.

Read more:

A History of the Months

The original Roman year had 10 named months:
Martius "March", *Aprilis* "April", *Maius* "May", *Junius* "June", *Quintilis* "July", *Sextilis* "August", *September* "September", *October* "October", *November* "November", *December* "December", and probably two unnamed months in the dead of winter when not much happened in agriculture. The year began with *Martius* "March". Numa Pompilius, the second king of Rome circa 700 BC, added the two months *Januarius* "January" and *Februarius* "February". He also moved the beginning of the year from *Marius* to *Januarius* and changed the number of days in several months to be odd, a lucky number. After *Februarius* there was occasionally an additional month of *Intercalaris* "intercalendar". This is the origin of the leap-year day being in February. In 46 BC, Julius Caesar reformed the Roman calendar (hence the Julian calendar) changing the number of days in many months and removing *Intercalaris*.

Cited from crowl.org

Ecclesiastes Discussion

1. Solomon seems to state in Chapter 7 that suffering serves a purpose – wisdom, appreciation, and the way of God. Do you agree?

2. Chapter 7 seems to describe via media as the way to a good life. Thoughts?

3. Solomon begins to discuss authority in Chapter 8 describing those who in their authority also harm others. Thoughts?

4. How do you feel about God's judgement of the wicked and the righteous?

5. Chapter 8:15 repeats there is nothing better to do than enjoy life. Is this the real message of all Solomon's ponderings?

6. Does the same fate come to everyone? Everyone dies, but is there a difference – in Solomon's time. Is it different after Jesus' resurrection?

7. Per Solomon wise men are forgotten yet wisdom is better than war. Is this the fear of dying that Solomon is expressing?