

The Egyptian calendar

Overview

The earliest Egyptian calendar was based on the moon's cycles, but the lunar calendar failed to predict a critical event in their lives: the annual flooding of the Nile River. The Egyptians soon noticed that the first day the "Dog Star," which we call Sirius, in Canis Major was visible right before sunrise was special. The Egyptians were probably the first to adopt a mainly solar calendar. This so-called 'heliacal rising' always preceded the flood by a few days. Based on this knowledge, they devised a 365-day calendar that seems to have begun in 4236 B.C.E., the earliest recorded year in history.

They eventually had a system of 36 stars to mark out the year and in the end had three different calendars working concurrently for over 2000 years: a stellar calendar for agriculture, a solar year of 365 days (12 months x 30 + 5 extra) and a quasi-lunar calendar for festivals. The later Egyptian calendars developed sophisticated Zodiac systems, as in the stone calendar at right. According to the famed Egyptologist J. H. Breasted, the earliest date known in the Egyptian calendar corresponds to 4236 B.C.E. in terms of the Gregorian calendar.

Details

The ancient Egyptians originally employed a calendar based upon the Moon, and, like many peoples throughout the world, they regulated their lunar calendar by means of the guidance of a sidereal calendar. They used the seasonal appearance of the star Sirius (Sothis); this corresponded closely to the true solar year, being only 12 minutes shorter. Certain difficulties arose, however, because of the inherent incompatibility of lunar and solar years. To solve this problem the Egyptians invented a schematized civil year of 365 days divided into three seasons, each of which consisted of four months of 30 days each. To complete the year, five intercalary days were added at its end, so that the 12 months were equal to 360 days plus five extra days. This civil calendar was derived from the lunar calendar (using months) and the agricultural, or Nile, fluctuations (using seasons); it was, however, no longer directly connected to either and thus was not controlled by them. The civil calendar served government and administration, while the lunar calendar continued to regulate religious affairs and everyday life.

In time, the discrepancy between the civil calendar and the older lunar structure became obvious. Because the lunar calendar was controlled by the rising of Sirius, its months would correspond to the same season each year, while the civil calendar would move through the seasons because the civil year was about one-fourth day shorter than the solar year. Hence, every four years it would fall behind the solar year by one day, and after 1,460 years it would again agree with the lunisolar calendar. Such a period of time is called a Sothic cycle.

Because of the discrepancy between these two calendars, the Egyptians established a second lunar calendar based upon the civil year and not, as the older one had been, upon the sighting of Sirius. It was schematic and artificial, and its purpose was to determine religious celebrations and duties. In order to keep it in general agreement with the civil year, a month was intercalated every time the first day of the lunar year came before the first day of the civil year; later, a 25-year cycle of intercalation was introduced. The original lunar calendar, however, was not abandoned but was retained primarily for agriculture because of its agreement with the seasons. Thus, the ancient Egyptians operated with three calendars, each for a different purpose.

The only unit of time that was larger than a year was the reign of a king. The usual custom of dating by reign was: "year 1, 2, 3 . . . , etc., of King So-and-So," and with each new king the counting reverted back to year One. King lists recorded consecutive rulers and the total years of their respective reigns.

The civil year was divided into three seasons, commonly translated: Inundation, when the Nile overflowed the agricultural land; Going Forth, the time of planting when the Nile returned to its bed; and Deficiency, the time of low water and harvest.

The months of the civil calendar were numbered according to their respective seasons and were not listed by any particular name-e.g. third month of Inundation-but for religious purposes the months had names. How early these names were employed in the later lunar calendar is obscure.

The days in the civil calendar were also indicated by number and listed according to their respective months. Thus a full civil date would be: "Regnal year 1, fourth month of Inundation, day 5, under the majesty of King So-and-So." In the lunar calendar, however, each day had a specific name, and from some of these names it can be seen that the four quarters or chief phases of the Moon were recognized, although the Egyptians did not use these quarters to divide the month into smaller segments, such as weeks. Unlike most people who used a lunar calendar, the Egyptians began their day with sunrise instead of sunset because they began their month, and consequently their day, by the disappearance of the old Moon just before dawn.

As was customary in early civilizations, the hours were unequal, daylight being divided into 12 parts, and the night likewise; the duration of these parts varied with the seasons. Both water clocks and sundials were constructed with notations to indicate the hours for the different months and seasons of the year. The standard hour of constant length was never employed in ancient Egypt.

Sirius: the 'Dog Star'

Early Egyptians depended on the Nile's annual rising and flooding. Each year as that great river flooded it brought down mountain soil to the Egyptian plain. This enriched the fields and enabled creation of an agricultural system that supported a large civilization.

In the eighth century B.C.E., the Egyptian Pharaoh's primary advisor, the Vizier, was charged with reporting the first appearance of the bright star we call Sirius after it had been missing from the sky for (depending upon the observer's latitude) approximately two weeks. This first appearance of Sirius in the pre-dawn sky was used to start the so-called Egyptian "lunar" calendar year, which was used for purposes of regulating religious affairs and everyday life.

Shortly after Sirius first reappeared in the east, the Nile would have its annual life-giving flood. Because of the Nile's flooding at this time, the fixing of the New Year could well be said to have been based on a geophysical as well as an astronomical event. Although many other stars may be used to fix the beginning of a sidereal year, the Egyptians made an excellent choice for this purpose. Sirius - Egyptians called it Sothis - not only signaled the approaching Nile flood, but is the brightest "fixed" star in the heavens.

In Egypt at the present time, Sirius rises just before the sun late in July, but usually can't be seen until early August. This is because as sunrise approaches, stars fade from view and the light of dawn obliterates starlight. At the time Sirius is about to reappear, the constellation Orion is fully visible in the lower eastern sky. With the bright star Betelgeuse on his shoulder, anyone familiar with constellations would find Orion hard to miss. Sirius can be seen in the next constellation to rise (Canis Major). Because of this close relationship, Sirius was sometimes referred to as the "dog star" by early Greeks who thought of Canis Major as one of Orion's hunting hounds.

