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Egyptian Astronomy

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The Flooding of the Nile

The Ancient Egyptians made many great advances in science and contributions to the store of human knowledge, especially in medicine and alchemy. The Egyptians also contributed to ancient astronomy and, as with the Mesopotamians, their work was based upon agriculture and predicting the seasons.

The annual flooding of the Nile was the foundation of Egyptian civilization and agriculture, so predicting this occurrence with accuracy was the driving force behind the development of Egyptian astronomy. Once again, their studies of the heavens became intertwined with religion, esoterica and the priesthood.

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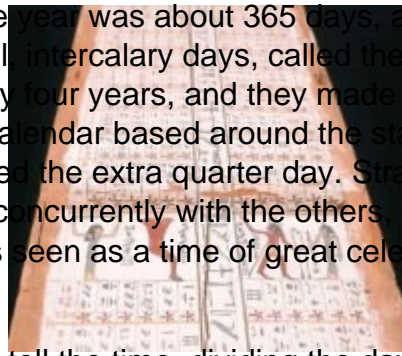
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Early Egyptian Astronomy

The history of Egyptian astronomy begins in the depths of prehistory and the discovery of stone circles at Nabta Playa, dating from the 5th Millennium BC, show that the Egyptians had already developed a calendar. The stone circle shows that they were accomplished at marking time and, it can be assumed, predicting the coming of the floods. They also developed a system of constellations that appear to be of native origin and independent from the work of the Greeks ^[1] and the Mesopotamians ^[2].

The Egyptians were fully aware that the year was about 365 days, and divided it into 12 months of 30 days, with five ceremonial intercalary days, called the Epagomenal days, added. This calendar lost one day every four years, and they made little attempt to correct this. Instead, they developed another calendar based around the star Sirius, which also consisted of 365 days but which included the extra quarter day. Strangely, they also kept a 360 day ceremonial calendar, running concurrently with the others, and these calendars coincided every 1461 years, which was seen as a time of great celebration and the start of a new age.

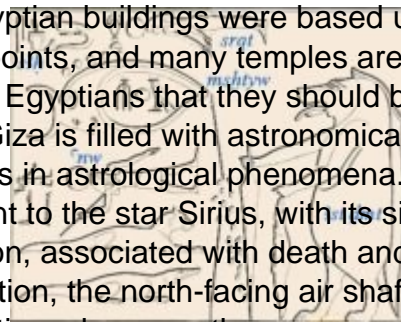


Egyptian astronomers used sundials to tell the time, dividing the days into 24 hours, although the length of these hours was not fixed, ensuring that day and night both consisted of twelve hours, whatever the time of year. At night, they divided the night sky into 36 groups of stars, called Decans, which could be used to tell the time.

Stellar Clock used to plot stellar time. (Public Domain)

The Ancient Egyptian Astronomers and the Stars

There is little doubt that the great Egyptian buildings were based upon the stars; the Great Pyramid is aligned with the cardinal points, and many temples are aligned along the axis of the rising midwinter sun, signifying to Egyptians that they should begin to prepare for planting in the spring. The Great Pyramid of Giza is filled with astronomical significance, based largely upon religious beliefs but with its roots in astrological phenomena. Within the Great Pyramids are southern facing airshafts that point to the star Sirius, with its significance in marking the start of the Egyptian year, and to Orion, associated with death and rebirth, another recurring theme in Egyptian mythology. In addition, the north-facing air shafts point to the circumpolar stars, called 'The Immortals' by Egyptians, because they never set.



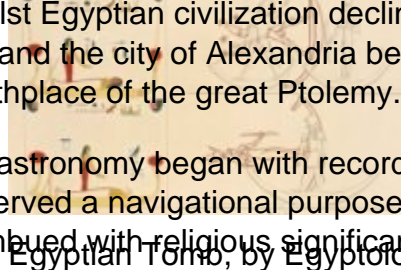
Ramesses II, Valley of the Kings (Creative Commons ^[3])

There are other theories concerning the pyramids, namely that they were located to reflect the constellation Orion, with the three pyramids at Giza representing the belt of Orion. As with the Neolithic ^[4] astronomy, this is largely conjectural and all that we can safely say is that the Egyptians built their monuments to reflect the cardinal directions and important times of year.

This trend continued in the Valley of the Kings, where Rameses II built his huge Temple of Abu Simbel to ensure that sunlight only penetrated the inner sanctum on the 20th of October and the 20th of February, with one of these days believed to be the anniversary of his coronation.

The Influence of the Egyptian Astronomers

Of course, when looking at history, ancient techniques do not begin and end at certain points and there is always a degree of overlap. Whilst Egyptian civilization declined, it became absorbed by the Greek and Roman cultures and the city of Alexandria became one of the most important centers of astronomy, the birthplace of the great Ptolemy.



As with many ancient cultures, the Egyptian astronomy began with recording the time of year for agricultural periods, and may well have served a navigational purpose, a common practice in the desert. These observations became imbued with religious significance and became incorporated into their architecture.

Egyptian Tomb, by Egyptologist Ippolito Rosellini

The Egyptians built their monuments pointing in the cardinal directions and used them to

reflect important celestial occurrences revealing the time of year. They also developed a sophisticated calendar, albeit with a lot of complexity and the need to run three separate calendars. This may seem strange to us, but the idea of multiple calendars is a solution that the Mayans [5] arrived at independently. In fact, we use multiple calendars, with the Islamic world maintaining a lunar calendar rather than the solar calendar of the Western world, and Orthodox Christian Churches use the Julian calendar to decide ceremonial dates.

Of course, the astronomy and architecture of the Egyptians has attracted many wild theories about how the Egyptians incorporated the weight and the circumference of the Earth into the Great Pyramid, or that they are the descendents of fugitives from Atlantis. These are conjectural and cannot be taken seriously without a little proof. Despite this, we can say that Egyptian astronomy was extremely sophisticated and many of their ideas became the foundation of our own stargazing and cosmology.

Source URL: <https://explorable.com/egyptian-astronomy?gid=1595>

Links

[1] <https://explorable.com/greek-astronomy>

[2] <https://explorable.com/mesopotamian-astronomy>

[3] <http://creativecommons.org/licenses/by-sa/3.0/>

[4] <https://explorable.com/neolithic-astronomy>

[5] <https://explorable.com/mayan-astronomy>