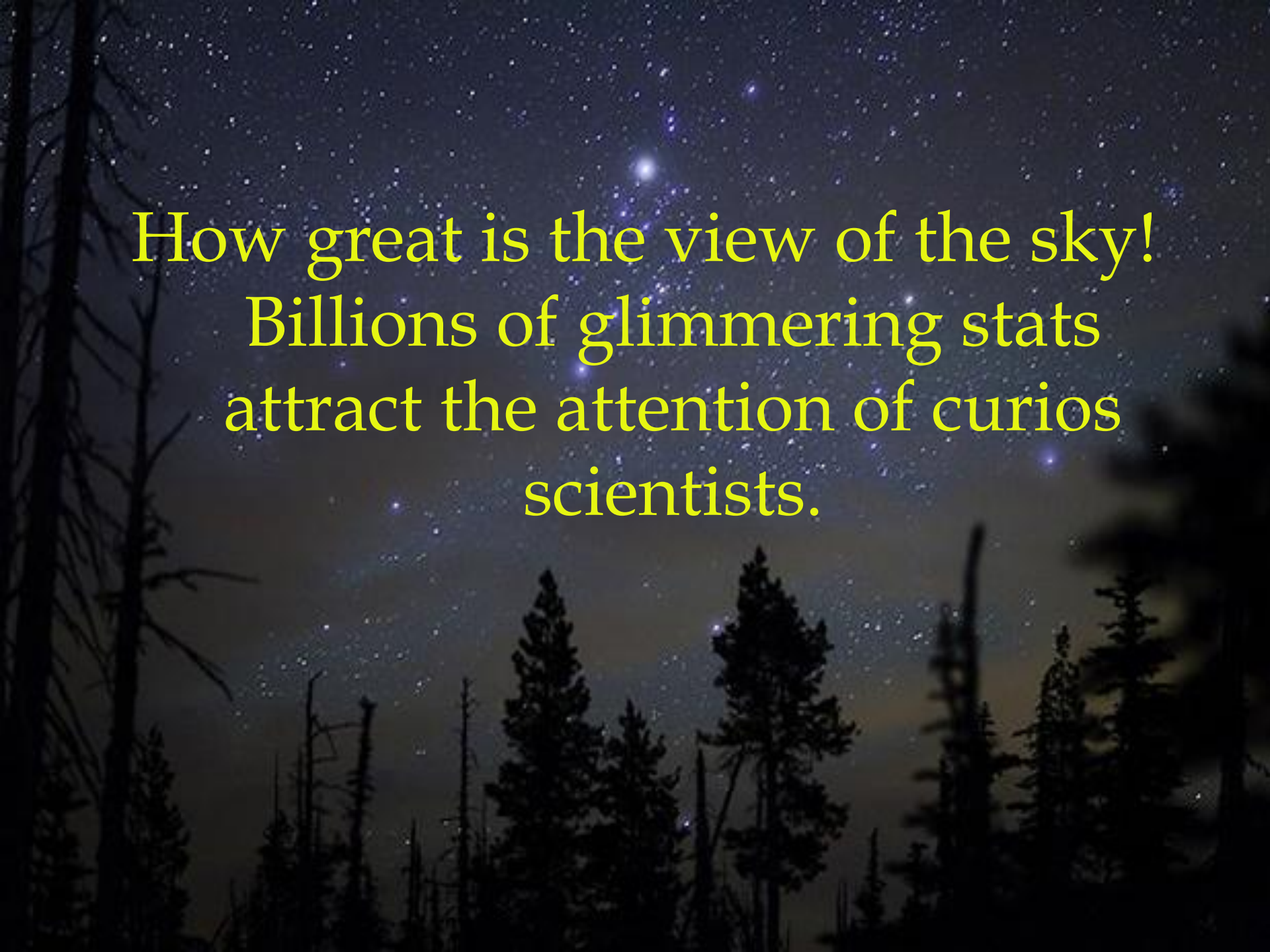
Development of ideas about the universe from ancient times to the XX century.

Author: Murakhovskaya O.A.

"Any animal won`t look at the heavens...
Only that ridiculous creature –
human can waste the time
gazing up into the sky ".

Herbert Wells


How great is the view of the sky!
Billions of glimmering stats
attract the attention of curios
scientists.

For thousands of years people had been spending nights by the bonfire gazing up into the starry sky and then they noticed that stars were in the constant positions to each other.

Why is it glowing dots do not fall every night, taking their place on the celestial sphere? Why is the sun and moon appear always on the one hand, and disappear on the other?

Some people just watched, others tried to give everything in its most authentic, in their opinion, the explanation. Later, people learned to write and thus leave their children for the observation that they did not start all over again.


Man found out a few remarkable figures of constellations.


The first lunar calendar was already composed 2000 years ago.

Ancient people connected agriculture with the seasons which were dependent on the positions of stars, the Sun, the Moon…

The first ancient astronomers and scientists were priests.

Religious views

The main gods of all ancient religions of the world were inextricably connected with the Sun, planets and celestial phenomena.

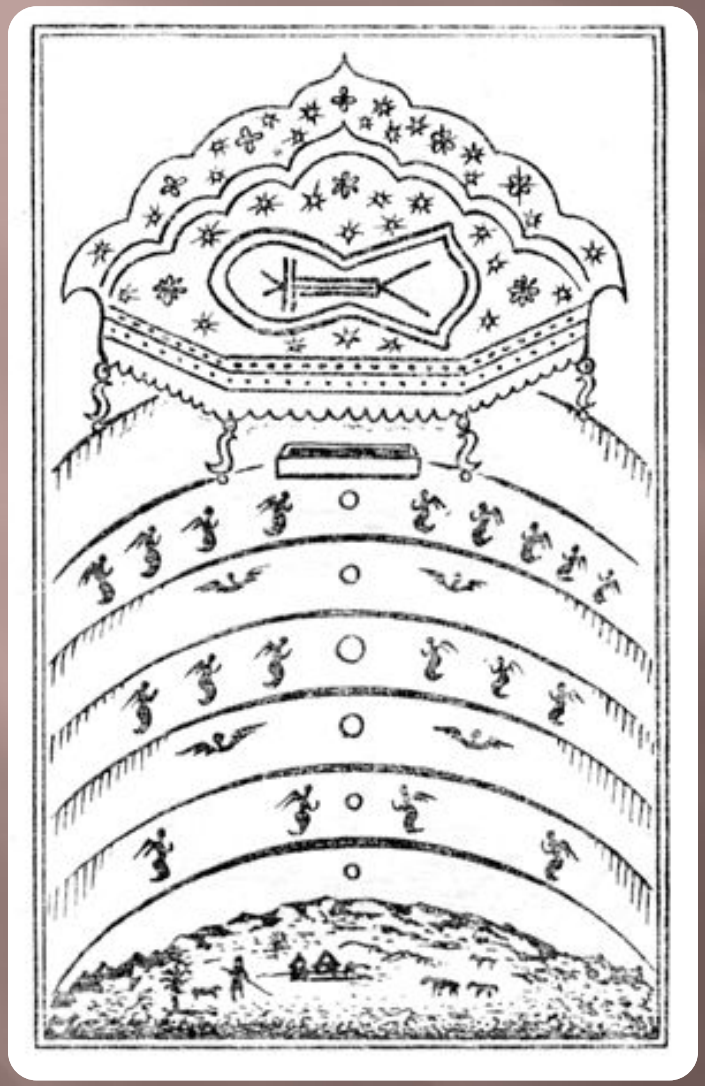
World religions are based on the statement that the universe is a living creature - the ancestor of everything alive. The visible in the sky planets are identified with the goods representing the definite spheres our life.

-"Stars worship" of Egypt;

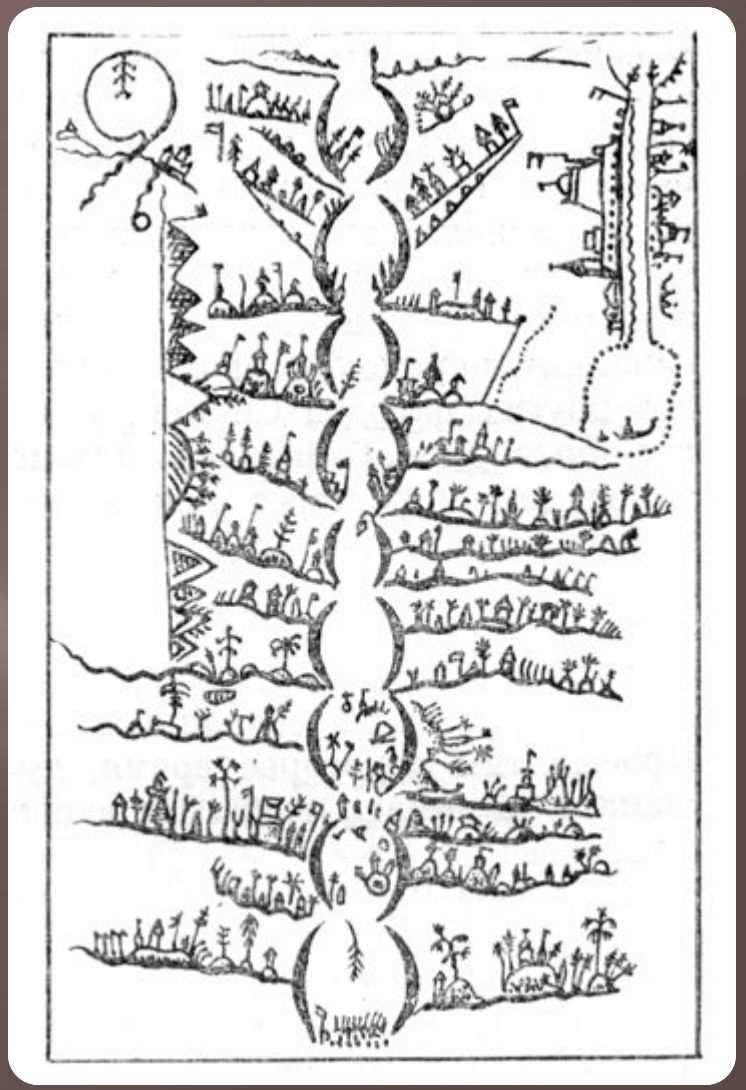
- Greek and Roman god`s pantheon and celebrations of undefeated Sun;
- Buddhism;
- Induizm;
- Persian worship of Mitro,the God of the Sun.

All of them were based on that statement about the universe.


The belief that the universe is like a multistage construction, common in the biblical, Babylonian and Islamic cosmologies.

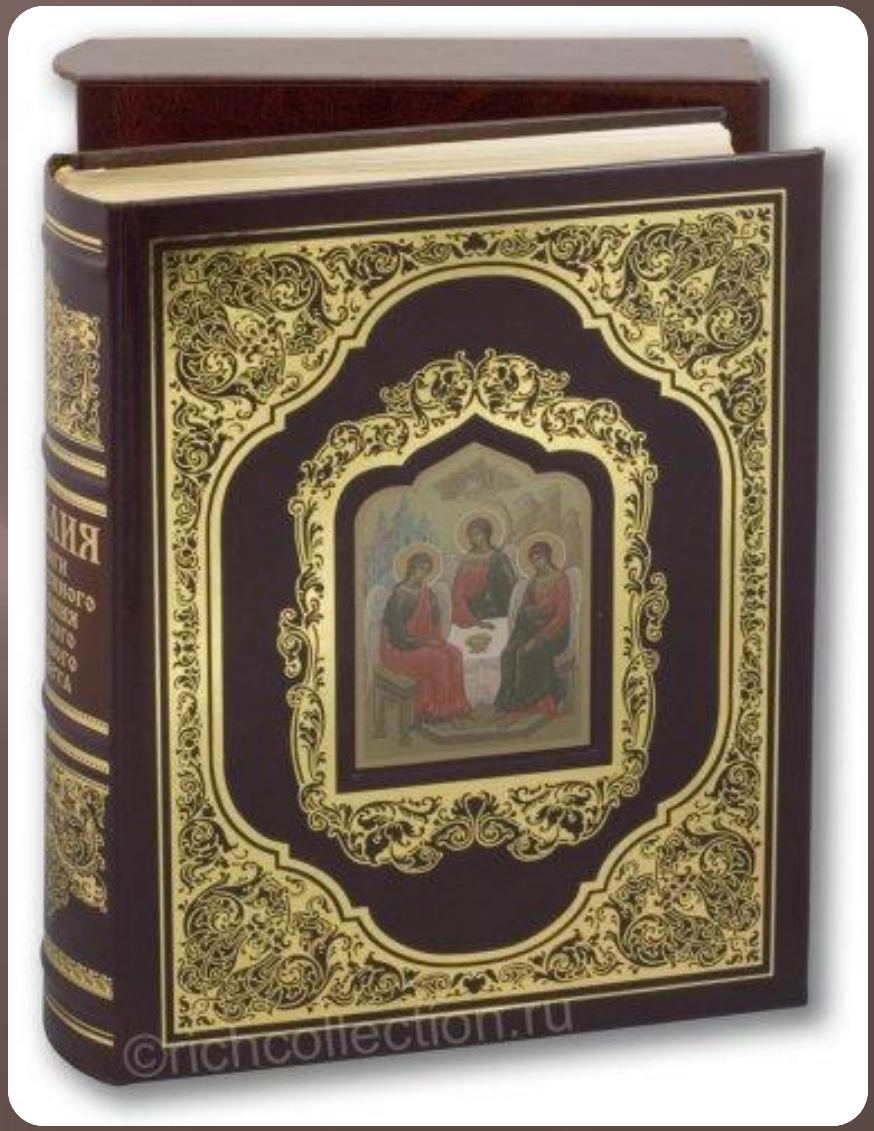


Seven heavenly spheres of Muslim views



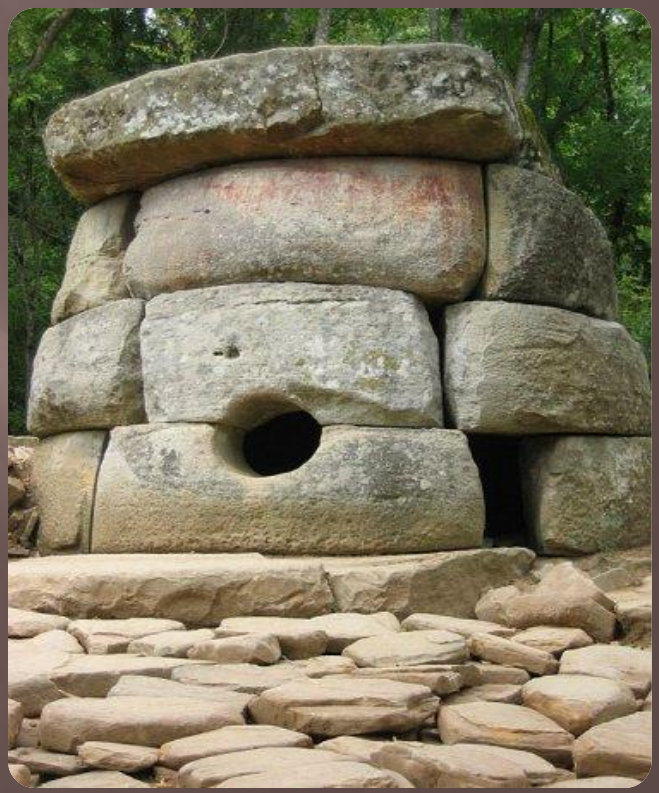
Drawing of the upper world Dayak tribe ngadzhu

All of them were based on that statement about the universe. The annual change of the position of the Sun in the sky is mentioned in the Bible, in the Old Testament in the Iove`s book.



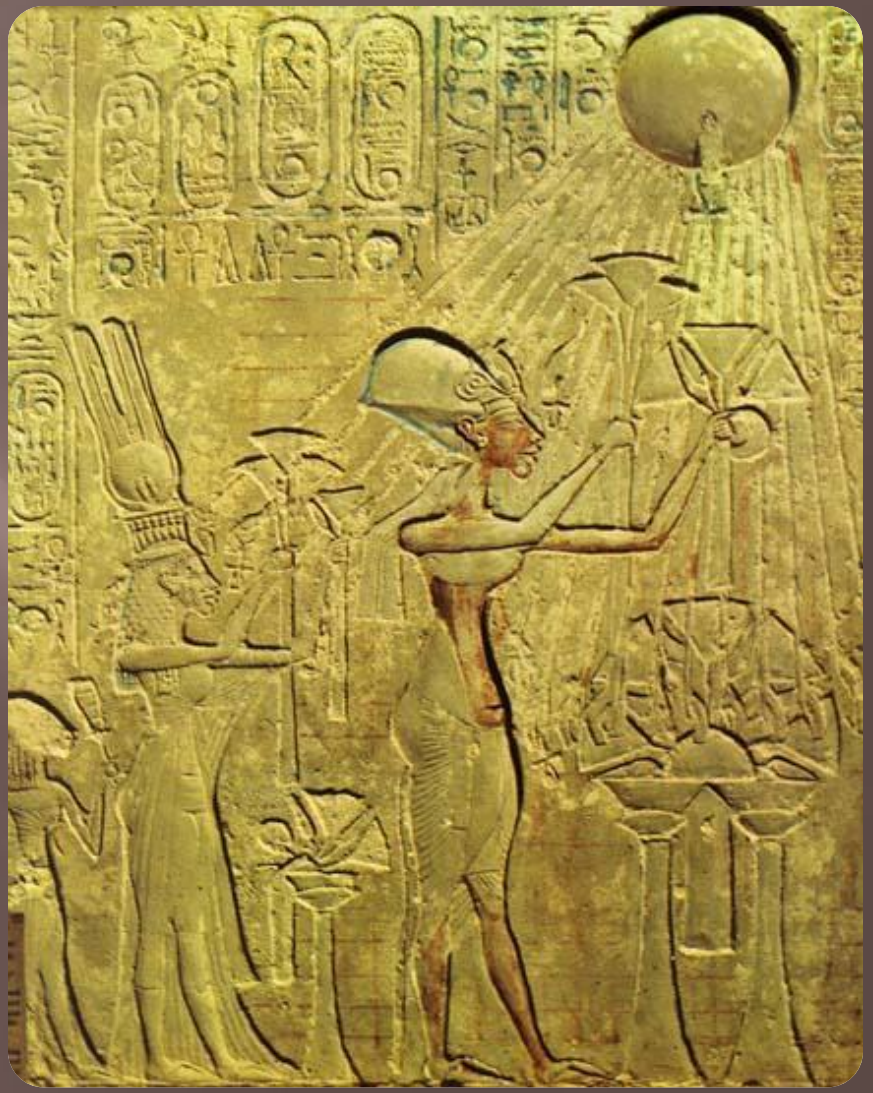
The first Ancient Observatory – **megaliths**

Menhirs



Dolmen

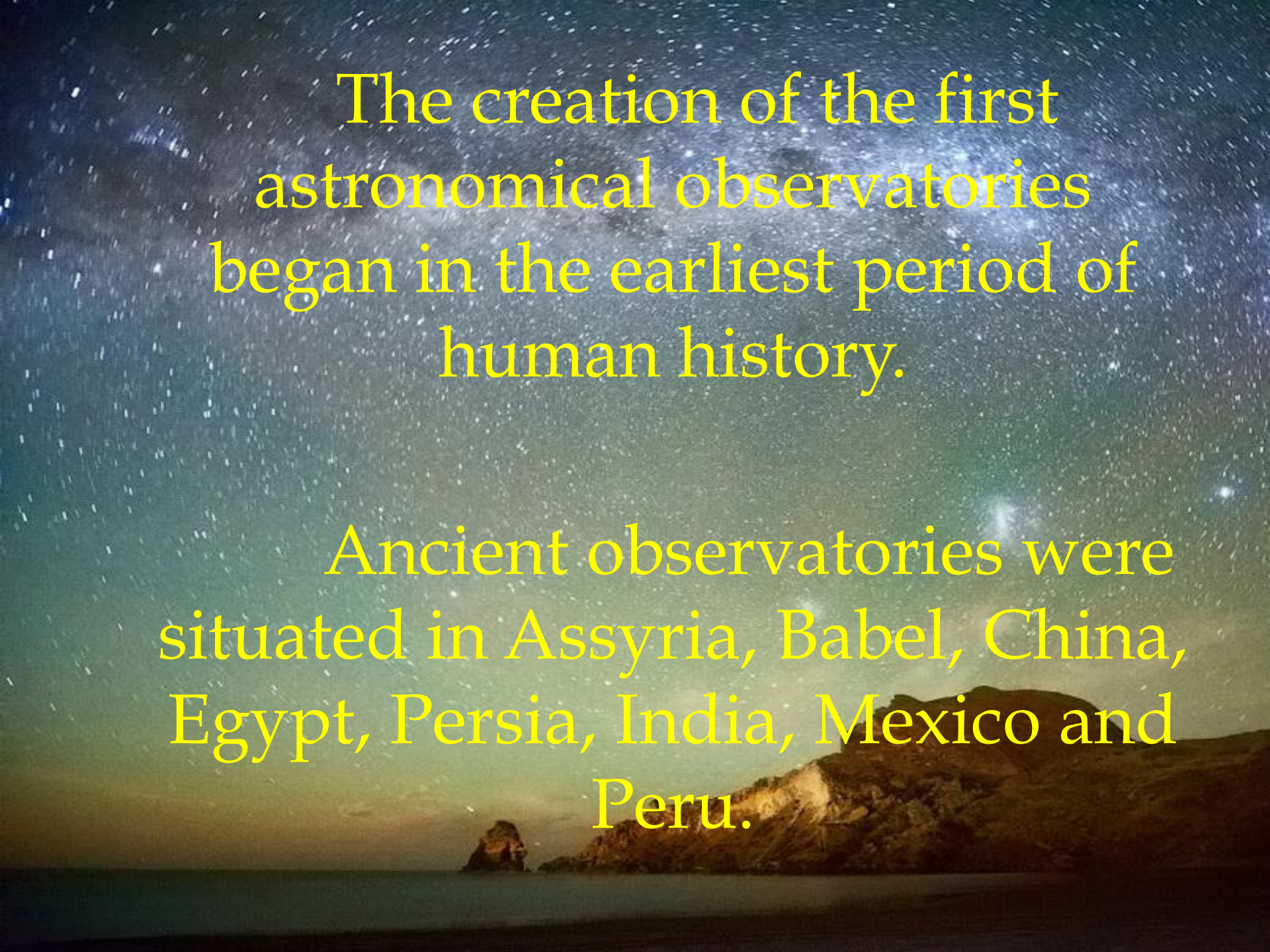
Sunworshippers believed they had to please the Sun if they didn`t want it to stop to illuminating the Earth.



So appeared the first temples which had circle-shaped foundation. They played the role of the first calendar, clock and observatories.

Stonehenge, England, 4000 BC


These temples were the
first calendars
and clock
and observatories.



The creation of the first astronomical observatories began in the earliest period of human history.

Ancient observatories were situated in Assyria, Babel, China, Egypt, Persia, India, Mexico and Peru.

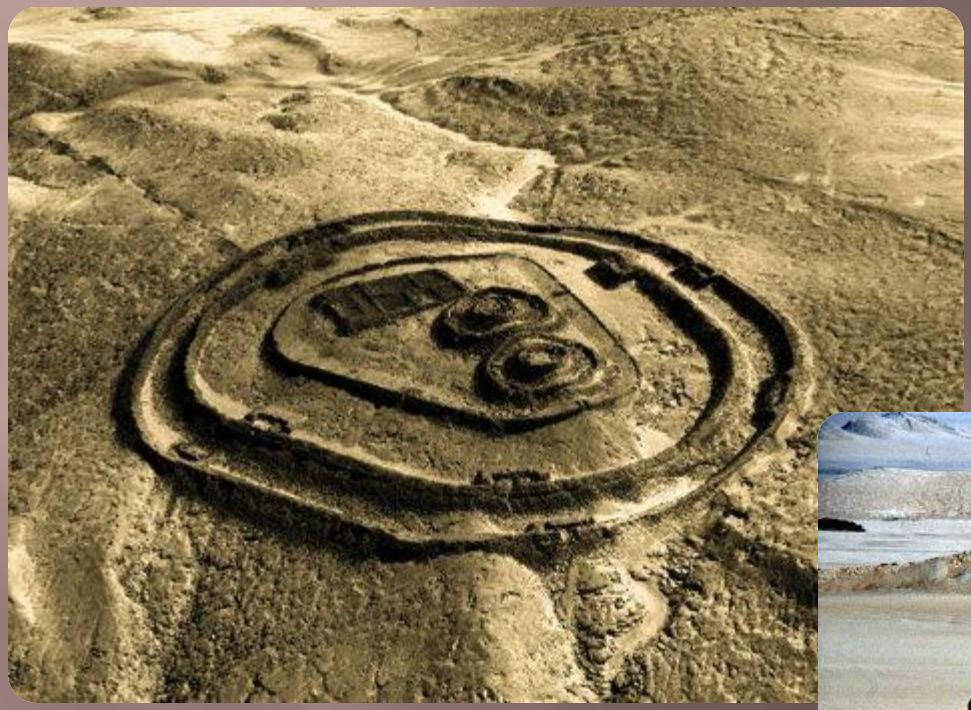
Ancient Observatory

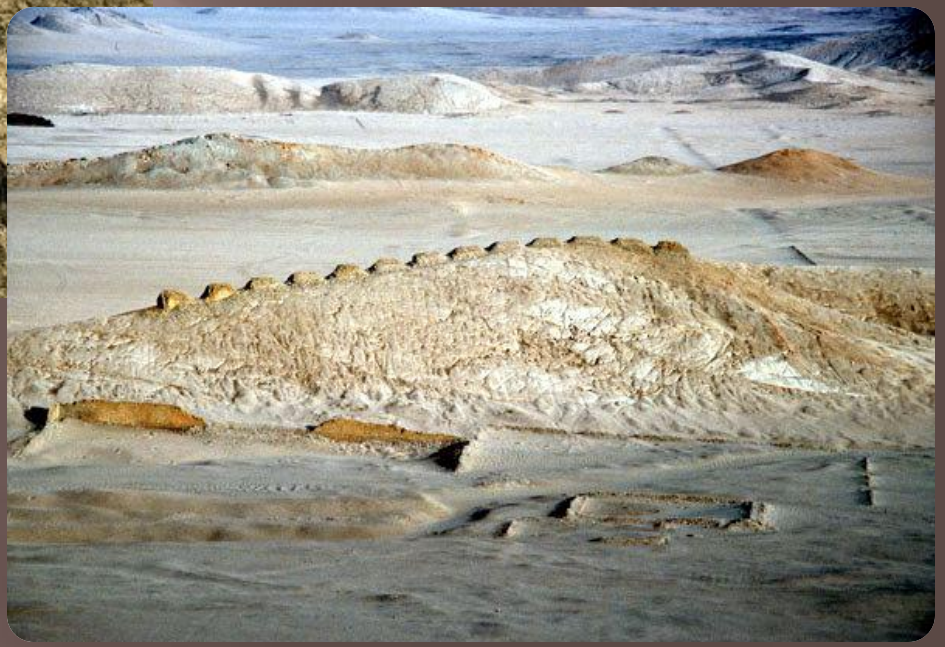
"Horse-stone", Ukraine

Stownhadge

Instruments for measurement were huge stones

Solar Observatory in Peru





Observatory on Lake Ladoga

Ancient Brazilian Observatory (2000 BC)

Kochaski, Ecuador

Arkaim

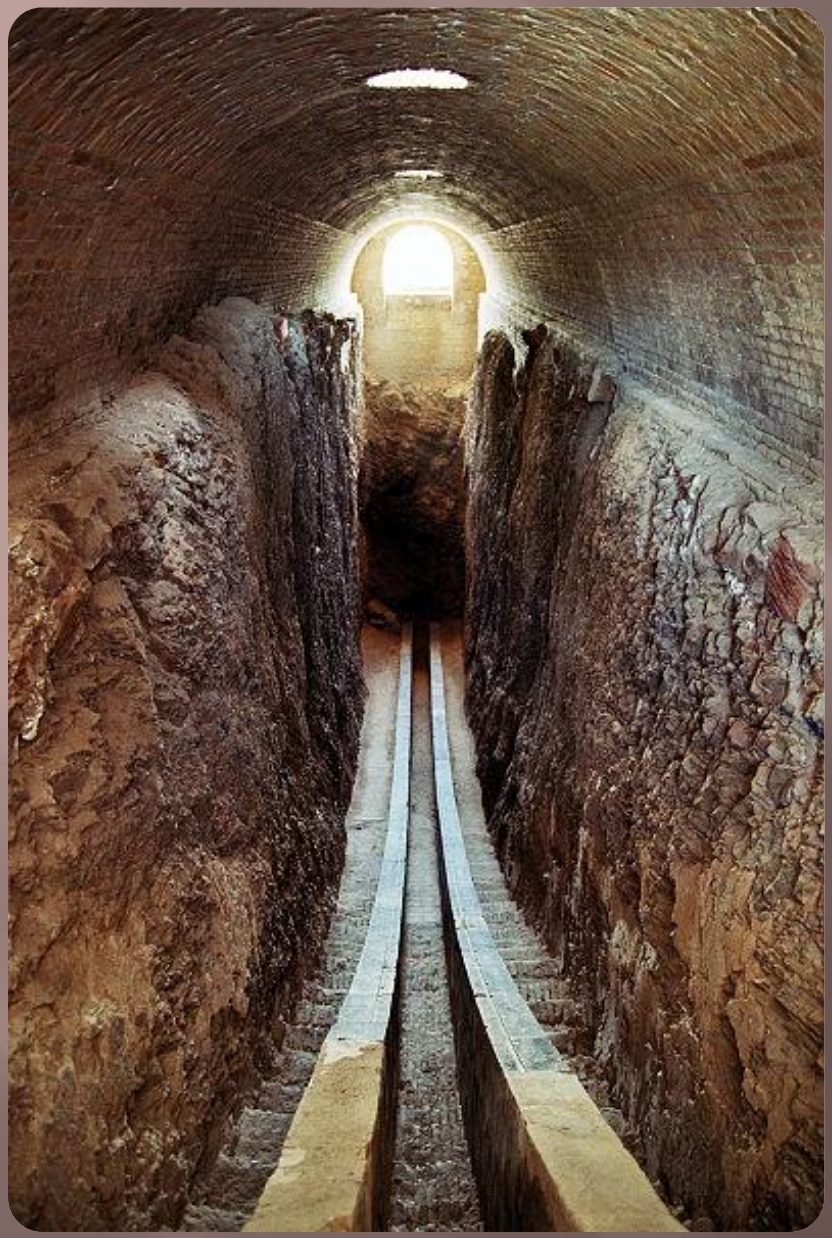
Chichen Itza, Mexico

Observatory Jantar Mantar, India

Ancient Beijing Observatory in 1442

Ulugbek Observatory

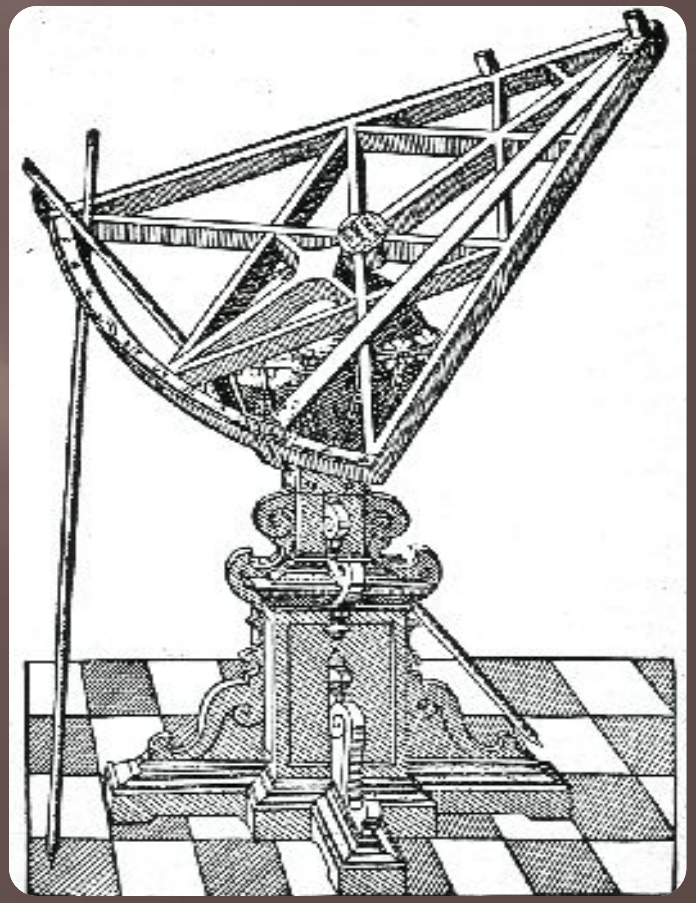
In the city of Samarkand (Uzbekistan) in the 15 th century astronomer and scientist Ulugbek creates the famous observatory. The scientist was sky catalog, which describes the 1018 stars.



The main instrument of the observatory - a giant (in a radius of 40 meters) **quadrant** to measure the angular distances of stars and other luminaries.

Astronomers had used modern for that period of time devices until they invented a spyglass and a telescope.

Octant



Sextant

The first observatory of the modern type were built in Europe since 13 century

State Observatory of Paris in 1667

Greenwich Observatory in England in 1675

By the end of 17th century the russian archbishop Kholmogorsky Afanasy used the bell-tower of the stone cathedral as an observation tower in 1692.

From1700 to1716 Sukhareva tower had been serving as an observatory and school of mathematical and "sailor" sciences where Jacob Bruce worked, he was the brother-in-arms of Peter I. In the observatory there were spyglasses, sextants, quadrants and more than 2m in diameter globe of the starry sky brought from Holland.

Pulkovo Observatory

The largest in Russia Pulkovskaya observatory was founted in 1839. It was equipped with most perfect instruments in particular with the biggest in the world 38-cm refractor. The main directions of work are the definitions the stars coordinate and celestial constants such as precession, nutation, aberration and refraction as well as discovering and measuring of bouble stars.

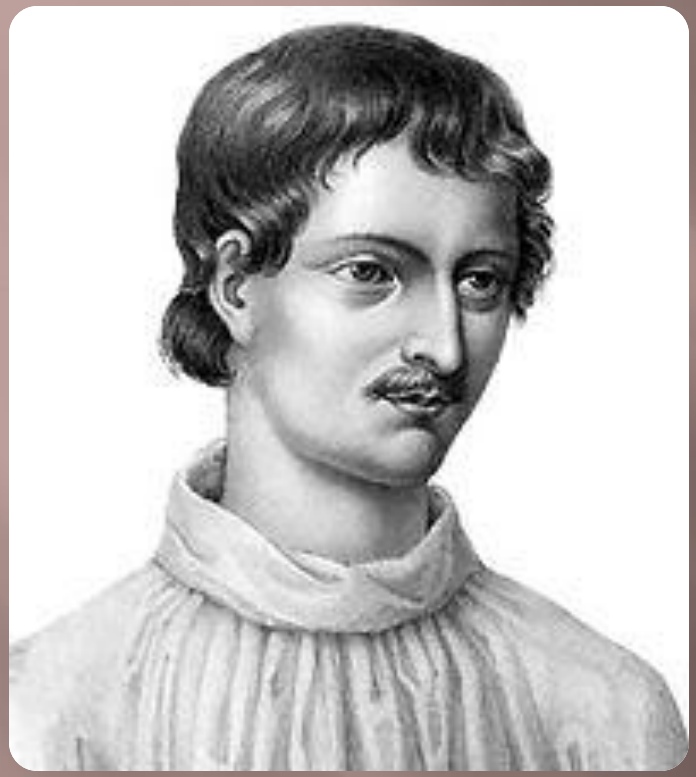
As is enormous contribution to the development of science of the structure of the universe of Greek and Roman scholars

- Anaxagoras (the birth of universe – «onest mixture»),
- Pyphagor (divided the mathematical harmony of space)
- Aristotel (the person «stopping the Earth»)
- Fales Miletskii,
- Platon
- Archimedes (measuring of sky)
- Evaox (the first theory of planets` motion)
- Eratosfen (the measurement of the Earth)
- Klavdii Ptolemei.

Johannes Kepler

formulated 3 laws of the planetary motion and the law of planetary kinematics; he derived the «Kepler`s equation» for determining the position of celestial bodies.

Dzherdano Bruno

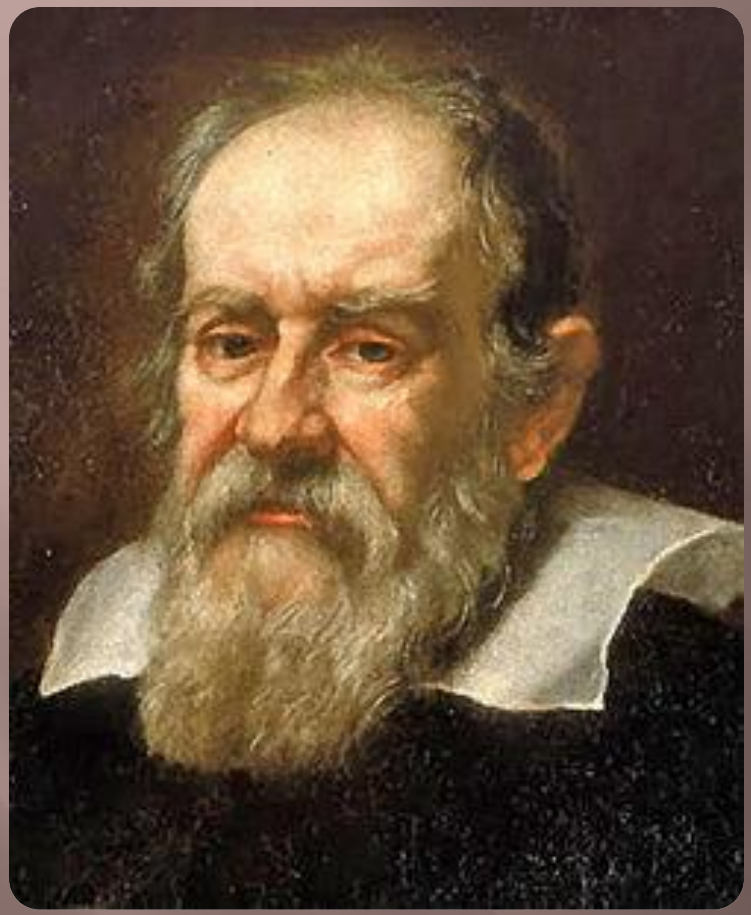


worked out the theory about 5 elements and supposed possibility of the life on other planets.

Tycho Brahe

made exact solar tables and measured the year length with the mistake less than a second; observed ultranew star in the Cassiopeia constellation; stuck to idea of extraterrestrial origin of comets, recognised the slope change of the moon orbit to ecliptic.

Galileo

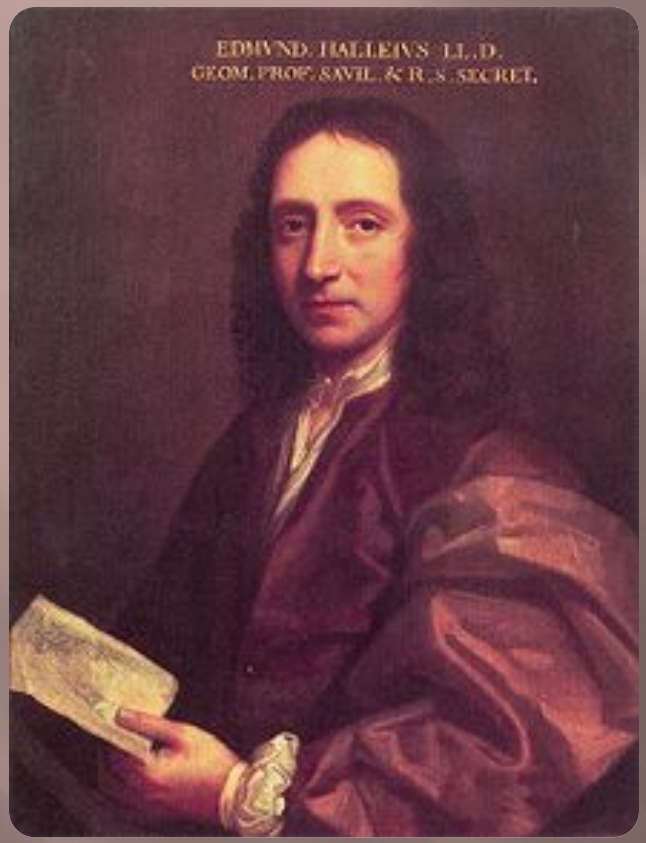


In 1608, Galileo and his simple telescope brought the heavens into focus, setting the stage for modern astronomy.

Nicolaus Copernicus

was the author of the heliocentric system and began the first scientific revolution

Edmund Halley



discovered the large Jupiter and Saturn inequality; derived orbits of 24 comets; discovered stars` motion and explored nebulars.

Lomonosov, Mikhail Vasilyevich

Discovered the atmosphere and a luminous rim on Venus; built the new optic devices for celestial observations.

Struve, Vasily Yakovlevich

was an active participant of Pulkovskaya observatory foundation, determined the system of astronomical constants and aberration of light constant; he well-founded the conclusion about existence and the value of the interstellar mergence of light; composed 2 two catalogs of double stars.

Bredikhin Fedor Aleksandrovich

systematically observed the Sun`s chromesphere, took photos of sunspots; investigated the surface of the Moon, Mars and Jupiter; explored the chemical composition of gas nebulas.

Konstantin E. Tsiolkovsky

was the founder of modern space exploration and rocket technology; developed rocket schemes for distant action and rockets for interplanetary voyages, worked out the theory of the motion of composite multistage rockets; he was the first man, who developed the idea about artificial satellite Earth.

Sergei Pavlovich Korolev

was the founder of aerospace technology and the USSR rocket weapon production; the founder of practical space. He was the «father» of practical astronautical science. Korolev heated the creation of the first soviet strategic rocket and was the top designer of the first in the human history artifical satellite of the Earth.


The new era of space exploration began when the first artificial satellite of the Earth was launched into space.
The Light
By: Steve Omac

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