

## Gian Domenico Cassini 1625-1712

Gian Domenico Cassini holds a considerable position in the history of astronomy for the remarkable impetus he gave to the development of this discipline. In France he had the honour to be referred to as Cassini I.

He was born on 8 June 1625 in Perinaldo, in the county of Nice, when that territory still belonged to Italy. He finished his studies in the Jesuit college in Genoa showing a special interest in poetry and astronomy. Still during his youth he became so famous as an astronomer that the Marquis Cornelio Malvasia, senator of the city of Bologna and lover of astronomy, proposed that he should take care of his private observatory. Cassini arrived in Bologna in 1649 and a brilliant, meteoric career began.

Observing the comet of 1652, Cassini demonstrated, as Tycho Brahe had suggested for the 1577 comet, that it was much more distant than the Moon. It became evident that comets were celestial bodies which moved among planets perforating their incorruptible spheres and not exhalations of the terrestrial atmosphere, as asserted by the old Aristotelian physics views.

One of his most important masterpieces was the construction, of the biggest world meridian line in the big San Petronio Church of Bologna. With accurate observations of the Sun's disk projected on the floor of the church he measured how much the diameter and the velocity of the solar image varied during the year. In this way he demonstrated that the apparent motion of the Sun was in agreement with the expectations of Kepler's Second Law, i.e. that celestial bodies move more quickly when they are closer to the Sun and slower when they are distant from it.

Thanks to the excellent telescopes produced by skilled Italian instrument makers, he discovered the "Big Red Spot" on Jupiter and calculated the rotation period of the big planet. He observed some details on the surface of Mars and determined the rotation period of this planet too. He carried out such accurate observations of the motion of Jupiter's satellites that these studies were used for a long time in the attempt to solve a fundamental problem; the determination of terrestrial longitude, a longstanding problem for sailors.



He showed that comets were beyond the Moon





Cassini's fame reached France and Louis XVI invited him to Paris to set up the new 'Observatoire Royal. Cassini carried out further astronomical observations and discovered, among other things, Saturn's satellites and the separation in the rings (now carrying his name) which surround the planet. In his honour and of the great Saturn researcher Huygens, the space mission heading towards this planet was named Cassini-Huygens.

A great importance has to be given to his calculation of the distance Earth- Sun that he derived using Kepler's Third Law from the simultaneous observation of Mars carried out by himself in Paris and by Jean Richer in Cayenne. At last, astronomers were able to assign to the Solar System its right dimensions.

In 1673, despite being recalled to Italy by the Senate of Bologna and by the Pope, Cassini decided to stay in Paris. He married, and his son Jacques, born in 1677, was brought up at the observatory where he was destined to succeed his father.

The Cassini dynasty ended with his grandnephew, Cassini IV's son, Alexandre, jurist and botanist, who was arrested and imprisoned during the French revolution. Close to death, and almost blind, Cassini dictated his biography before he died in Paris on 14 September 1712 at the age of eighty seven. He was buried in the church of Saint Jacques du Hautpas with a very simple gravestone "J.D. Cassini Astronome".

## 'the Cassini Division