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“CASSINI – SCIENTIST FOR A DAY”

SATURN AND ITS RINGS

(a mysterious giant)

Saturn is the sixth planet of the Solar System and the second as size after Jupiter. Although there is no exact information about the planet's structure, they think that inside it there a rocky core surrounded by hydrogen and helium, its core having a similar composition as the one of the Earth. Above the core there is a thick layer of metallic hydrogen, followed by a layer of liquid hydrogen and helium, and in the outside space at about 1000 km there is the gaseous atmosphere. There are traces of ice too. The region of the core is estimated to be equal at least to 9 times the mass of the Earth. Saturn has a hot core estimated to have the temperature of 11 700 °C and radiates energy twice and a half more than it receives from the Sun. The biggest part of the energy is generated by the Kelvin-Helmholtz mechanism (slow gravitational compression), but the heating of the planet cannot be explained just through this mechanism. An additional suggested procedure by which Saturn creates its heating is the helium „rain” from the interior of the planet, the drops of helium release the heat through friction as they fall down through the lighter hydrogen.

Saturn presents a system of rings which are made of ice particles and small quantities of dust and rock wastes. The size of these particles varies from the size of a grain of sand to the size of a bus. The Cassini prospecting hole studied the rings with the help of a special spectrum with ultraviolet rays and it resulted, for example, that the particles of the main rings (called A and B) are made of pure ice in a proportion of 90-95 %, without traces of carbon dioxide, ammonia or methane.

The news brought by the Cassini prospecting hole show to the researchers new aspects about the formation of the Saturn's rings , and the new scenario refers to the formation of the rings as a result of a collision between a „newly captured” satellite by the Planet and an external massive object , inside „a late massive bombardment” which affected the entire Solar System.

As a result of the clash an explosion took place, the resulted substance was then uniformly redistributed, as rings, surrounding Saturn.

I believe that Target 3 : Saturn and its rings are of a high interest to discover new mechanisms to produce the Planet's heating and the explanation of the turned red rings, noticed in the visible light, different from the white bluish colour specific to the ice on the Earth.

It would be interesting to find out if in these pieces of ice, which compose the rings, there are forms of life as were found in glaciers of Antarctica.