

NEW TASKS ON MARS INVESTIGATION IN INTEREST OF COSMOGONY, PLANETOLOGY, AND VERIFICATION OF JORDANO BRUNO'S HYPOTHESIS ABOUT GREAT NUMBER OF INHABITED WORLDS. E.V.Dmitriev, Euro-Asian Astronomical Society (EAAS), Moscow, e-mail: deva1001@mtu-net.ru

Basis. The hypothesis about Megatungus explosion in the primary atmosphere (PMA) of the Mars due to which the planet dichotomy was created [1,2] requires to be verified. The hypothesis supposes that the temperature in the Mars nourishment zone was low thanks to this the planet embryo had time to absorb significant portion of pre-planet cloud gas and further increment of the planet mass had taken place already in presence of PMA. This circumstance became the determining factor during the planet forming and its early history. Due to PMA the Mars obtained torque, its rock body wasn't exposed to high warming-up and was protected against right catastrophic impacts of large objects within the period of giant meteorite bombardment of the Solar system planets. This scenario of the planet forming and its relative small mass – ten times as lighter than Earth – didn't favor to evolution of endogene processes characteristic of Venus and Earth. Mars kept its original view that is why its superficial layers would be satiated with fragments of comets and asteroids, and other space objects.

The incomplete scenario of the planet forming [3] showed that the determinant stipulating the Solar system forming became the moment when intensive star wind of the proto-Sun appeared. Namely this circumstance divided the Solar system into two groups differs sharply from one another as to their properties – the planets of the Earth group and the gaseous planets-giants. There are many considerations allowing to suppose that this scenario of the planet forming is most likely ordinary phenomenon. All the above raises definite hope for enough high percent of probability that the Earth-type planets could be appeared near several star types on which the life could be conceived and transformed in highly developed civilizations in time. Most probably that the evolution of such civilizations was accompanied with exhaust of large amount of their activity products into space. The Solar system crossed many times the Galaxy branches characterized with heightened star population during its motion about the Galaxy center. A very long period of time (~4.5 billion years) and good keeping of substances disposed onto the Mars surface thanks to its neutral atmosphere give reason to raise a question about purposeful search of artifacts or signs of non-Earth's civilization

representatives staying on the Earth. It is necessary to note that the Mars surface areas almost equaling to the Earth's land, which is being permanently renewed. To verify the suggested ideas it is proposed to perform a series of purposeful right investigations of Mars with the help of automated probes.

Tasks. The main tasks of the suggested investigations are to collect material evidences of: the planet PMA availability in past (task No.1); the Farcide hill forming due to joining of large planetzimal to Mars (task No.2); influence of shock waves created during the Megatungus explosion upon the planet solid surface (task No.3); availability of non-Earth civilization activity products or signs of staying on the planet. (task No.4).

Investigations. According to the suggested hypothesis [3], the Mars lithosphere created as a result of the subsequent deposition of high-melting component of PMA was not melted and was not significantly changed later on. During the final phase of the Mars accretion, PMA dust deposition should be accompanied with gravitation-aerodynamic separation of substance that should cause poorness of atmosphere upper strata as to heavy elements and enrichment with light elements. That is why Task No.1 can be solved by investigating the lithosphere upper layers up to depth of several kilometers beyond the boundaries of the north planet depression. Scientists are very lucky in this case. It was noted many times that Mars is unique planet as to science. Many billions years ago the Mariner canyon had "ripped up" lithosphere up to depth of 7 km thus to solve Task No.1 it is required only to investigate the observed layers of the canyon walls up to the maximum possible depth. For this purpose it is necessary to deliver to the planet surface a winch (main module) and robot-cliffer. The winch should be secured at brink of the most deep place of the canyon to be able to lower or lift the robot-cliffer which would be investigate subsequently the canyon wall layers. The main module would provide power supply and control of the robot. Meanwhile it should be able to move in different directions, be protected against overturning or be able to recover its operational position after overturning. Investigation of soil layers of the canyon walls of the Mariner valley would allow the estimate of the saturation degree of the Mars surface

with meteorite substance to be made. It may appear that the significant part of the rocks observed on the planet surface are impact ones as well as fragments of comets and asteroids fallen out onto its surface during the billion years.

The second task is solved significantly easier: it will be sufficient to find the signs of general impact-metamorphosis transformation of rock in the most lowered parts of the north depression allocated between 70° and 50° NL, i.e. within the zones of maximum shock waves affecting upon the planet surface created due to the Megatungus explosion. Besides these rocks shall be depleted with volatile components in comparison with the lithosphere upper layers of the southern hemisphere. The most suitable objects to be investigated might be breccia released from craters. To perform these investigations the Mars Exploration Rovers of "Spirit" and "Opportunity" types could be used well.

The same way could be used for solving the third task. It is necessary to determine what rocks (volcanic or sedimentary rocks) make the Farsid hill spurs jutting into the northern depression.

To solve the fourth task - searching of extraterrestrial civilization signs - it is

necessary to perform the detailed photographing of the planet with resolution of one decimeter or better prior to start up the intensive exploration of Mars. This photographing could be realized with the help of low-orbit satellites or onboard equipment of aircraft. When «suspicious» objects are found the Mars rovers equipped with manipulators should be sent to them. This will allow to perform three-dimensional photographing and to extend significantly the possibility of their investigation.

Scientific significance of the proposed investigations. In contrast to many Mars programs having cognitive character and are designed partially to be luck the suggested investigation plan has sharply defined goals to be sought and directed to solve fundamental problems of planet creation, early history of Mars and other planets as well as to find another civilization signs.

References: [1] E.V.Dmitriev. Near-Earth astronomy – 2003, Proceedings of Terscol conf., v.1, 2003. St.Petersburg p.134-140. [2] E.V.Dmitriev. 38th Vernadsky-Brown Microsymposium, CD-ROM, # MS014. [3] E.V.Dmitriev. Near-Earth astronomy – 2003, Proceedings of conf., v.1, Terscol, 2003. St.Petersburg, p.141-145