

## **Can There be Living Beings on Mars? (Mongole jeeb thakite pare kina)**

Translated from Bengali by

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Among all the planets discovered in the galaxy till date, the internal features of Mars can be considered the closest to that of Earth's; therefore if any planet is found to be suitable for living beings like those living on Earth, it has to be Mars. We can see that heat, light, water and air are the primary sources of sustenance of plants or animals including humans. As far as it has been known, Mars possesses all the above features like that of Earth. The length of day in Mars is almost equal to that on Earth and that is why Mars gets the same amount of heat and light from the Sun as that of Earth; therefore it is not the abundance or lack of heat and light that makes Mars suitable for living beings. But does Mars have water or air at all?

In order to show clearly what science has to say regarding this matter we are presenting the gist of an essay written by astronomer Proctor.

There is water on Mars. If seen through binoculars, one can see that the two extreme edges are whiter and brighter than the rest of the planet. From this very assumption scientists have concluded that Mars also has got two poles covered with snow just like Earth has. Maraldi was the first to identify these two spots and also noticed that one of the spots is gradually becoming smaller.

But even this notion could not explain the actual phenomenon. He could not think of the fact that probably those points were covered with snow like the poles of Earth and one was becoming smaller due to the advent of summer; not being able to recognize the actual cause, he ended up assuming that those white spots will finally vanish or become invisible while getting smaller gradually and he even calculated the exact date and time when it was about to happen. But that actually did not happen. Half a century later when Sir William Herschel examined Mars minutely through binoculars he could still see those spots. He then attempted to explain the

reason behind it which is accepted by present day scientists as well. It is a known fact that due to the presence of snow Atlantic Ocean is not as easily navigable in winters as it is during summers. Similarly, the snow-capped polar-regions of Mars also alter due to climatic changes.

At this point a question may arise—anyone may ask whether there is any proof that polar-regions of Mars are also covered with snow like those of the Earth? May not there be any other reason behind the brightness of the two edges of the planet?

If we want to come to a conclusion regarding this, first of all we need to know whether there is any ocean or sea on Mars. We all know that the light that emits from Mars are redder in colour compared to any other planet, but one cannot see the redness if seen through binoculars. Apart from the whitish spots on both edges, one can also find beautiful bluish green patches on the surface of Mars just like those on the surface of the Earth indicating the presence of oceans. If they really happen to be oceans then it can be said that the ratio of land and water on Mars is almost equal and that also clears the doubt about the presence of snow-capped polar-regions at the edges of Mars.

But how can one prove that those greenish spots are actually oceans? When no astronomer can find this truth about Mars, then how can this doubt get cleared?

There seem to be one way out. Colour-detecting machines can come to this rescue and that is exactly what has happened. This machine cannot detect that—but if those greenish patches happen to be oceans and those bright whitish spots be snow-capped polar-regions then that very result may lead astrologers and scientists to come to a certain conclusion. If a planet displays far-fetched oceans along with snow-capped polar-regions then it becomes quite evident that those snow-capped regions are born out of the huge amount of condensed air evaporated from the ocean surface. It is possible to detect the presence of this huge amount of water vapour through colour-detectors.

When a ray of light travels through various atmospheric layers it shows certain types of black patches when made to pass through a spectrum. Now, the light we get from Mars is nothing but the light reflected from the Sun itself but before reaching Earth it has to pass through the layers of heavy water vapours of Mars twice. Once while going from the Sun to Mars and the second time while returning from Mars to the surface of the Earth. Likewise, a colour-detecting machine can easily detect whether the light has passed through the layers of water vapour while

travelling from Mars to Earth. Let us now see how far Dr. Huggins has been successful in this experiment.

While examining the light on the colour-detector on 18<sup>th</sup> March 1868 he could see the blackish patches as mentioned in the spectrum.

One could see similar black patches on the light spectrum of Mars as one would see when Sun comes closer to the orbit and its light passes through a thick layer of water vapour. In order to identify whether those black patches are part of water vapour of Mars or Earth he decided to remove the machine from Mars towards the moon. At that time the moon happened to be closer to the orbit than that of Mars—therefore if the black patches belonged to Earth it would have been more distinct and visible while examining the moon but no such spots were found. Thus it became clear that those dark spots were part of Mars and not Earth. Therefore it also becomes quite evident that those greenish patches were oceans and the whitish bright spots were nothing but snow-capped polar-regions. Therefore, it can easily be said that Mars is quite similar to Earth in all these features. Mars has oceans like Earth has got, it also exhibits the phenomenon of condensation of evaporated water vapour from oceans giving rise to snow-capped polar-regions which in turn also diminishes in size owing to climate change. Not only this but Huggins' experiment also tells us that those huge amount of water vapour evaporated from the ocean surfaces can reach the polar edges only by one way. If Mars has a coating of water vapour or an atmospheric layer around it, then only that water vapour can reach the polar edges passing through the layers. That indicates Mars is also surrounded by multiple layers of water vapour just like Earth is. Though it is still not known for certain whether the nature of the air layers of Mars are similar to that of Earth or not, it can surely be said that since no unknown or unidentified spots were found on Mars after examining through the colour-detector, it may not contain any other gas other than the ones Earth's air layers contain. Initially when people used to examine Mars through binoculars, they were misled about the air layers of Mars. As they found no stars or planets at the vicinity of Mars, they thought the air layers or the atmospheric layers of Mars were very far-fetched—which was nothing but an optical illusion which is now a proven fact.

We could find every necessary thing on Mars required for the sustenance of living beings. Let me conclude my essay by referring to Proctor once again. He said, that winters and summers occur according to climatic changes in the Northern and Southern edges of Mars where

everyday activities from morning to evening, in fact every change that takes place on hourly basis like—accumulation of clouds, rainfall, dispersion of sunrays among the clouds, etc. and all other changes or alterations that we can see in our Earth’s sky—everything can be seen on the surface of Mars through a powerful binocular.

**Source:**

Devi, Swarnakumari. “Mongole jeeb thakite pare kina.” *Bharati*,1885.

**About the Author:**

Swarnakumari Devi (1855-1932), daughter of Debendranath Tagore and elder-sister of Rabindranath Tagore, is one of the most prolific woman writers of nineteenth century Bengal. She was the first woman to write on scientific facts ranging from physics to astronomy and through her simple way of writing she aimed at popularizing science among common people in order to eradicate ignorance and superstition. Her scientific essays published in the journal *Bharati* during 1880s hold a special significance because she was progressive enough to choose to write on the unexplored area of science during a time when women were even denied education.

