

Knocking on heaven's door is not so difficult

Skies over Belarus show us northern lights and mysterious noctilucent clouds

By Olga Belova

Most of us know about astrology, horoscopes and how the planets influence our destiny but few people can find Mars in the sky. Many fail even to know that the Milky Way is our own galaxy.

Venus, the planet of lovers, has a surface temperature of 500 degrees and is hidden by dense clouds of poisonous sulphuric acid, while Jupiter, Saturn, Uranus and Neptune lack firm soil, being comprised of gas. Comets are assumed to hail from mysterious Oort Cloud and our nearest neighbours are the Andromeda Nebula and Triangulum galaxies. Together with our native Milky Way, and 40 other small galaxies, we are part of the Mass Merger of Galaxies. In our galaxy alone, according to conservative estimates, there are 200-400 billion stars.

We may show interest in our zodiacal sign but few of us really ponder the universe in which we live, laments astronomer Victor Malyshchits, a senior teacher with the Physical Informatics and Atomic and Molecular Physics Department, of the Physical Faculty of the Belarusian State University. "Unfortunately, we're observing a slight decline in interest in astronomy and towards the 'occult'. It's understandable, as mysticism is easier to internalise. There was an unprecedented surge in interest in astronomy a few years ago, with demand for factory-

manufactured telescopes rocketing. People even began making their own and astronomy clubs flourished. I visited some in my native town of Glubokoe."

Northern lights

In June and the first half of July, the sky over Belarus has not been so interesting but August brings a beautiful panorama of the Milky Way. Mr. Malyshchits tells us, "In the sky over Belarus, you can view 'unnatural' phenomenon for our latitude, such as the northern lights. These are almost unpredictable but are well visible when there are sun flares. You can orientate your position from such magnetic storms. However, our limited eyesight prevents us from seeing these in all their beauty. You can take spectacular photos though.

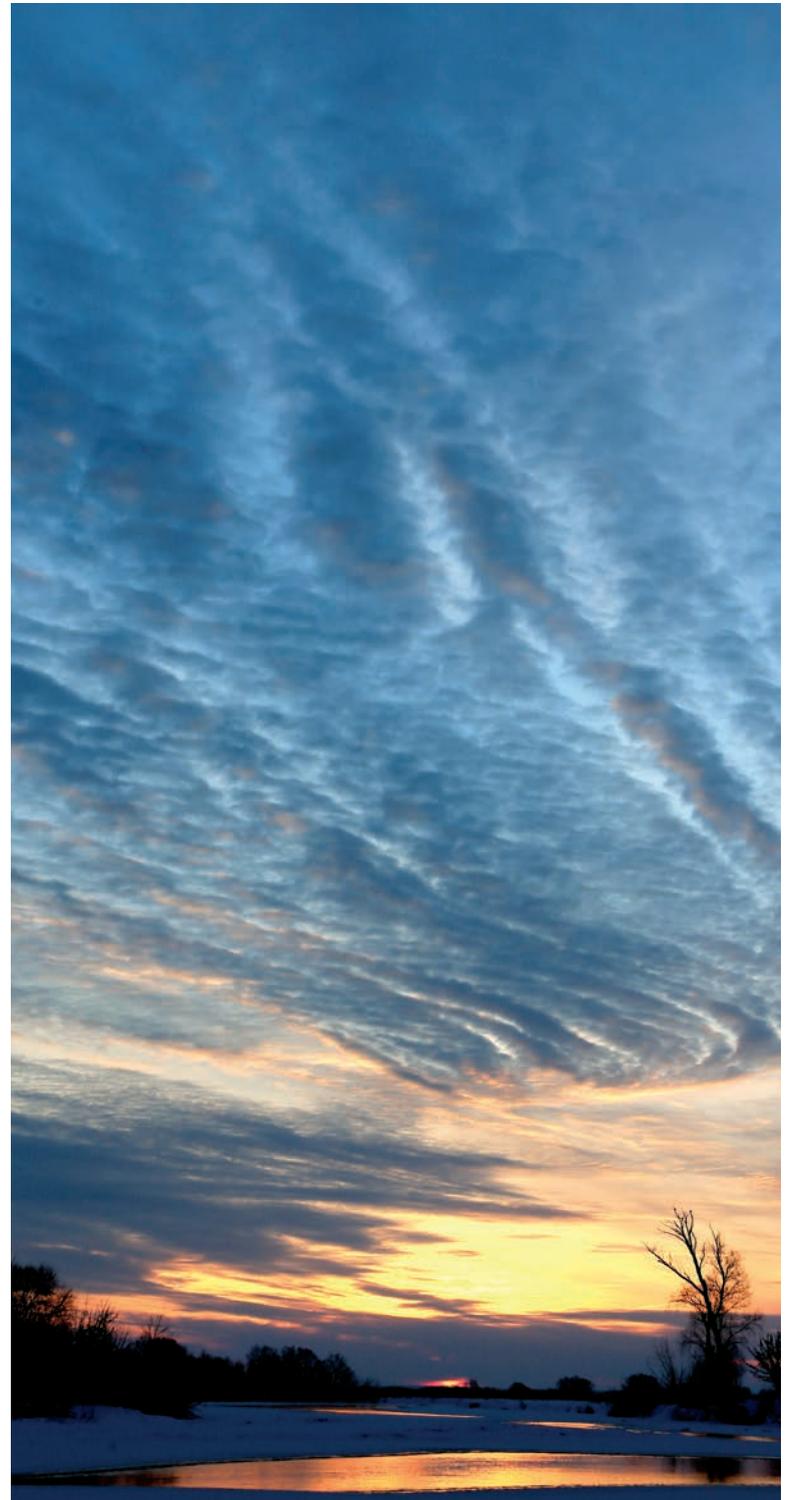
Noctilucent clouds — an unsolved mystery

From Belarus, you can see one of the most mysterious phenomena: noctilucent, or mesospheric clouds. Unlike usual clouds, these 'dwell' at a fantastic height of at least 80km. They aren't visible during the day and are not reached by probes, so scientists still dispute their nature. Most believe they comprise dust from destroyed ice meteorites. They move at high speeds of about 100m per second and take fanciful forms. They appear only in summer.

"They are a mystery," says Mr. Malyshchits. "They've appeared only a few times in winter and are more distinctly visible in our country than further north, where the sky is brighter at night. They're usually seen at midnight or just before dawn, being otherwise absolutely invisible. On bright nights, they are dark or, even, black. It is surprising to realise that, above noctilucent clouds, there is only space. By a successful coincidence of circumstances, they can be observed several times over the summer.

Is there life on Mars?

Mysterious Mars is visible from Belarus so how can we refrain from asking the eternal question? Mr. Malyshchits explains, "Theoretically, there may once have been life on Mars and there was certainly volcanic activity, sending considerable volumes of gas into the dense atmosphere. The air must have contained carbon dioxide, creating a greenhouse effect, and warmth, as on Earth. It has already been proven that there were a great many rivers, lakes and seas on Mars but liquid water can no longer exist on the surface of this planet, due to pressure being too low: water immediately takes gas form. However, underground, there are major deposits of ice. We still don't know whether there is life on Mars."



Unusual sky over Mogilev Region's Bykhov District

Are we alone?

"From time to time, certain radio impulses and flashes are picked up — which some take as signals from extraterrestrial civilisations," admits Mr. Malyshchits. "Eventually, some are explained; some are not. We still don't know

much about space. Today, several remain unexplained; for example, 'Wow' signals. These only flash once, which is inconsistent with effective transfer of information. We are yet to find any steady or repeated signal from any star or galaxy."

Terminator-style mission possible



Sergey Gvardeitsev

Belarusian programmers helping create and test self-restoring processors for spacecraft

Unassailable processors are being developed for modern communication satellites, using microcircuits resistant to external factors. "These processors will operate reliably in space, where each object is subject to the influence of solar particles," explains Sergey Gvardeitsev, the General Director of Belarusian Itransi-

tion — a High-Tech Park resident.

"The processor can self-restore and continue stable functioning, even if up to 75 percent of a microcircuit surface is burnt by the sun. It's like a scene from *The Terminator* film, when the main, robotic, character restores itself, to continue its mission," notes Mr. Gvardeitsev.

Transition is to test chips and develop software for the special processors. "Each costs up to \$300,000 but differs from usual processors in having very long life-span," adds the General Director.

Belarusian companies have already sewn chips into 'smart' Adidas training shoes — developed by IBM, with Belarusian programmers making the software. "We developed technology which allows data to be collected while wearing the trainers — such as counting steps taken. The major challenge was to make the chips extremely light. Moreover, not all interfaces were suitable," notes Mr. Gvardeitsev.

Comfortable and secure plane take-off, landing and parking



Passenger service at Minsk National Airport

Significant funds allocated to reconstruction of National Airport terminal in Minsk

Dmitry Melikyan, the Director General of Minsk National Airport, has told the Minsk City Executive Committee, "Reconstruction at Minsk National Airport terminal is being conducted as a part of

preparations for the Ice Hockey World Championship in 2014: this year, Br324 billion have been allocated, including Br254 billion for buying equipment."

The number of parking bays for aircraft is to be expanded, adding 11 to the existing 45, at a cost of Br150 billion. The second

and third stages of reconstruction are to include the building of a modern international terminal and a second artificial runway — as part of a turnkey contract signed by the Department of Aviation of the Ministry of Transport and Communications of Belarus, with a Chinese company making precision machinery. Chinese Eximbank is providing a loan for this purpose.

The new runway should be operational by 2017 and the terminal completed by 2020. Total investments will amount to more than Br4 trillion. A special entrance and exit for taxis is planned, to allow convenient passenger drop off and pick up while ensuring security. In addition, an exhibition centre, a hotel complex with multi-level parking and a Centre of Business Aviation are being built. There will be 16 hangars for planes, a stop point and a high-speed rail link to the capital.