

Sparkling emerald jewels

Minsk underground is now full of adverts for man-made emeralds: ‘High quality professionals ready to make emerald necklaces, earrings and rings for you — cheaply!’ and ‘The most beautiful pendants from emeralds and rubies — anytime — for your beloved, at an affordable price!’

By Svetlana Petrova

The photos are so mesmerising in their beauty that few women would be able to resist. Tempted myself to follow the style of the TV series *Magnificent Century*, I phoned the number and was told that I could have any item made to measure, to my own design, or could select from the catalogue. The man who introduced himself as Alexander added, “Where do the gems come from? Dear girl, we’ve been buying them from the Academy of Sciences for over a year. The cost is very affordable: about \$60 per carat. They look even better than ‘genuine’ ones, believe me; even jewellers agree!”

Having decided to learn more about gems, I go to the Scientific and

Practical Materials Research Centre of the National Academy of Sciences of Belarus, where emeralds are synthesised, under high-temperature conditions.

“Our ‘cultured emeralds’ (rather than natural or ‘wild’) are proving popular: more than a thousand people have bought from us,” notes Vladimir Merkulov, the manager of the enterprise’s laboratory. “Many people buy the gems ‘raw’ — to give

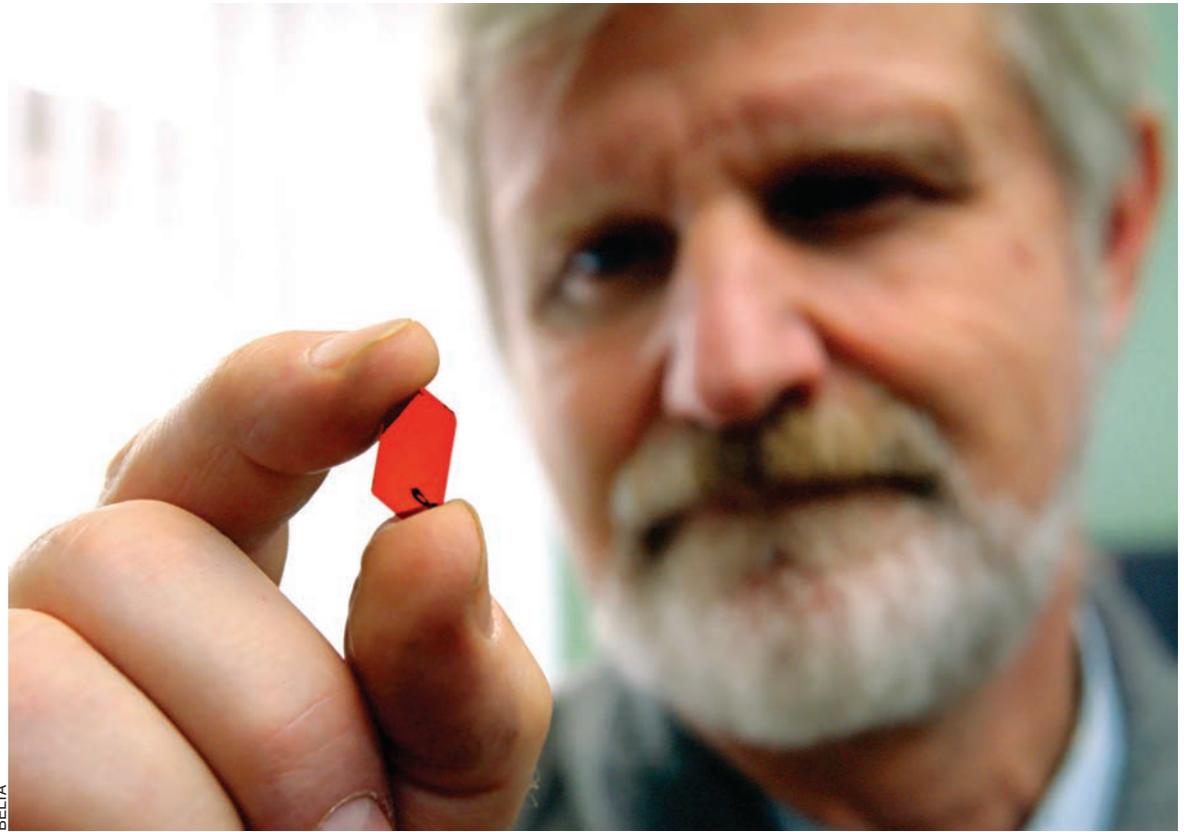
to workshops for making rings, earrings and pendants. At the end of 2010, scientists discovered how to grow red emeralds, which are extremely rare in nature, found only in the American state of Utah. Growing red emeralds in artificial conditions holds much potential, so the NAS has plans to improve its methods, in order to grow larger gems.”

Today’s Belarusian emeralds are sold through trade networks coun-

trywide, as well as being exported. Recently, Chinese companies bought a batch and are so pleased by the quality that they now wish to purchase the technology themselves. Many jewellery companies were interested in our gems: in particular, Swarovski. The company has announced their interest to buy trial designs of crystals to facet them at its capacities.

“We can adjust the colour to

suit the buyer, while adding characteristics seen in natural deposits — in Colombia, Brazil, Zambia and Russia. We have special equipment and invite the best diamond-cutters to cut any kind of facet, according to the customer’s wishes,” says Mr. Merkulov. “Since we grew the first emerald, eight years ago, we’ve sold more than 10,000 carats of gems — bought by more than a thousand people. Belarusian consumers can also buy ‘cultured emeralds’ in Russia, at a lower cost, but most jewellers say that Belarusian emeralds are more beautiful and gleam more brightly. Ours are grown in a special furnace at 1,000 degrees Celsius, over three months, while the Russians use hydrothermal technology, taking only a few weeks.”



Scientists from National Academy of Sciences able to grow artificial emeralds in the unusual shade of red

The MT’s reference

Since the second half of the 19th century, experts in several countries have tried to solve the problem of emerald synthesis, with the first successful experiments dating back to 1888 (France). The first true artificial emerald was created in 1935 in Germany, by scientist G. Espig and his colleagues, for IG-Farbenindustrie enterprise. It was called an igmerald (using the first letters of the firm’s name and the English word ‘emerald’). Since the 1940s, the Americans have pursued industrial production of igmeralds. Today, emeralds are produced in Germany, France, Switzerland, the United States, Japan, Russia and, of course, Belarus.

Exploration of life under Lake Nizhneye

Belarusian polar explorers are conducting unique world research on the icy Antarctic continent, aiming for a breakthrough in microbiological and pharmaceutical sciences

By Alina Sergeeva

After spending four months on the icy continent (three ‘alone’ at the Russian Antarctic Vechernyaya Mountain station) our Belarusian team has returned to Minsk, laden with photos and videos showing a diverse range of biological samples, including those from snow and water, Antarctic mosses and lichens.

Special attention has been paid to microbial diversity, with some even able to absorb oil from spills. New Belarusian equipment designed specifically for use in low temperature conditions has been tested, including radar to study the ice sheet in Antarctica. Our Belarusian polar explorers liaised with Russian colleagues for some of their experiments, following close co-operation having been established long ago. Alexey Gaidashov, the Head of the Belarusian Antarctic expedition, tells us more.

How are our Belarusian polar explorers co-operating with Russian colleagues?

Belarus and Russia are strategic partners in most areas of international activity. Co-operation in Antarctica is just one further example. On March 15th, 2013, the Government of the Republic of Belarus signed an agreement with the Government of the Russian Federation regarding co-operation in Antarctica, following a meeting of the Supreme State Council of the Union State, in St. Petersburg. Our partnership is focused on scientific, logistical and transport spheres. By using the well-established transport pattern of the Russian Antarctic expedition, Belarus can send people and materials simultaneously, saving money. Of course, we pay our way fully on board ship.

With the Russians, we’re planning joint research programmes for engineering and technical work. Together, we’ve been conducting certain types of research and observations, receiving planes during the summer Antarctic season, organising environmental activities, carry out loading and unloading operations and, where



Belarusian polar explorers realise a number of scientific projects in Antarctic

necessary, carrying out joint rescue operations and activities to ensure the safety of people. We also regularly exchange scientific information.

Is Antarctica really the perfect testing ground for certain devices?

Absolutely — because of the lack of human disturbance. In the Antarctic, we’ve previously tested Belarusian subsurface probing radar devices, which allow us to look under the surface of the snow — from

100m to a few kilometres. This locator can be used for engineering surveys in constructing large sites.

We carried out some studies for the first time: unique to world science. One such is the exploration of an old lake called Nizhneye. For many thousands of years, it has been covered with 1.5-2.5m of ice, with water temperatures of minus 1 degree. Under the ice is a riot of life: multitre bacterial mats, which are

huge areas of interconnected micro-organisms. From outside, they appear to be brown and green but closer inspection reveals other bacteria, yellow or orange in colour. For the first time, we’ve managed to pick up samples of sediment from the bottom of the lake. Around Japanese Syowa Station, which is 300km from our base, similar research was conducted last year. However, the core explored by the Japanese was quite small: 60cm (to our

1.75m). Ours is really unique. Of course, there may be yet more unknown or long extinct bacteria and micro-organisms to discover.

When will we gain our own Belarusian polar station in Antarctica?

In autumn 2014, the first module of our station is to be delivered to the Antarctic, with the first phase of its construction to be completed in 2018. However, to implement this plan, we need to make adjustments to the state programme by which the project is funded.

The presence of our own station will represent more than our ‘business card’; it will be an important factor in determining our place within the Antarctic community. Belarus has signed the Antarctic Treaty and has approved the Protocol on Environmental Protection, coming to the Antarctic with serious intentions. Our main objective now is to acquire the status of a consultative party, gaining the right to vote, to veto and to influence decision-making regarding the future of this continent.