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Pushing the limits

Anna Zimmermann dreams of becoming an astronaut. Or working in a research station in Antarctica. The medical student is fascinated by living in hostile environments.

DÖLF BARBEN

She does not parachute off cliff edges. Nor does she spend ten days cycling across America. She wants more than that: if Anna Zimmermann could fulfil her dreams, she would experience things beyond the realm of extreme sports.

Where she wants to go, “staying outside would mean fairly rapid death”, as she puts it. The places Zimmermann is referring to are the International Space Station, circling the Earth at an altitude of 400 kilometres, and a research station in Antarctica.

Living in extreme conditions, surviving in the most inhospitable places, is a long-held fascination for the 29-year-old medical student from Aargau, who lives in Berne.

Keep dreaming bigger

Where does this interest come from? It is more of a fascination, says Zimmermann as she talks about “people”, who have evolved over millions of years within a “very narrow set of environmental conditions”. She is consumed by the thought that people have always tried to leave “our ecological bubble” to venture “into the unknown”. This desire drives technological development, she says, “allowing us to keep dreaming bigger”.

She is particularly fascinated by the power of the mind. You can train your mind to overcome physical boundaries. “Nonetheless”, she says: “the human psyche is extremely fragile. As people we are irrevocably bound to other people – and dependent on them.”

From a young age, Zimmermann has been keen to push her own boundaries. She signed up for military service, completed her officer training, and participated in endur-



“My philosophy for life is to remain interested and open and see what opportunities arise.”

Anna Zimmermann

ance exercises. She has also been adventurous as a civilian. She spent 19 days trekking in Nepal, for example, mostly at an altitude of over 4,000 metres in the biting cold and without a change of clothes. This February, she also attended a polar medicine course in Norway on first aid for cold injuries.

The driver: curiosity

She has learned a lot through her adventures, both about herself and others. For example, Zimmermann now realises that she likes it “when the daily routine is stripped to the basics, when things are simple. It’s liberating”. She is also keen to point out that she does not do all these things “to

tick the right boxes – it’s curiosity that drives me”. This curiosity keeps her pushing the boundaries, including in the direction of space travel over the past few months. “That’s where all my interests converge,” she says. Zimmerman realised this on a visit to the Kennedy Space Center in Florida almost a year ago.

Following this realisation, she began to seek out possible touch points. She came across Concordia research station in Antarctica, which is run by the European Space Agency (ESA), where researchers work in one of the world’s most remote locations. It is almost as if they were in a spaceship. Swiss doctor Jessica Kehala Studer is currently there.

On the ‘Moon’ near the Gotthard Pass

And then came Asclepios, the organisation founded a few years ago by students for students at the Swiss Federal Institute of Technology Lausanne (EPFL), which simulates missions to the Moon. The fourth Asclepios mission started this summer in the Gotthard area of the Swiss Alps with over two dozen participants from all over the world – including Anna Zimmermann.

As a medical student, she was placed in the Mission Control Centre, which was in a bunker deep underground. Her blue, short-sleeved shirt sported a round mission badge near her name tag. Zimmermann was responsible for the physical and mental well-being of the six astronauts.

They lived in an isolated area of the complex during the 14-day mission. They conducted experiments, did strength training and were only allowed to shower twice before “returning” to Earth. They were occasionally allowed to walk on the “sur-



Higher, farther, faster, more beautiful?

In search of somewhat unconventional Swiss records

This edition: living and learning on the ‘Moon’ – in the Swiss Alps



face of the Moon". They changed into special suits and left the bunker located near the Gotthard Pass. The pictures of these simulated lunar walks look funny and unreal. Figures clad in orange with big humps on their backs stomping around among the rocks and cliff edges as they operate their devices. They look like characters from a children's television programme.

Are the simulated Moon missions really the way they appear from the

pictures, i.e. just a game? A bit of fun during the holidays for young people who enjoy indulging in fantasy and who dream of flying to Mars?

Insights for the real thing: space travel

"Definitely not", says Claude Nicollier, one of Switzerland's most famous space travel experts. He is the only Swiss astronaut to date to have gone into space (see interview on page 20).

The astrophysicist and honorary professor at the EPFL mentors the Asclepios project.

The students spent months undergoing intensive preparation, he says. "They have to be disciplined and work hard." There is cooperation with the scientific and business communities. Asclepios is more than capable of providing valuable insights for real space travel. Many of these students aim to become astronauts. Having participated in a mis-

Students at the Asclepios control centre simulating a mission to the moon. Still from the documentary "To The Moon and Back" by Elisa Gomez Alvarez, Rita Productions/RTS



An Asclepios astronaut with a robot negotiating the 'lunar' landscape of the Gotthard massif.
Photo: Asclepios IV Mission

“It’s harder to come back from Antarctica than from the International Space Station, even though it’s on the same planet.”

Anna Zimmermann

sion like this one, says Nicollier, will help their application stand out, whether for the position of astronaut or for other jobs in aerospace, of which there are many.

Zimmermann found the Asclepios mission enriching and “a very rewarding communal experience”. Becoming an astronaut remains an “absolute” dream for her. A dream or an objective? She is under no illusions about her future: “It’s a job with so many incredibly interesting aspects,” she says. Unfortunately, very few peo-

ple get to become astronauts. There is no way of knowing whether there will soon be a selection process. That’s why she prefers to describe her ambition as a dream.

A more realistic goal for her is to conduct research into space travel, as a space doctor, for example. She is

considering such a career path but is not necessarily set on it: “My philosophy for life is to remain interested and open and see what opportunities arise.”

The research centre dream

And what if a job were to come up in the Antarctica station? “Yes, that would be my dream research position,” she says – explaining in the same breath how she would have to

A loose screw in space

Claude Nicollier is still the only Swiss person to have been in space. What was it like to be weightless? And what does he think now about expeditions to the Moon and Mars?

Past meets future – astronaut Claude Nicollier taking a selfie with one of the Asclepios project participants

Photo: Asclepios IV Mission



INTERVIEW: DÖLF BARBEN

Claude Nicollier, the astronaut from Vevey, is one of Switzerland’s most famous sons. He left the Earth four times between 1992 and 1999 to spend a total of 42 days, 12 hours and five minutes in space. He impressed experts with his calmness while helping repair the Hubble Space Telescope. Nicollier celebrated his 80th birthday on 2 September 2024.

There is another Swiss astronaut: Marco Sieber from Berne (see “Swiss Review” 2/2023). But he has yet to visit space. Nicollier is thus still the only Swiss person to have experienced weightlessness, for example. It’s not usually the first thing that comes to mind when thinking about space travel. Still, as simulations of space missions (see report on page 18) show, prolonged weightlessness cannot be replicated here on Earth.

Claude Nicollier, when and how does weightlessness kick in when going into space?

When the space shuttle reaches orbit and the engine cuts off, you become weightless all of a sudden. Many people don’t feel well during the first few hours, like being seasick. Once your body adjusts, you can enjoy it.

How do you enjoy it?

You can walk wherever you want instead of having to stay on the floor. You can walk on the ceiling or the wall. It’s a wonderful feeling.

Astronauts Michael Foale (left) and Claude Nicollier replacing sensors on the Hubble Space Telescope (1999). Nicollier is securely attached to the space shuttle's robotic arm.
Photo: Keystone/NASA



prepare for it. This shows that she has done her homework. She says that being completely cut off for months is a big problem. You can't just go home – not even if someone close to you falls ill or dies. "It's harder to come back from Antarctica than from the International Space Station, even though it's on the same planet," she says, adding: "I could see myself doing it."

<https://asclepios.ch>

And what's sleeping like?

The space shuttle had sleeping bags, which you could attach to a wall or the ceiling. You can't just float around while sleeping.

Why not?

You need a certain stability to sleep. Especially for the head. You attach your head to the pillow with a fabric band. It's the same on Earth: if your head is sticking out over the end of the bed, you won't sleep.

While repairing the Hubble Space Telescope, you worked with a battery-powered screwdriver. Were you not at risk of suddenly turning yourself instead of the screw?

Yes, that is a risk. That's why you have to hold onto something with your other hand before using a screwdriver. If you are using both hands, you need to anchor yourself with your feet. As soon as you start expending energy in a state of weightlessness, there is an action and a reaction. You have to practise for that.

How do you do that? You can't simulate weightlessness.

You have to differentiate. If you move around slowly in a water tank, the sensation is similar to weightlessness. So, that's a good way to practise working with tools. But it only works for slow movements. You can also use your arms and feet to push off when underwater, and that doesn't work when you're weightless.

If you could have your time again, would you still want to be an astronaut?

Most definitely.

And would you fly to the Moon? Or even to Mars?

I would love to fly to the Moon, for sure. It's not even that far, just a few days; it's almost a suburb of the Earth. Mars is a different proposition. If I were 30, I probably would go for it – in the knowledge that it would be very draining, both mentally and physically.

Why?

Mars is very far away. The Earth would just be a small blue dot surrounded by blackness. It would take up to 20 minutes for radio signals to reach it. It would be a very isolating experience for a person. That would be extremely challenging psychologically.

What does that mean for the gradual colonisation of Mars?

People who are born to explore could take on a journey like that with all the huge difficulties it entails. That's why I see the exploration of Mars as feasible. But I don't see millions of people moving there.

You can find more pictures of Nicollier's space missions in our online version of this article at www.revue.link/nic