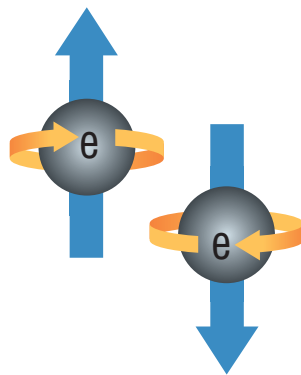




# SCIENCE

First Hand



## IN THIS ISSUE:

Catastrophic volcanic eruptions affecting the Earth's climate occur more frequently than it was previously thought: on average, once in a century

Weakening of the lens' natural antioxidant defense causes the development of cataracts due to the irreversible damage to crystallin proteins

Dozens of miles of roadless taiga separate the Yuganskiy nature reserve from the nearest settlement, and the only vehicles that can carry you to this place are motor boats, snowmobiles and... your own feet

Some pyrophytic fungi that grow on the sites of former forest fires and old bonfires can feed on charcoal, which is a rare phenomenon even among bacteria

A Journal  
for Inquisitive People

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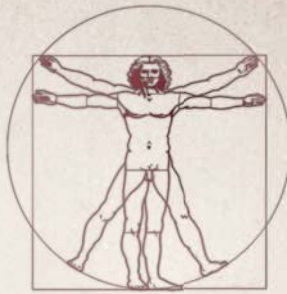
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*“The natural desire  
of good men is knowledge”*

Leonardo da Vinci

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*Dear friends!*

*In the new journal issue, we continue to acquaint our readers with the nature conservation areas of Russia, which not only serve as a refuge for many species of animals and plants, including endangered ones, but also help preserve cohesive natural communities, both unique and typical ones, in their pristine form.*

*Yuganskiy Zapovednik, a highly protected nature reserve, was established forty years ago on the territory of the Khanty–Mansi Autonomous Okrug, a major center of oil production. This region’s endless forests, interspersed with vast watershed swamps, represent the typical landscapes of the West Siberian middle taiga. These hard-to-access lands have become a safe haven for such well-known Siberian species as sable, brown bear, otter, reindeer... Camera traps allow researchers to observe the hidden life of these animals.*

*In autumn, the forests of the nature reserve, like most of Siberian taiga, gleam with colors. The reason for this “mosaic” is periodic fires, after which the burnt areas recover within one and a half to two centuries. An important role in this process belongs to wood-destroying fungi. But as early as a few weeks after the fire, carbotrophic fungi (“feeding on coal”) appear on the charred soil, and over the next couple of years, a variety of mushrooms, from morels to boletes, begin to fruit massively on the burnt spots.*

*Large-scale forest fires are one of the many natural disasters that threaten modern ecosystems. And yet, humanity has been lucky so far as our civilization has been developing during a relatively calm tectonic period – suffice it to recall such global catastrophes as the Siberian trap eruptions, which caused mass extinction 250 million years ago. Or recall the eruption of Mount Tambor just 200 years ago, which caused a “volcanic winter” in the Northern Hemisphere. Until recently, it was believed that mega eruptions break out once in a thousand years, but studies of volcanic ash from glaciers showed that they occur about an order of magnitude more frequently! So it is quite likely that we see such a catastrophe in this century.*

*Ordinary sunlight also poses a considerable threat to humans – its ultraviolet component may cause not only burns and skin cancer but also cataracts. The health of the lens of eye depends on a unique cascade of molecular mechanisms responsible for converting UV energy into heat. Over the years, the effectiveness of this protection system decreases due to the weakening of the lens’ natural antioxidant defense. However, cataracts should not necessarily come as an inevitable consequence of aging, and the best way to prevent this pathology is a healthy and active lifestyle that supports the body’s defense systems.*

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