

Cosmic Rays and the Cygnus Mystery

Since the discovery in the 1920s that all types of radiation can cause gene mutations, scientists have wondered what role high energy cosmic rays might play in human evolution. Yet it was an idea destined never to find favour among geneticists, who could determine no hard evidence that the background flux of cosmic rays might have had any noticeable effect on human cell mutation.

All this is about to change, as an examination of ice cores extracted from sites in Antarctica and Greenland provides new information on the level of cosmic rays reaching Earth in past ages.

When so-called 'primary' cosmic rays hit the upper atmosphere they generally break up to produce a plethora of 'secondary' particles that form isotopes, which fall to Earth and are preserved each year in layers of ice. One such isotope is beryllium 10, found within the ice cores, which provides clear evidence that on three occasions over the past 100,000 years – around 60,000 years ago, 40,000 years ago and 17,000 years ago - there have been extremely intense periods of cosmic ray activity lasting up to 2,000 years at a time.

Although the cyclic nature of these spikes of activity indicate a connection with long-term solar cycles, other factors might have been behind the sudden increase in cosmic rays during Palaeolithic times, when our earliest ancestors made huge jumps in evolution that led eventually to the rise of civilization. Catastrophists propose that a close supernova explosion might have sent a barrage of cosmic particles in our direction, dramatically increasing cloud formation, thus preventing the sun from penetrating through the atmosphere and leading quickly to an ice age and mass extinctions on the ground. It is possible, therefore, that close supernovae might account for the high levels of beryllium found in the ice cores.

An altogether different scenario is that the true source of cosmic rays affecting the evolution of life are black holes or neutron stars, a theory first proposed in 1973 by world-renowned astronomer Carl Sagan. In the 1980s particle physicists in Europe and the USA unexpectedly detected the presence deep underground of incoming cosmic rays that had penetrated the solid rock to great depths, suggesting that they had come from an extremely powerful cosmic ray accelerator somewhere in deep space.

These unique cosmic rays were found to have been produced by a binary star system containing either a black hole or neutron star in the northern constellation of Cygnus, the swan. Known as Cygnus X-3, this astronomical source was classified as recently as 2000 as the galaxy's first 'blazar', meaning that it produces jets of stellar material, mostly ionized gas, that direct cosmic particles towards the Earth at close to the speed of light, something it has been doing for anything up to 700,000 years.

The recorded bursts of cosmic radiation from deep space on at least three occasions in human history could suggest that Cygnus X-3 is the key to solving the mystery of the cosmic rays. Had the Palaeolithic cave artists and shamans responsible for the cave art at Lascaux, and other similar caves across Western Europe, become aware of incoming cosmic rays, which are unique in being able to penetrate deep underground? Did these cygnets, as Cygnus X-3's strange particles became known, cause gene mutations, leading eventually to the development of a complex mindset, including symbolic art and the first organised societies towards the end of the last Ice Age?

Cygnus is the oldest known constellation represented in art, appearing as a bird on a pole in the famous cave of Lascaux in southern France, c.17,000 years ago. What is more, all around the world there was once a great reverence of this constellation, known also as the Northern Cross. From the bird effigy mounds of North America to the Olmec centres of Mexico, the Incan sacred city of Cuzco, the Egyptian Pyramids of Giza, the Hindu temples of India and Avebury, the largest stone circle in Europe - all reflect an age-old interest in Cygnus, which features also in religious symbolism and beliefs, at the heart of Judaism, Christianity, Hinduism, Islam, as well as shamanic practices worldwide. All of this indicates that Cygnus X-3, as our galaxy's sole blazar, is the best candidate by far for at least a percentage of the cosmic radiation that continues to reach Earth and may well have catalysed mutations leading in the past to sudden advances in human evolution. For more on THE CYGNUS MYSTERY by Andrew Collins visit www.andrewcollins.com.

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