

THEOSOPHY-SCIENCE GROUP

NEWSLETTER NUMBER 68

September 2010

EDITORIAL NOTES

This Newsletter is prepared by the Theosophy-Science Group in Australia for interested members of the Theosophical Society in Australia. The email version is also made available on request to members of the Theosophical Society in New Zealand and USA by the respective National bodies. Members in USA should contact tsa@theosophical.org, Members in New Zealand should contact: john@serion.co.nz. Recipients are welcome to share the Newsletter with friends but it must not be reproduced in any medium including on a website. However, permission is given for quoting of extracts or individual articles with due acknowledgment. Selected items appear from time to time on the website of the TS in Australia – austheos.org.au.

A MAJOR COMING EVENT IS: A THREE DAY THEOSOPHY-SCIENCE SEMINAR AT SPRINGBROOK IN MAY 2011

at The Theosophical Education and Retreat Centre, 2184 Springbrook Rd, Springbrook - Arrival Thursday 19 May (approx. 4 pm) and departure Monday 23 May (approx 9 am). The cost will probably be \$300 per person, including all meals (vegetarian). Arrangements will be made for transport to and from Springbrook from Gold Coast airport and Robina train station.

Following a successful 2009 seminar in the Adelaide Hills, there was much enthusiasm for the next seminar in May 2011. Its success will be up to all the participants. (All recipients of this Newsletter and other members of the Theosophical Society are welcome to attend. Please get in early with your expression of interest to be sure of a place. (If necessary, recipients of this Newsletter will be given preference) Email Victor Gostin victor.gostin@adelaide.edu.au). If you do not have email, write to: “Dr V.A. Gostin, 3 Rose Street, Gilberton, SA 5081”. Please also advise if you would like to be considered for giving a talk and indicate subject and title.

THE TOBA_SUPERVOLCANO: How Humanity Barely Survived Extinction.

DR VICTOR GOSTIN

Geology and Geophysics; University of Adelaide

Volcanoes have always played an important role in our planet's history, and volcanic activity has always influenced humans living close by. The most violent eruptions have even affected human evolution and migrations.

Recent eruptions in Iceland and the Philippines, and earlier eruptions of Vesuvius and Krakatoa have all challenged human assumptions of the Earth as a constant, reliable planet. The most violent volcanoes are those along Earth's tectonic plate edges, such as around the Pacific rim, and westward from Papua through Indonesia, Turkey to Italy. So it comes as no surprise that Toba on the western end of Sumatra holds the record of Earth's biggest eruption over the last two million years. This occurred some 73,000 to 74,000 years ago. The super-eruption blew the whole top off a large volcano creating a giant hole now hosting a deep and 100km long crater lake.

For comparison, Mount Pinatubo, Philippines in 1991, erupted only 5km^3 of ash; historic Krakatoa in 1883 produced 12km^3 while Santorini in 1628 BC erupted about 60km^3 in the eastern Mediterranean. This precipitated the end of the Minoan civilization and is widely believed to have triggered the Atlantean legend of a lost continent. The timing coincided with the exodus of the Hebrews from Egypt, and might account for the record of "pillar of cloud by day and fire by night" in the Old Testament.

In stark contrast, the Toba supervolcano probably erupted some 2500km^3 of hot ash, vertically upward into the high stratosphere. Sited near the equator, its eruption directly affected the atmospheres of both hemispheres, creating ten days of total darkness, a six-year volcanic winter, and extreme cold conditions with severe drought for some 1800 years. For most plants and animals including early humans, this was indeed cataclysmic!

The volcanic ash drifted mainly westward covering India with an average of 10cm of ash, and smothering a forested landscape. There is also evidence of an ash layer from Toba buried within Indian Ocean sediments that provides excellent timing, and corresponds with the world-wide climatic cooling that followed. Evidence from buried pollen indicates that most forests were buried, and only much later were replaced by wooded and open grasslands.

Debate exists over the degree and extent of this catastrophe on human communities, but it is most likely to have been extremely severe. Genetic evidence suggests that human diversity was severely reduced and passed through a genetic bottleneck of a few thousand individuals. Indeed analysis of mitochondrial DNA indicate that all humans outside Africa are descended from migrants out of Africa, those who had survived in a variety of refugia in the East African rift complex. Similar “genetic bottlenecks” are seen in tigers and non-human primates.

Prior to this cataclysm, our early “cousin” *Homo erectus*, had for over two million years progressively migrated into most of Eurasia, including Western Europe, China and south to Java. Humans already controlled fire and used a basic stone tool kit. Brain-size increased dramatically during that time. Whereas the vast majority of *H. erectus* was decimated by Toba, a closer relative, the Neanderthal, survived and co-existed with our direct ancestors in Europe until the last glacial maximum [20,000 BP].

Stephen Oppenheimer (2003) in his excellent book *Out of Eden: The peopling of the world* presents a detailed account based on a synthesis of climatic records, archaeological, physical types, dental, and especially detailed genetic evidence derived from most living peoples. He points out that about 11,000 years before Toba erupted, a cold period with accompanying low sea levels allowed modern humans to follow the Indian Ocean coastline as beachcombers and arrive in Southeast Asia. It appears likely that these early travelers suffered extinction following the Toba catastrophe. It was only about 65,000 years ago that humans once again traveled out of Africa.

After the Toba eruption the archaeological record in East Africa shows the appearance of long distance exchange networks. As Williams et al (2009) suggest: “This new cooperative social strategy may have been crucial for human survival in degraded environments after the eruption, and may also have facilitated the dispersal of modern humans from Africa and replacement of archaic human populations outside of Africa during the last ice age”.

One wonders if ancient human memory (of survivors) as revealed by deep introspection and “accessing the akashic record” actually recorded this definitive human event? Did this mark the catastrophic fiery end of the Lemurian (or 3rd Root Race) humanity? [Stanzas of Dzyan; Secret Doctrine by HPB].

westward from Papua through Indonesia, Turkey to Italy. So it comes as no surprise that Toba on the western end of Sumatra holds the record of Earth's biggest eruption over the last two million years. This occurred some 73,000 to 74,000 years ago. The super-eruption blew the whole top off a large volcano creating a giant hole now hosting a deep and 100km long crater lake.

For comparison, Mount Pinatubo, Philippines in 1991, erupted only 5km³ of ash; historic in the eastern Mediterranean. This precipitated the end of the Minoan civilization and is Krakatoa in 1883 produced 12km³ while Santorini in 1628 BC erupted about 60km³ widely believed to have been the last location of the Atlantean legend. The timing coincided with the exodus of the Hebrews from Egypt, thus explaining the records of "pillar of cloud by day and fire by night" in the Old Testament.

In stark contrast, the Toba supervolcano probably erupted some 2500km³ of hot ash, vertically upward into the high stratosphere. Sited near the equator, its eruption directly affected the atmospheres of both hemispheres, creating ten days of total darkness, a six-year volcanic winter, and extreme cold conditions with severe drought for 1800 years! For all plants and animals including early humans, this was indeed cataclysmic!

The volcanic ash drifted mainly westward covering India with an average of 10cm of ash, and smothering a forested landscape and wiping out all life (including early forms of Homo but Homo sapiens was still in Africa). Evidence also exists as an ash layer buried within Indian Ocean sediments that provides excellent timing and correspondence to the world-wide climatic cooling. Evidence from buried pollen indicates that forests were eventually replaced by wooded and open grasslands.

Debate exists over the degree and extent of this catastrophe on human communities, but it is most likely to have been extremely severe. Genetic evidence suggests that all living humans survived in a variety of refugia in the East African rift complex. Indeed analysis of mitochondrial DNA indicates that all humans outside Africa are descended from migrants out of Africa, well after that supervolcanic explosion. Similar "genetic bottlenecks" are seen in tigers and non-human primates.

Soon after this eruption, the archaeological record in East Africa shows the appearance of long distance exchange networks. And as Williams et al (2009) report: "This new cooperative social strategy may have been crucial for human survival in degraded environments after the eruption, and may also have facilitated the dispersal of modern humans from Africa and replacement of archaic human populations outside of Africa during the last ice age".

One wonders if ancient human memory revealed by deep introspection and "accessing the akashic record" actually recorded this enormous human event. Did this mark the catastrophic end of the Lemurian (or 3rd Root Race) humanity? [Stanzas of Dzyan; Secret Doctrine by HPB].

Key References:

Oppenheimer, Stephen. 2004 *Out of Eden The peopling of the world**. Constable and Robinson, London. ISBN 1- 84119 697-5

Oppenheimer, Stephen. 1998. *Eden in the East. The drowned continent of Southeast Asia*. Weidenfeld & Nicolson, London. ISBN 0 297 81816 3.

Ravilious, Kate 2010. The day the earth exploded; how humans survived the greatest disaster in history. *New Scientist* 17 April, 2010: 28-33.

Williams, Martin et al. 2009. Environmental impact of the 73 ka Toba super-eruption in South Asia. *Palaeogeography, Palaeoclimatology, Palaeoecology* 284:295-314.

* A talk entitled "Peopling of the Earth" based on the above book was presented by Hugh Murdoch at the Theosophy-Science Seminar at Springbrook in May 2006. A summary is included in Newsletter N63, June 2008

THE TERRESTRIAL COSMIC RAY FLUX: ITS IMPORTANCE FOR CLIMATE

This is the title of an article sent to me by Victor Gostin from *EOS* (the magazine of the American Geophysical Union). It seems a most unlikely subject but read on.

Study of a very deep ice core in Central Greenland shows very sharp annual dust peaks. These have been measured by a technique using laser light scattering, These dust peaks have been used to date the ice core over a hundred thousand years, There is a recurring pattern of ice peaks, at intervals of 11, 22 and even longer periods. These intervals are all clearly related to well established solar cycles. The familiar 11 year sunspot cycle is one half of a 22 year cycle consisting of two related 11 year halves.

However any change in the solar radiation is too weak to make a significant effect during a solar cycle unless there is an appropriate amplifying mechanism. Solar modulated terrestrial cosmic ray flux has been suggested as possibly filling that role by means of its effect on the electrical conductivity of the atmosphere through ion production.

A diagram of a short section of the ice core shows the sharpness of the annual dust peaks. A separate expanded diagram shows an overlaid quite sharp bold curve of a four year running average of the raw data. A series of successive individual peaks are arbitrarily numbered 1 to 8. (To understand what follows it is necessary to point out that a full 22 year solar cycle is a specific combination of two successive 11 year cycles but you cannot make a coherent 22 year cycle by combining the second half of one 11 year module with the first half of another. This is borne out by the fact that for 11 year cycles 1 and 2, 3 and 4, 5 and 6, and 7 and 8, each pair combines to generate a 22 year cycle, while 11 year cycles 2 and 3; 4 and 5; 6 and 7 do not so combine.

The above pattern resembles the neutron monitor records of the cosmic ray flux where 11 year modulations with sharp peaks alternate with 11 year flat topped maxima, producing a 22 year dust modulation pattern, thus indicating a link with the terrestrial cosmic ray flux.

POSSIBLE EFFECTS ON CLIMATE

The question now arises as to whether cosmic ray variations could have an effect on climate or are they merely proxies for irradiance variation? The argument against solar influence on climate changes is that solar irradiation varies so little over all relevant time scales. An amplifying mechanism is required for any significant change. Ney proposed in 1959 that solar modulated cosmic ray flux (CRF) could possibly provide such amplification. The CRF affects the electrical conductivity of the atmosphere through ion production. Furthermore Bond et al (2001) have shown strong correlation between carbon

¹⁴C and beryllium¹⁰ accumulation rates (CRF proxies) with ice rafted glacial debris in the North Atlantic. These variations correlate with worldwide changes reported by others [several examples cited]. (On the century time scale, the CRF variations were dominant with the observed trends in beryllium 10 typically + or – 10% in 100 years comparable to the approximately 10% changes in CRF over an 11Year cycle at high latitude

“This article provides evidence that the solar modulated CRF, which affects atmospheric electricity may initiate a sufficiently large amplification mechanism that can magnify the influence of the Sun on the Earth’s climate, beyond the traditional radiative effects”.

THE ANCIENT TEACHINGS AND PROPHECIES OF THE HOPI PEOPLE

by Alan Senior (A prominent member OF THE TS IN SCOTLAND)

Reprinted with permission from *insight (The Journal of the Theosophical Society in England); winter 09/10 Vol 50 No 4.**

A pictograph on Prophecy Rock in Hopiland in north-eastern Arizona illustrates the idea that humankind is currently at a crossroads; we will be either spiritually transformed or consumed by impure actions that we have committed, both against ourselves internally and toward the environment externally. This is similar to predictions found in Tibetan legends.

It is interesting that during the first of two visits to North America, the Dalai Lama met a party of Hopi elders who had driven all night to meet him in Los Angeles, pointing out that his arrival fulfilled an ancient prophecy of the Hopi nation, as well as one of Tibet.

According to their traditions, the world's axis passes through both lands. Also, after a thousand years of Hopi religious practice, it was prophesied that a great spiritual leader would arrive from the East. He would be the Sun Clan Brother and his name would be linked with salt water. Dalai means 'great ocean' and his other name, Gyatso, also means 'ocean'. The Hopis also knew of a Tibetan prophecy: "When the iron bird flies, and the horse runs upon rails, the Dharma will travel west to the land of the Red Man." Similarities between Hopi and Tibetan dances and rituals have also been observed and both have a fire puja (Sanskrit: 'an offering' worship and divine honour offered to something sacred) so nearly identical that on his next visit in 1980, the Dalai Lama was able to participate with four Native American chiefs in the ritual..

These are beautiful yet dangerous times, say the Hopi elders; the earth is renewing and cleansing itself regardless of the actions of humans. If we purify ourselves we will be in harmony with this cycle of purification in nature. If not, we will be in constant conflict and in strife with nature. The Hopi feel that they will play a key role in the survival of the human race through their ability to commune with the unseen forces that hold nature in balance. They also stress that it is important for people to maintain a strong spiritual centre and to live the simple life of a true human being, walking amidst the beauty of life.

In the Hopi world, the spirit of a thing is called a katchina and those with psychic powers are able to communicate with the spirits of all natural things in the world. The message is that we are only guests in this world and we must conduct ourselves with respect for the land, walking the Path of Silence, conveying love and friendship through our actions. The Song of the Morning Sky says that only in silence can one learn just one of many teachings also reflected in theosophical literature.

The Hopi, alongside most Native American tribes, maintain the idea of cyclical creations and destructions over vast periods of time. The chiefs and medicine men, together with representatives from other tribes, meet in kivas (underground chambers) to study the sacred teachings and to renew the ancient ways. Many myths of the Hopi people are also echoed in theosophical literature, such as the claim that humanity has been destroyed many times and that this is a successive world. Thus, the Hopis believe that mankind emerges periodically into subsequent worlds and they regard the destruction of previous worlds as a necessary part of the spiritual evolution of humanity, an expurgation brought about by inharmonious activity upon the planet.

Currently they prophesy the coming of the 'day of purification' when the earth will undergo natural disasters that will cleanse the planet of much of the ecological disharmony. Such beliefs are expanded upon by modern-day catastrophe theorists who tend to explain events like the Great Flood, the death of civilizations (for instance, Atlantis) with reference to comet or asteroid collisions linked to rapid geological changes, polar shifts, volcanic and earthquake activity.

The name 'Hopi' means 'the peaceful ones' and they continually carry their sacred prayer feathers, messages of peace and prophecies (warnings) of impending disasters wherever they go as instructed by the ancestors. Their teachings contain stories of large-scale destruction when mankind had put more emphasis on material rather than spiritual things, when laws of nature were interfered with or ignored and the world was destroyed. Yet, as the Ancient Wisdom teachings show, in all parts of the world a few spiritual people who adhered to the teachings were allowed to survive and, amongst the Hopi, these were the ancestors who carried forth the knowledge of the spiritual way of life.

In these teachings all life is sacred and open to spirit. Thought and action are governed by the circle, which they see as basic in nature and evident in everything -- myth, ceremony, art, community organization, sun, moon and stars, the rotating seasons, and the actions of birds and animals. The centre of the circle is the point of creation and this is the symbol of the Great Spirit, reflected in dances and ceremonies. For the Hopis, birth and death are linked by the Road of Life, again a circle like the path of the Sun. The Winter Solstice is the dawn of a journey through the Upper World, whilst the Summer Solstice proclaims death to the Upper World and birth into the Lower World. So life is a continuous circle between the two.

The human body and the body of the Earth were similar for the ancient ones -- each has a backbone with five vibratory centres. The top (head) one corresponds to the crown chakra and is a link with the Creator from birth until closing at death. Below is the brain (or third eye centre) which brings the understanding necessary to carry out the Divine Plan of the Creator, whilst the third centre (throat chakra) inhales the Breath of Life and emits sounds which must be attuned to universal vibration. The fourth centre (heart chakra) adjusts to the vibrations of the life force, whilst the fifth centre (solar plexus) is called by the Hopi the Throne of the Creator and it is here that inorganic and organic matter meet and is digested. [[As with many modern therapies, the Hopi believe that illness results from blockages located in these centres and that it is not only humans who are sick but the planet, too, which will only become peaceful after many dramatic changes in its inhabitants].

These changes must occur, say the Hopi, or destruction will result and, as a reminder of such a catastrophe, in 1969 they predicted the appearance of a bright star in the sky, which came to be called the Blue Star Prophecy. That year was very significant for them as it also saw the first Moon landing, marking a new relationship with the planet, and an awakening of universal consciousness with anti-war demonstrations, the international Woodstock gathering and enlightened feminism; sadly, it also saw the widespread use of drugs. Then in 1987 came the sighting of a supernova the Blue Star, now given the astronomical number SN 1987A and the time seemed right for a rebalancing of energies, both celestial and earthly, as it appeared to coincide with dates from both Mayan and Aztec artifacts which described a major time-shift

when human consciousness would be aligned with new, positive energies.

A supernova occurs when a star runs out of energy in its centre, collapses inward and explodes outward and the symbolism here became apparent to many people] Already, in 1948, the Hopi elders had broken their silence, concerned with humanity's pathological treatment of the Earth, and began to share their prophecies with the outside world. Frank Waters, author of 'The Book of the Hopi' (Penguin Books, 1985), observed that "their existence always has been patterned upon the universal plan of the world creation and maintenance, and their progress on the evolutionary Road of Life depends upon the unbroken observance of its laws. They re-assert a rhythm of life we have disastrously tried to ignore. They remind us we must attune ourselves to the need for inner change if we are to avert a cataclysmic rupture between our own minds and hearts. Now, if ever, is the time for them to talk, for us to listen."

[In 1959, concerned tribal representatives had presented to the United Nations some visions of the future which they had ritually observed, but the warnings were totally ignored. This Hopi prophecy showed the land mass of America drastically reduced on both the east and west coasts, with a terrible wide split down the middle of the Continent. This, they claimed, would be the result of people's neglect of Mother Earth's needs and their re-drawn map of America interestingly resembles descriptions given by Edgar Cayce (the Sleeping Prophet) in the 1930s].

The time has come, say the Hopi elders, for all peoples to join in meaningful action, because destruction of all land and life is accelerating at a rapid pace, as witnessed in the felling of the Brazilian rainforests which, if allowed to continue, will disappear completely in less than 30 years. The Hopi message is constant yet constantly ignored by most Americans:

***I take only that which I can return.
The balance of nature and harmony of the Universe
must be maintained.
I cannot possess, I can only share."***

The Hopis also point to the rape of their own land by the application of the Indian Relocation Act passed by Congress in 1985, also the Bureau of Indian Affairs' attempts to remove them from their homes so that precious minerals can be mined beneath the sacred Black Mesa, whilst citing the reasons as *due to the Hopi's land disputes with the ever-encroaching Navajos*.

The Hopis know better. Now, perhaps, is the time to become that one big circle drawn by the Hopi, like the motto on the Great Seal of the United States -- *out of many, one*.

.....

Editorial Notes:

Alan Senior is a prominent member of the Theosophical Society in Scotland

My thanks to the General Secretary of the Theosophical Society in England for permission to publish this article here.

My thanks to Colyn Boyce for the text by email.

GENERAL COMMENT

There are two things in particular which I find especially interesting.

1. The Hopi's interest in science especially astronomy, with their mention of the very bright (relatively nearby) supernova of 1987 which caused quite a stir among astronomers at the time.

2. The similarity of the Hopi ceremony to a ceremony in Tibet, to the extent that the Dali Lama, on a visit to the Hopi, was able to participate in their ceremony. This is despite their geographical separation, existing on two continents well separated by extensive ocean.

I am tempted to shoot with a very long bow and speculate about this similarity along the following lines: According to population expert, Stephen Oppenheimer [*Out of Eden; the peopling of the world*; Constable and Robinson Ltd; London, 2004], the first modern humans (*Homo sapiens*) to reach the American continent, came from Northern Asia during the last ice age, about 20,000 years ago, via the then continent Beringia linking Northern Asia with Alaska by land at a time of extremely low sea level. Perhaps the Hopi are long term descendents of that migration who brought their ceremony along with them and maintained it more or less constant over the centuries. Tell me I am dreaming if you like, but try to find a better explanation, other than chance. [Ed].

CLIMATE CHANGE - THE GEOLOGICAL EVIDENCE.**Summary of a Recent Lecture by Dr Victor Gostin,
Adelaide University**

Detailed records of climate change over the last series of ice-ages have been obtained from deep glacial cores in Antarctica and Greenland. Analyses of entrapped gas bubbles and hydrogen isotopes show a close correlation of fluctuating temperatures and greenhouse gasses. The cyclic nature of these fluctuations supports similar results from lake and ocean sediments called Milankovitch [Earth-orbital] Cycles.

In contrast to these ancient regular climatic fluctuations, recent decades have recorded increased average global temperatures. For example, glacial cover on equatorial Mt Kilimanjaro has retreated faster than at any time during the last 11,700 years, and unprecedented recent decades of warming over the last 200,000 years is recorded in lake of arctic Canada. Similar conclusions are reached from studies of borehole temperatures, treep rings, and arctic sea-ice retreat.

Examination of the changing ratios of carbon isotopes in the atmosphere and in surface ocean waters (that absorb carbon dioxide) directly implicate the enormous human burning of fossil fuels as the source for the rise in this gas. Carbon dioxide, together with rising methane and nitrous oxide (from manure and nitrogenous fertilizers), accounts for most of the rising average temperatures.

Apart from attempting to reduce human population and the production of greenhouse gasses, humanity had better learn to accommodate to global warming and the accompanying rises in sea level.

Regards to you all,
Hugh Murdoch
28 Terrace Road
Killara, NSW 2071
Phone: 02 9498 4620
Email: hughm@austheos.org.au
