

## IS THE WORLD IN CURIOUS SHAPE?

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There's no cure for insomnia quite like a lecture on geodesy, the science of measuring the earth. Surveyors and satellite trackers and a few others perspire for precision, speaking solemnly about oblate spheroids and gravitational anomalies. The rest of us are content to think of the Earth as a ball of rock and whatever about 8,000 miles in diameter.

Well, *most* of the rest of us. There are minority opinions about everything, including the shape and composition of the Earth. Of all the alternative theories of geodesy, three have gained reasonably large followings in the United States; and each was once headquartered in northeastern Illinois. Koresh, a turn-of-the-century Chicago prophet, told his followers that the Earth is a hollow sphere and we live *on the inside of it*. Later, Marshall B. Gardner of Aurora theorized that the Earth is a hollow sphere, but we live on the outside. In the 1920s, Wilbur Glenn Voliva and his followers in Zion loudly proclaimed that the Earth is flat.

All three theories are still flourishing.

Cyrus Reed Teed, the man who became Koresh, was born on a New York farm in 1839. Teed served in a field hospital unit of the Union army during the Civil War. Later, he attended New York Eclectic Medical College, an unconventional school specializing in herb remedies. Upon graduation, Dr. Teed established a practice in Utica, New York. There, besides concocting his herb remedies, he dabbled in alchemy. Alone one night in his laboratory, he had a vision in which a beautiful woman revealed the secret of the cosmos to him. She told him he was on the inside. Dr. Teed exchanged Cyrus for its Hebrew equivalent, Koresh, and set out to reshape the world.

Koresh described the shape of the world in *The Cellular Cosmogony* (editions of 1870, 1898, 1905, 1922, and 1951). He claimed that the conventional globe accurately depicts the Earth, except for one thing: you have to turn it inside out! The Indian Ocean is indeed on the opposite side of the earth from America, but straight *up*, not straight *down*. We could look up and see most of the rest of the earth if it weren't for the dense, distorting atmosphere. We are actually on the inside of a cosmic egg, Koresh claimed, but complicated laws of perspective and atmospheric refraction make the Earth's surface appear to curve the other way.

The Koreshan system was worked out in detail. To start at the outside and work in, we begin with nothing. Outside the Earth, there is absolutely nothing, perhaps not even space. (This vaguely parallels General Relativity, which holds that space and time can't

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exist without matter or energy.) The outer shell of the Earth begins with seven metallic layers, with the noble metals gold and silver first. Five mineral strata lie inside the layers of metal. The familiar earth and water lie inside the minerals.

Above us are three layers of atmosphere, each containing stars which are merely "focal points of substance or centers of combustion." Inside the atmospheres is a solar sphere and, in the very middle, the stellar sphere. The Sun and Moon we see are not real objects, but are images formed on the first atmosphere by the real sun, which is half light and half dark. The planets are "spheres of substance aggregated through the impact of afferent and efferent fluxions of essence." Whatever that means.

Koresh was a small man with blazing eyes and an air of absolute self-assurance. An electrifying orator, he made a lasting (though not always favorable) impression on all who heard him. Koresh claimed to be a new messiah, and he sometimes dropped broad hints about his remarkable powers. Women found him irresistible.\*

For several years, Koresh travelled around the country lecturing on his theories. When he reached Chicago in 1886, the enthusiastic reception he received encouraged him to stay. He founded a communal group called the Koreshan Unity, and money and converts flowed in. The Unity established the College of Life and published two magazines, *The Guiding Star* and *The Flaming Sword*. These promoted Koreshan Universology, a strange conglomeration of off-beat religion, radical politics, and pseudoscience, of which the Cellular Cosmogony theory was only a small part.

Small part or not, the Cellular Cosmogony was crucial to Koreshanity; and Koresh knew it would take evidence to convince the skeptics of its truth. With that in mind, on July 25, 1896, he sent his secret weapon, Professor Ulysses G. Morrow, to the Old Illinois and Michigan Drainage Canal to determine experimentally whether its waters were concave or convex.

Ulysses G. Morrow, former shorthand teacher and part-time-preacher, was a fallen-away flat-earther, whose defection had shaken the flat-earth movement. Morrow knew about several experiments performed by British flat-earthers at the Old Bedford Canal, north of London. (For a description of one of these, see my "He Knew Earth Is Round, but His Proof Fell Flat," *Smithsonian* April 1978.) The experiment he devised to prove the Earth concave was nearly a carbon copy of them.

\*Except his wife: she left him.

A perfectly straight section of the Old Illinois and Michigan Drainage Canal ran northeast from Summit, Illinois, just outside of Chicago. Near Summit, the Koreshan geodesists drove a stake into the canal bottom and attached a twenty-two-inch disk to the stake with its center eighteen inches above the water. Morrow and his assistants got into a boat and rowed three miles down the canal, where they set up a telescope a foot above the water. Atmospheric refraction functioned wonderfully, and the entire disk was visible. Geometrically, all but the upper five inches should have been below the horizon. Thus encouraged, they rowed two more miles and tried again. Although the disk was by now a couple feet below the water horizon, it was again entirely visible. Morrow and company repeated the observations in the opposite direction with equally satisfactory results.

Morrow, already editor of the *Guiding Star*, now became the leading Koreshan geodesist. He organized several other geodesic experiments; and, when a new edition of *The Cellular Cosmogony* was published in 1898, it was Morrow who wrote the section entitled "The New Geodesy." He shamelessly pillaged flat-earth literature, bending "flat" arguments until they were concave.

Meanwhile, Chicago medical authorities were getting downright stuffy about Dr. Teed's medical pretensions, and the doctor prescribed a change of climate for himself. In 1897, he and most of his followers moved to the Gulf Coast of Florida, where they founded the town of Estero, also called "the New Jerusalem." Koresh expected millions of converts to flock to the city, but few showed up. The prophet died in 1908. Though he failed to rise from the dead as he had predicted, his followers didn't lose faith. The little colony struggled on until at least the 1950s.

A few years after the death of Koresh, Marshall Blitcher Gardner began promoting another version of the hollow-earth theory. Gardner, a heavy, lantern-jawed man, was in charge of machinery maintenance in a corset factory in Aurora, Illinois, thirty-five miles east of Chicago. He first published his views in 1913, in a 68-page book entitled *A Journey to the Earth's Interior, or Have the Poles Really Been Discovered?*

Gardner believed in the conventional spherical earth up to a limit, the limit being about eighty degrees north and south latitude. There, he believed the Earth's surface curves gently inward, folding back on itself to form a spherical shell about 800 miles thick. Since this would leave openings 1,400 miles in diameter at both poles, Gardner

claimed that Cook, Peary, Amundsen, Scott, and other polar explorers either fibbed about their discoveries or were misled by their navigation instruments. Certainly none of them reported looking into the interior and seeing a central sun 500 miles in diameter illuminating continents and oceans there.

Gardner claimed that substantial evidence supports his theory. For instance, the aurora borealis (northern lights) might be light from the central sun reflecting off the atmosphere above the northern hole. What look like polar caps on Mars could be the same thing. The frozen mammoths found buried in the Siberian tundra might have wandered out of their warm inner world and frozen to death. The Eskimos might be descendants of people who ventured out and lost their way. The erratic behavior of compasses at high latitudes could be due to the close proximity of the openings. Early explorers of the Arctic reported several observations—animals apparently migrating northward, warm winds from the north, etc.—which are neatly explained by the theory. Gardner even thought that some explorers actually went part way into the openings without noticing it.

This type of hollow-earth theory is far from new. Edmund Halley, of comet fame, had suggested in 1716 that the Earth might consist of several hollow spheres, one inside the other, with the spaces between them lighted by "peculiar luminaries." Cotton Mather was impressed by the idea and defended it in his *Christian Philosophy*. Later, Captain John Cleves Symmes, hero of the War of 1812 and nephew of the founder of Cincinnati, expanded the theory and added large polar openings to the spheres. Symmes wanted to lead a hundred-man expedition from Siberia to the inner earth; and, in 1822 and 1823, he made several appeals to Congress for financing. Though deluged with petitions from Symmes's supporters, Congress respectfully declined.

"Some very unintelligent readers have accused us of putting forward a theory that is not new but merely a rehash of Symmes's Theory of Concentric Spheres," complained Gardner in his 456-page second edition, published in 1920. He went on to hotly deny the charge. After all, he claimed the Earth was a hollow spherical shell surrounding a central sun. Symmes had proposed five concentric shells and no interior sun.

In fact, Gardner might not have heard of Symmes when he published his 1913 edition. He apparently plagiarized most of it from William Reed's 1906 book *The Phantom of the Poles*, and Reed never mentioned Symmes. Gardner certainly wasn't aware that a sub-

stantial corpus of hollow-earth literature—more than a dozen books, pamphlets and articles—preceded the work he pirated. Thus he couldn't know that Reed's book was also unoriginal. Although Symmes himself wrote nothing, the arguments that he used in his lectures were published by his followers and then endlessly recycled and adapted. Symmes's four inner spheres were considered excess baggage by many of his admirers, one of whom, Alexander Mitchell, apparently discarded them by 1826. As for Gardner, his only important contribution to hollow-earth theory is the central sun.

Still, except for Symmes himself, Gardner was probably more influential than any of his predecessors. His monumental 1920 edition, though still largely derivative, was certainly the largest collection of hollow-earth arguments published up to that time. Though he didn't stump the countryside for support, Gardner was a prolific letter writer, and he got a certain amount of attention from newspapers. He also publicized his ideas by sending free copies of his books to major libraries and to influential people all over the world.

In his second edition, Gardner described some of the reactions he got from recipients of free copies of the first edition. Minor officials of the royal houses of Sweden and Italy dutifully sent thank-you notes. Gardner considered these virtually royal endorsements. Arthur Conan Doyle took time out from his pursuit of fairies to write that, if it weren't that the poles had actually been discovered, he'd be a convert. And a college professor, tongue firmly in cheek, allowed that Gardner's book compared favorably with the work of Ferguson. The flattered author obviously didn't know that he was being compared to Orlando Ferguson, a flat-earthier.

On the whole, Gardner believed that he and his ideas were shabbily treated. He longed to see the Stars and Stripes planted in the inner world, both to confirm his own genius and to keep other nations out. He was irked when no expeditions embarked. He believed that there were rich lands inside which could easily feed the outer world's hungry multitudes. However, his theory offered neither security nor salvation; and it only attracted a modest following during his lifetime, which ended in 1937. By then, Byrd had flown over both poles without seeing any holes; but Gardner still believed that his theory had merit.

Last, but hardly least of the Illinois geodesists, was Wilbur Glenn Voliva, America's best known flat-earthier. Voliva was born in Indiana in 1870 and grew up on a farm. He began preaching at sixteen,

was ordained at nineteen, and subsequently continued his studies of theology at four different colleges. He served as pastor of several New Light churches; but, in 1899, he joined the Christian Catholic Apostolic Church of Zion, a faith-healing-and-fundamentalism sect headed by John Alexander Dowie. In 1906, he replaced Dowie as General Overseer of the church, then headquartered in Zion, Illinois. Sometime afterward, Zion schools began teaching that the Earth is flat.

Voliva believed that the Earth is shaped like a giant flapjack, a circular disk with the north pole at the center and a 150-foot wall of ice at the rim, the "southern limit." (Obviously you can sail around this world, and Voliva did.) He thought that the Sun was only 1500 miles up and only 32 miles in diameter. The Moon, about the same size, shines by its own light. Lunar eclipses are caused by an unseen dark body passing in front of the Moon. A special law of perspective allows ships to apparently sail over a nonexistent horizon, and this law combines forces with a special law of refraction to cause the apparent rising and setting of celestial bodies.

It's not clear exactly when Voliva rejected the spherical earth, but it's obvious why. He took his Bible seriously—"I'm the only man in the world that literally believes it."—and felt that the Biblical descriptions of the Earth don't fit a sphere. Isaiah 40:22 says, "God sits enthroned on the vaulted roof of Earth," and Voliva took the verse literally. Other Bible verses refer to the Earth's foundations, ends, and corners. To Voliva, there was no question that the Earth is flat; and he had a standing offer of \$5,000 to anyone who could prove to him that it wasn't. No one ever collected.

Voliva was correct in believing that the ancient Hebrews considered the Earth flat. So did the Egyptians and Babylonians. The spherical opinion espoused by Pythagoras, Aristotle, and Ptolemy eventually prevailed, although some of the Fathers of the Church fulminated against it. By the time Columbus sailed, few educated people doubted that the earth is round. The system Voliva promoted (and which Morrow earlier abandoned for the Cellular Cosmogony) differed in several respects from the ancient Hebrew cosmology. And, far from being ancient, it was devised by an English snake-oil salesman, Samuel Birley Rowbotham, in the middle of the 19th century.

Rowbotham, who at various times called himself Tryon, S. Goulden, "Parallax," or Dr. Birley, always called his system "zetetic astronomy." For 45 years, from 1849 until his death in 1884, Rowbotham crisscrossed England lecturing on zetetic astronomy. The

word "zetetic," he would tell his listeners, comes from the Greek *zetetikos*, meaning to seek or inquire. He claimed to inquire only after facts, leaving mere theories to the likes of Copernicus and Newton. Many of his "facts" came straight from the Bible. Rowbotham wrote several books and pamphlets, the best known being his 432-page second edition of *Earth not a Globe*, published in 1873 under the pseudonym "Parallax." In his later years, he became wealthy selling "Dr. Birley's Phosphorized Medicine," a worthless concoction of sugar water and phosphoric acid.

When Rowbotham died in 1884, he left behind a large and vociferous group of followers. The movement continued to gather steam and peaked in the mid 1890s under the Universal Zetetic Society. The U.Z.S. had a corps of lecturers stumping England and Ireland promulgating the plane truth. Its official journal, the *Earth-Not a Globe-Review*, was distributed throughout the English-speaking world (Morrow was once a U.S. agent for it). Members wrote books and pamphlets; and one, the redoubtable Lady Elizabeth Anne Mould Blount, wrote a flat-earth novel, a flat-earth operetta, and the *Earth not a Globe Waltz!*

It was this tradition that Voliva inherited. The British flat-earth movement faded rapidly after the turn of the century and apparently died in World War One. The seeds it had planted in America took root and blossomed, but randomly. While individual flat-earth lecturers lectured and wrote books or pamphlets, there was no flat-earth organization of any consequence. Then, under Voliva, the Christian Catholic Apostolic Church of Zion grew to include thousands of members worldwide. All were, at least nominally, flat-earthers.

Ironically, this, the largest flat-earth organization of modern times, was intellectually barren. Though Voliva's planely worded radio broadcasts brought him national notoriety, neither he nor any of his followers ever wrote a flat-earth book, or even a pamphlet. Voliva did devote the entire May 10, 1930, issue of the sect's periodical, *Leaves of Healing*, to flat-earth arguments; but these were mostly lifted from the 19th-century British flat-earth literature.

Perhaps Voliva was too busy with other things. When he took over in 1906, Zion and Zion Industries were bankrupt; and he had to get them out of hock. Though he held no political office, he ran Zion with an iron hand; and smoking, drinking, swearing, gambling, and other forms of fun were not permitted. He had far-flung missions to manage and Methodists to persecute. There were government investigations, court battles, and the Great Depression. On top of all this, he had to prepare for the Second Coming of Christ, which

he believed would be in 1936. By the time the latter event failed to materialize, his political influence had waned; but Voliva was still the spiritual head of his church at his death in 1942.

Voliva, Teed, and Gardner were absolutely sincere in their beliefs, and they couldn't understand why others didn't readily accept their arguments. All three felt misunderstood and persecuted. Teed and Voliva both believed they were divinely appointed, literally prophets without honor. Gardner merely believed that he had made the most important geographical discovery since Columbus without ever leaving his armchair. If all three could be resurrected for a round-table discussion of the shape of the Earth, each would probably refuse on the grounds that the other two were crackpots.

Why can such theories attract a following? Well, some people are merely rebellious and like to believe that, whatever the accepted idea is, it's wrong. Also, such theories may reinforce a cherished belief, still a hidden fear, or fulfill a secret fantasy.

Does the idea of a virtually infinite universe, extending untold light years in every direction, make you feel insignificant? Try Dr. Teed's hollow world, and limit your universe to 8,000 miles in diameter. If you are a Freudian, you get the added bonus of symbolically returning to the womb.

Were you intrigued by Jules Verne's *Journey to the Center of the Earth* and Arthur Conan Doyle's *Lost World*? Do you have fantasies about undiscovered lands where prehistoric animals still live, and of the glory sure to fall on the explorers who discover them? Then take an ego trip with Gardner to the center of the world.

Does the idea of Earth whirling through space at nineteen miles per second make you dizzy? Do you feel that a strict reading of your Bible *requires* the Earth to be flat, in spite of Magellan, NASA, and a million smart-alec scientists? Then perhaps you should accept Voliva's flat Earth.

As mentioned earlier, all three ideas are very much alive.

The original Koreshans have pretty well died out in America, but the idea was transplanted to Germany after World War One, and it later flourished under the Nazis. The *HohlweltLehre* still survives in Germany, and it has been exported back to the United States. Bio-Tech Research in Nevada City, California, is promoting a translation of the German book *Space and the Universe* by F. Braun.

Ironically, in spite of polar-orbiting satellites, Gardner's hollow Earth has a wider acceptance now than it did during his lifetime. The late Ray Palmer, former science-fiction writer and editor, used

to promote the theory in his *Flying Saucers* magazine as the solution to the UFO mystery. There are at least half a dozen hollow-earth books currently in print, including *Secret of the Ages: UFOs from Inside the Earth* by Brinsley Le Poer Trench, a member of the British House of Lords. At last report, two expeditions to the inner earth were being planned, one through the northern opening and one through the southern.

Last, but certainly not least, is the flat-earth movement, headquartered in Lancaster, California. Charles Johnson, president of the International Flat Earth Research Society, is absolutely on the level. Through the pages of the *Flat Earth News*, he editorially blasts the space program and predicts the ultimate triumph of the Plane Truth.