THE PLANE TRUTH

A HISTORY OF THE FLAT-EARTH MOVEMENT

By
Robert J. Schadewald

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Preface
By
Lois Schadewald

THE PLANE TRUTH BY MY BROTHER BOB (ROBERT J. SCHADEWALD) has been a work in progress since at least 1984, although I'm sure the idea of it dates to the 1970s. It's a work that is unfinished in places, perhaps more detailed than one would have thought possible in places, perfectly constructed in places, and all over the (flat) map in still other places. Bob worked on The Plane Truth until the week he died in 2000. Of all things, completing this book to his satisfaction was of the utmost importance to him. I believe that the book remained unfinished because Bob felt that it never met his standards closely enough to be published. Bob hovered over this book and wouldn't allow it to come to fruition. My brother was an incredibly talented writer, but in some ways, I think, he was never totally satisfied with anything he had written. So he kept writing and rewriting this book. The dull glow of this not-quite-finished hue is evident in places within this work, but also the eloquence and beauty of Bob's finished writing shines in other places.

The Plane Truth is offered for what it is: an unfinished scholarly work on the history and background of flat-earth belief sprinkled through with the characters and colourful personalities of those involved. "It's a small, flat world" was a phrase Bob often used when hearing of some unlikely coincidence. For Bob, flat-earth analogy could fit almost any situation. When he discussed creationism (the precursor of intelligent design) he would explain the argumentation creationists used by comparing it to the argumentation Victorian, England, flat-earthers used. (Spoiler alert: they're the same.) When creationists promoted a Two-Model Theory (creation/evolution) bill to be taught in schools, Bob wrote a bill called A Balanced Treatment of Flat-Earth Science and Spherical-Earth Science Act. The reaction of Charles Johnson (then president of the Flat Earth Society) can be found in Chapter 9: "Johnson and Johnson".

It's hard to know how Bob would have felt now with so many references to flat earth in use. Some examples include Thomas Friedman's books, The World is Flat and Hot, Flat and Crowded; Flat Earth Productions (a digital visual effects company); Flat Earth Veggie Crisps; and, here in Minnesota, Flat Earth beer. I know for certain that he would have loved that last one.

My brother was a student of pseudoscience. It fascinated Bob to try to understand how someone could so firmly believe in an idea that almost everyone else would consider an indicator of insanity or, at least, naiveté. Bob studied not only flat-earth belief, but also creationism, perpetual motion, alternative geodesy (geocentricity, hollow earth, pole shift), Big Foot, the Loch Ness monster, and Tesla-mania, to name a few. Of all the pseudosciences Bob studied, flat-earth belief was one of the first and always his favourite. He studied flat-earth belief and history from about 1974. He formed acquaintances with as many people as he could find who believed that the Earth is flat. He travelled to England to research original materials of the British flat-earthers, and he corresponded with like-minded people all over the world in his quest to find out as much as he could about the development and fluctuations of flat-earth belief. He was considered a world expert on the topic.

Although belief in a flat earth dates to pre-biblical times, modern flat-earth belief got its start in Trowbridge, England, during an evening lecture on January 15, 1849. The Bible, said the lecturer who called himself "Parallax," teaches that the earth is flat. Modern astronomy, he said, is based on mere theories. Zetetic astronomy deals in facts. This itinerant lecturer is the main subject of Chapter 1, "The Founding Father." Zetetic astronomy is dealt with in further detail in Appendix B, "Additional Notes on Zetetic Astronomy."

The Victorian flat-earthers managed to spread their belief to the far corners of the world. Chapters 1 through 4 and 7 discuss the flat-earth movement in Victorian England from its inception in

1849 with Samuel Rowbotham, to its decline which began when Lady Elizabeth Anne Mould Blount left the flat-earth movement in 1923. Chapters 5, 8, and 9 discuss the American flat-earthers, William Carpenter (who immigrated to America from England in 1879), Wilbur Glenn Voliva (who presided over a flat-earth theocracy in Zion, Illinois, in 1906), and Charles Johnson (president of the Flat Earth Society from 1972 to 2001), respectively. Chapter 6, "Elsewhere Across the Plane," discusses flat-earthers in Canada, South Africa, and New Zealand. Chapter 6 is probably the most unfinished piece to be found in this work. Chapter 9, "Johnson and Johnson," was also unfinished, but has been made more complete by additions from myself and Bob Forrest. It contains some duplicated material from articles written by Bob about Charles Johnson that can be found on the web.

This ebook would have never been possible if it hadn't been for Bob Forrest contacting my sister-in-law, Wendy, to ask permission to publish the first four chapters as an open source book. As it turns out, my brother had sent these four chapters to Bob Forrest in Manchester in 1984. Wendy contacted me to get my opinion of this, I thought it was a great idea and contacted Bob Forrest to let him know that I had the remaining chapters of the book in my possession. So it was that we decided to publish the book in its entirety. Bob Forrest's friend, Michael Behrend, provided the expertise of converting the Word files that I had into ebook format. Michael Behrend and Bob Forrest also added illustrations that were missing. Both edited the chapters, correcting spelling errors, incorrect terminology, incorrect dates and so forth. Their combined knowledge of flat-earth history was invaluable. I had considered trying to publish The Plane Truth on my own, but I could have never fact checked it. I don't have that type of knowledge. This book is vastly improved by the input of both Bob Forrest and Michael Behrend, and I know my brother would have been very grateful for the work they've done. I am also very grateful for their work and so happy to see my brother's favourite project completed and made available for anyone with similar interests.

Bob left a list of people he wanted to acknowledge for their help with The Plane Truth. I offer it here with no embellishment (except the few comments Bob left) and two additions of my own—Michael Behrend and Sue O'Donnell, for her help with editing.

Manny Sillman

Paul Nelson

Bob Forrest

Charles Johnson (once nominated me to Outstanding Young Men of America)

SDA guys

Washington people re DeFord

Chuck Long (donated material)

Martin Gardner (ditto)

Ronald Numbers (ditto)

Dennis Lien

Duane T. Gish provided numerous insights into the psychology of flat-earthism.

Mrs. H. I. Moran, City Librarian of the Durban (South Africa) Municipal Library.

Frank Awbrey

Mrs. Gail H. McFarlane, Glasgow University Library

Robert C. McGregor, Glasgow District Libraries

Geoffrey Davenport, Royal College of Physicians

Catherine Boden, William Salt Library, Stafford, England

More of Bob's writings can be found in the book Worlds of Their Own: A Brief History of Misguided Ideas: Creationism, Flat-Earthism, Energy Scams, and the Velikovsky Affair, a collection of Bob's work that I published in 2008 after Bob's death.

Lois Schadewald, July 2015

Prologue: The Ancient View of the Earth

WHEN COLUMBUS SAILED IN 1492, he knew he could safely reach the Indies by sailing west. His crewmen were less confident. Fearing they would slip down over the edge of the globe, never to return, they nearly mutinied. Columbus finally convinced them that their fears were groundless, for the earth is flat. The rest is history. Columbus and his ships sailed safely across the flat sea and reached America. Or so Charles K. Johnson, late president of the Flat Earth Society, told the story. (The orthodox version of the story, of course, is that Columbus believed the earth was spherical, but his crew didn't share his belief, and feared that they might sail over the edge of a flat earth!)

The spherical heresy has incensed literal-minded Christians since time immemorial; for the flat-earth cosmology the ancient Hebrews borrowed from the Babylonians is implicit throughout the Bible. The modern flat-earth movement arose in 19th century England as a reaction against the burgeoning fields of astronomy and geology. Its philosophy is summed up by a bumper sticker now popular among fundamentalists: "The Bible says it. I believe it. That settles it."

Before the dawn of history, those people who gave the matter any thought probably concluded that the earth was essentially flat. From any sort of hill, the calm surface of the ocean looks flat as a flapjack. It's not surprising that none of the early cosmologies which are still preserved—Sumerian, Babylonian, Hebrew, Egyptian—describe a spherical earth.

The Babylonians believed that the universe consists of a reasonably flat earth surrounded by water, with the whole covered by a huge dome. According to their cosmology, water is above the dome and below the earth. The celestial bodies are gods and goddesses, and their movements and positions with respect to one another have profound effects on mundane affairs. This cosmology and its associated astrology were common to much of the ancient Middle East. The essence of the Babylonian cosmology was adopted by the ancient Hebrews and it underlies the text of the Bible.

Nowhere does the Bible explicitly mention the earth's shape, but it is a flat-earth book from beginning to end. Thus in Genesis 1:6, "God said, 'Let there be a vault between the waters, to separate water from water.' So God made the vault, and separated the water under the vault from the water above it, and so it was; and God called the vault heaven." Also, the order Genesis ascribes to creation—earth on the first day and the sun, moon, planets, and stars on the fourth—makes no sense in the light of our present cosmology. But it's perfectly reasonable to a flat-earther. Elsewhere, the Bible comes closer to explicitly describing the earth's shape. Thus

Isaiah 40:21–22 says, "Do you not know … that God sits throned on the vaulted roof of earth, whose inhabitants are like grasshoppers? He stretches out the skies like a curtain, he spreads them out like a tent to live in …" Numerous passages state that the earth is immovable and others treat the sun and moon as minor bodies. In the New Testament, the presumed shape of the earth is evident in the story of the temptation of Jesus. According to Matthew 4:8, "Once again, the devil took him to a very high mountain, and showed him all the kingdoms of the world in their glory." The word translated as "world" is the Greek kosmos, meaning the whole universe. From a sufficiently high mountain, one could see all the kingdoms of a flat world of limited extent, but the passage is nonsense when applied to a spherical earth. The same is true of Revelation 1:6, "Behold, he is coming with the clouds! Every eye shall see him …"

But the flat-earth theory was already passé when the New Testament was written. The Greeks are usually credited with proposing that the earth is a globe. Pythagoras and some of his followers even suggested that it rotates around the sun rather than the other way round. By the fourth century B.C., the globular opinion dominated Greece. Aristotle offered three proofs that the earth is a globe: (a) ships sailing out of port seem to disappear over the horizon, (b) sailors voyaging far to the south see stars above the southern horizon that aren't visible from more northern latitudes, and (c) at a lunar eclipse, the shadow of the earth on the moon is curved.

The concept of a spherical earth found favor in the Hellenic world and even among some of the early Jews. But then, as now, many were determined to cut science to fit their Bibles. The Fathers of the Church were not unanimous about the shape of the earth. Lactantius and Epiphanius insisted that the earth is flat; Clement of Alexandria and Origen insisted that it is round. But the majority thought it was flat. Apparently, Eusebius was also a great flat-earther, and he may have been of special importance to Cosmas Indicopleustes, of whom more presently. For a couple centuries, these worthies tried to stamp out the spherical heresy among the faithful, bombarding them with verses like those already quoted.

This first phase of the Christian flat-earth movement peaked early in the 6th century, when the Egyptian merchant and monk Cosmas Indicopleustes wrote his Christian Topography. Cosmas argued that the earth's surface is a rectangle, surrounded by seas, and covered by a vaulted roof. Indeed, the Cosmas cosmos looked essentially like a steamer trunk. It measured four hundred days journey east and west by two hundred north and south. Far in the north lay a great conical mountain behind which the sun disappeared at sunset. Rain fell from windows in the vaulted roof, and angels propelled the heavenly bodies on their ways.

The Cosmas cosmos was common sense cosmology. As already stated—but it deserves emphasizing—from any sort of hill, the ocean does look as flat as a pool table.

Cosmas got many of his arguments (and perhaps some of his odium theologicum) from the Fathers of the Church, notably Lactantius and Theodore of Mopsuestia. Cosmas took the shew-bread table in the Jewish tabernacle as his model of the earth, flat and twice as long as it was broad. He argued from scripture that the sun must be near and small, since it moved backward for Hezekiah. Again, according to the Bible (Revelation 1:6, quoted above), everyone on earth will see Jesus coming through the clouds when he returns in glory. Obviously, that's impossible if the earth is a sphere. Near the end of Christian Topography, Cosmas wrote, "We say therefore with Isaiah that the heaven embracing the universe is a vault, with Job that it is joined to the earth, and with Moses that the length of the earth is greater than its breadth."

Despite his powerful allies, Cosmas was fighting a losing battle. The geographical and astronomical–astrological works of the spherical Ptolemy had mostly taken over well before he wrote his great work. A century later, the great churchman Isidore of Seville sided with Ptolemy in his De Natura Rerum. In the 8th century, the Venerable Bede adopted the sphere. Later, Albert the Great, Thomas Aquinas, and Roger Bacon all rejected the Christian Topography. The revolution was quiet but thorough, and within a few centuries the ancient Hebrew cosmology

had died out among the educated. By the late Middle Ages, the question was considered settled, and theologians had to content themselves with wrangling over whether the antipodes—lands on the other side of the globe—were inhabited.

Such was the situation when Columbus showed up in the Spanish court, hat in hand. The dramatic story of his debate with Spanish scholars there is from Washington Irving's History of the Life and Voyages of Christopher Columbus, and it's every bit as historical as "The Legend of Sleepy Hollow." What problems Columbus had with his crew during the voyage seem to have been unrelated to the shape of the earth, though, as we saw in the opening paragraph, Charles Johnson disagreed.

By the time Galileo tangled with the Inquisition, Magellan and others had circumnavigated the globe, and these voyages stilled most lingering doubts about the earth's shape. Galileo got in trouble, not for claiming that the earth is round, but for arguing that it is not the center of the universe. This dispute set the pattern for the next two hundred years, during which fundamentalists directed their efforts toward smashing the ungodly Copernican system and returning to geocentricity. (We'll discuss this ongoing effort in a later chapter.) Except for a few isolated individuals, no one seriously challenged the spherical assumption. Until, that is, the nineteenth century ….

Chapter 1
The Founding Father

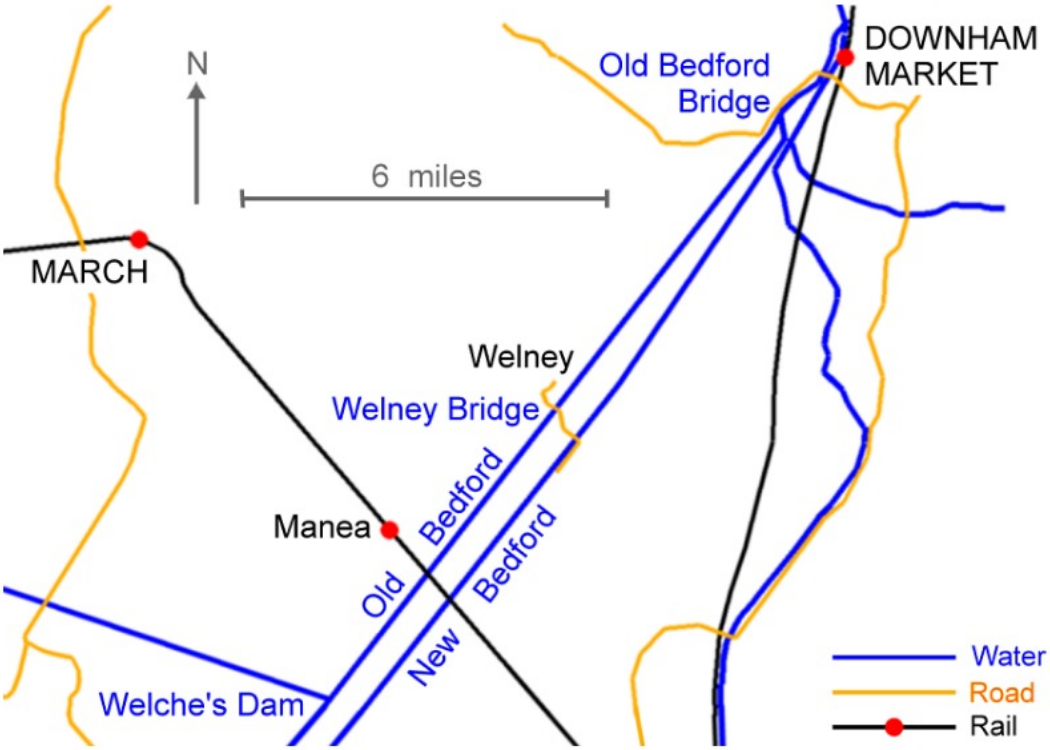
TROUBLE BREWED IN PARADISE, and 21-year-old Samuel Birley Rowbotham faced the challenge pistol in hand. Rowbotham was Secretary of the Cambridgeshire Community, a socialist colony at Manea Fen in central England. Founded in 1838, the colony was supposed to exemplify the New Moral World envisioned by Robert Owen, England's leading socialist. Now, less than a year later, it was torn by dissension, and most of the colonists were assembled to forcibly expel Rowbotham from office.

The headquarters of the Cambridgeshire Community stood on the east bank of the Old Bedford Canal, just north of Welche's Dam. The canal runs perfectly straight and unobstructed from Welche's Dam northeast to Welney Bridge, a distance of about six miles. In their spare time, Secretary Rowbotham and some like-minded colonists performed experiments on this stretch of the canal to determine the curvature of the waters. They found none. Armed with this experimental evidence and a long list of scriptures, Rowbotham had attempted to impose upon the colony the doctrine that the earth is flat.

No one could deny that Manea Fen looks flat. The Fens district of England lies south of the Wash, a silted-up bay of the North Sea. Comprising about a half-million acres, it was mostly reedy, uninhabited swamp during historical times, although the last glacier left islands of higher ground. The Romans built some embankments along the Wash, and an ancient tradition holds that these were part of a scheme to drain the Fens. The Roman embankments were insufficient, and the Fens suffered numerous inundations by the sea in medieval times.

The southeastern section of fenland extends almost to the ancient university town of Cambridge. In 1634, Francis, Earl of Bedford, formed a consortium to drain this area, now known as the

Bedford Level. In those days, universities didn't teach civil engineering, and Bedford turned to a talented Dutch engineer, Cornelius Vermuyden. The project took nearly two decades. Vermuyden built dikes along the coast, levees along the rivers, and drainage ditches through the fens. Windmills pumped the fen water into the rivers where it would not flow of its own accord. Ancient river channels were deepened and an artificial river, now known as the Old Bedford River, was dug; a cut parallel to this, the New Bedford River, was added about fifteen years later. By the 19th century, the Old Bedford had been adapted for barge traffic and was known as the Old Bedford Canal.



Map showing part of the Bedford Rivers and surrounding fenland Part of the Old and New Bedford Rivers and surrounding fenland.

The Manea Fen property actually belonged to William Hodson, a wealthy farmer who lived near Wisbech, Cambridgeshire. A former Methodist lay preacher, Hodson was enamoured with the ideas of Robert Owen, then England's leading socialist. Owen advocated a network of self-sufficient socialist colonies, but no one knew whether his ideas would work in practice. In the fall of 1838, Hodson decided to build an Owenite colony on the Manea Fen estate.

The former fenland was wonderfully fertile; the area was (and still is) a center for barley, wheat, hay, and oats. [ref. 1.1] Hodson believed Manea Fen's 200 acres could support fifty families, and he planned to build fifty houses plus a community building and workshops. All buildings would be heated by a central heating plant, and the colony would have its own steam engine to run its threshing machine and other equipment. To ensure the colony's self sufficiency, the colonists would include members of all major trades. Hodson advertised in the Owenite paper, the New Moral World, for someone to run the colony. One applicant was 21-year-old Samuel Birley Rowbotham.

Rowbotham was born in Manchester, where Robert Owen had once run a cotton mill. Manchester remembered Owen for his management skill, benevolent policies, and improvements in cotton spinning machinery, so when he began preaching socialism, Owen found a ready following there. Rowbotham was one of many who attended Owen's Manchester lectures and found his political and economic ideas appealing. Though he never formally joined a local Owenite group, Rowbotham became a hanger-on, well-known to many socialist leaders.

When William Hodson met Rowbotham to discuss his plans for the colony, he was immediately impressed by the young man. Orthodox Owenites tended to be freethinkers, but the former minister found that Rowbotham combined Christian piety with socialist enthusiasm. Rowbotham got the job, and the two began organizing the community.

Most Owenite leaders feared Hodson's community would be too small to survive, and the National Community Friendly Society never endorsed the project. Several individual Owenite chapters did, however, and the "Cambridgeshire Community" was organized with Rowbotham as Secretary. The charter called for them to acquire Manea Fen from Hodson over a twenty year period. Construction began on a large community building on the canal bank, and Rowbotham beat the bushes for colonists. He flushed out a motley assortment.

The first recruits arrived at Manea Fen at about Christmas of 1838. As one disgusted socialist later described it, "They immediately commenced finding fault with one another and with everything about them." [ref. 1.2] The colonists ate, drank, caroused, and argued with gusto, but they showed little enthusiasm for work. Rowbotham tended to select colonists for their religious orthodoxy rather than their personal character and useful skills. His recruits constantly battled with the freethinking orthodox Owenites.

The colony struggled through the winter of 1839 on subsidies provided by Hodson. The divisions among the colonists were papered over and the necessary work somehow got done. In the spring, the crops were planted and a semblance of harmony achieved. But early summer brought a crisis.

Rowbotham had a secret agenda from the beginning. When he first saw Hodson's ad, he consulted a map of Cambridgeshire and noted its many straight waterways. A flat-earther from his youth, Rowbotham saw them as ideally suited for testing the alleged convexity of the earth, and he was delighted to discover that Manea Fen actually fronted on the Old Bedford Canal. [ref. 1.3] It's not clear exactly what experiments Rowbotham and his colleagues performed in the summer of 1839, for his later accounts are contradictory. In one version, he claimed that he sat in the water and observed with a telescope a few inches above the surface. From this vantage point he could see boats so far down the canal that they should have been out of sight behind the curvature of the earth. In another version, he claimed he had set up a surveyor's transit on a bridge and rigged two boats with tall masts carrying flags at the same height above the water as the crosshair. The boats were dispatched in opposite directions on the canal, but the flags failed to drop below the line of sight as required by spherical theory. Whatever the experiments, Rowbotham and a few others decided to make flat-earth fundamentalism a tenet of the Cambridgeshire Community, and that was the final straw.

A stormy meeting of the Manea Fen socialists ensued, and for once Rowbotham's silver tongue failed him. He was shouted down and voted out. When he refused to go, the council boarded up the door to his room. It was then that Rowbotham got his pistol (unloaded, he later claimed) and sent his opponents scurrying. Hodson supported Rowbotham, and Samuel sacked the entire council.

Flushed with victory, Rowbotham arranged a series of flat-earth lectures in the nearby town of March. When he returned from the first lecture, however, he found himself locked out again. This time, Hodson wouldn't support him, and Rowbotham and seven followers—"undesirables" he had recruited—were thrown out of the colony. The exiles moved to nearby Wisbech, where they set up housekeeping and organized another series of flat-earth lectures. These were not successful, so the little troupe hit the road for London. There they disbanded and dispersed.

Let's now take a closer look at Rowbotham himself

Samuel Birley Rowbotham was born in Didsbury Chapelry, a small district on the outskirts of Manchester, in 1816. The Rowbothams were a numerous clan in surrounding Lancashire, with

roots going back many centuries. Samuel's father was probably a middle-class merchant and his mother's family, the Birleys, included numerous well-to-do industrialists. The Birleys owned the Egyptian Cotton Mills in Manchester and collaborated with the Scottish inventor Charles MacIntosh to produce rubberized raincoats that still bear his name. In 1830, they helped establish the Manchester–Liverpool Railway to haul cotton from the Liverpool wharves to their mills.

Samuel Birley Rowbotham

As a youth, Samuel was pious but rebellious, and his attitude toward school teachers often put him at the wrong end of a birch switch. As he told it 50 years later, [note 1.1] he first began to doubt Newton at age 7. At Christmas time the following year, Samuel's school held a program on the system of the universe, and the Rowbothams attended. The Newtonian nonsense so offended young Samuel that he and a friend tried to sneak out. They were apprehended, to the mortification of his parents. Samuel's father caned him and transferred him to a different school.

Shortly afterward, the rebellious boy was sent to live with his paternal grandfather. This gentleman was something of a mathematician and a great admirer of Newton. He had a small scientific library, a large and expensive orrery, [note 1.2] and several telescopes. The old man showed his grandson some of the astronomical wonders to be seen with a telescope, including the mountains of the moon. Even then, Samuel was not convinced that the moon is a large and distant body.

One day, little Samuel stood between his grandfather's knees while the elder Rowbotham discussed the wonders of the universe with some friends. Finally the old man asked the boy if he was convinced. "Grandpa," he replied, "you make it sound very nice, but you don't prove what you say. You only talk and calculate; some day, when I get a big man, I will show you and all these gentlemen that you are wrong, and I will prove it. I will spend all my money and all my time doing it." [ref. 1.4]

His grandfather's friends inclined toward infidelity, and Samuel noted that they based their arguments against the Bible on the Newtonian system. As he grew older, Samuel studied the Bible assiduously, and he found there confirmation of his astronomical suspicions. The Bible clearly shows that the ancient Hebrews considered the earth flat and immovable and covered with the solid dome of the sky. Samuel decided it was either Newton or the Bible. Sometimes he was not sure which:

Again and again, the feeling came over me that as the Newtonian system appeared so plausible and so grand in its extent and comprehensiveness, it might after all be correct; and, if so, there could be no heaven for man's future enjoyment; no higher existence than on this earth; no spiritual and immortal creatures, and therefore no God or Creator. [ref. 1.5]

As he matured, Rowbotham read widely in the popular scientific literature, and he probably attended lectures on various aspects of science.

Meanwhile, he vacillated between Biblical literalism and atheism, sometimes leaning toward Newton, sometimes toward the Bible. It was while in this state that Rowbotham embraced the ideas of Robert Owen. With a broad if superficial knowledge of science, Rowbotham sometimes lectured Owenite groups on scientific topics, and he proved to be a gifted speaker. It was his speaking ability that caught the attention of the leading Owenites and ultimately landed him the job at the Cambridgeshire Community.

After his brief adventure at the Manea Fen colony, Rowbotham dropped from sight for three years. In 1842, he surfaced again in Manchester with a 64-page pamphlet entitled An Inquiry

into the Cause of Natural Death, or Death from Old Age, and Developing an Entirely New and Certain Method of Preserving Active and Healthful Life for an Extraordinary Period. Besides the extraordinarily long title, several things are notable about the pamphlet. First, Rowbotham began his life-long practice of operating under pseudonyms, here calling himself "Tryon." Second, his publisher, Abel Heywood, was a publisher of socialist writings. Third, Rowbotham did not name or claim any medical credentials, although the text implies that he was a doctor.

Rowbotham's one-page introduction to his Inquiry is dated January 1, 1842. Acknowledging that readers might find some of his ideas startling, he insisted that they were solidly based:

Everything of a metaphysical or speculative character has been carefully avoided; so that whoever may feel disposed to raise objections, he will be obliged to do so not in accordance with any whim, prejudice, or superstition, but by denying the truth of the premises or the legitimacy of the deductions; or, in other words, by combating with truth and reason. [ref. 1.6]

Rowbotham argued that the body hardens from conception to death. The process begins with the growth of bones in the embryo and continues through maturity, ending with the hardening of the aged body. Numerous observations support this view. The bones of children are soft and tough, but adult bones are brittle and easily broken by falls. Tendons and cartilage harden with age. The eyes become dim, the ears grow deaf, blood vessels clog and solidify until the blood becomes stationary. Death is the consequence of this general hardening. He summed it up thus:

Old age, then, is only a name given to certain conditions of the body, which conditions may be brought on sooner or later according as the process of ossification, or consolidation, proceeds with more or less velocity. [ref. 1.7]

The aging process, however, is not inevitable. Without proper care, the human body dies little by little; properly cared for, it is virtually immortal. Aging primarily results from "earthy matter" such as phosphate and carbonate of lime, which clogs up the body. Proper care means a diet which avoids earthy matter.

Rowbotham recommended fresh vegetables, greens, fruit, and meat. Sugar and alcohol are harmless in moderation, but salt is very bad and so is hard water. Cider and perry [note 1.3] both contain malic acid which dissolves earthy matter, so they are healthful. Wheat flour is bad news, and white bread is the very "staff of death." [ref. 1.8]

Numerous groups of people and notable individuals have reputedly achieved great longevity. Rowbotham claimed that the ancient Gymnosophists [note 1.4] ate a healthy diet; consequently, they lived so long that they tired of life and committed suicide in disgust. The Irish ate little wheat and lived long. Women generally ate less earthy matter and out-lived men. Eating sparingly promotes longevity even if the food is high in earthy matter. Rowbotham claimed that long-lived drunkards are invariably sparing eaters. [note 1.5]

Even after a lifetime of bad diet, health could be restored. After nine months of investigation, Rowbotham had reached a firm conclusion:

By a careful and continued use of the Tartaric, Hydro-chloric, and Nitric acids, in peculiar states of combination, the most wonderful effects have been produced. I have no wish whatever to keep the proportions and particular modes of combining them, and the proper doses, from the public, so soon as experience has shown the best mode of exhibiting them in every variety of complaint. Up to this moment, I have had three hundred and twenty of the most severe and obstinate cases under my care. The plan of treatment has been to put the patient upon a peculiar diet (one consisting of articles as free as possible from earthy matter), and to administer certain combinations of the tartaric, nitric, and hydro-chloric acids, to dissolve what I conceived to be

the matter which obstructed the system; and in NO case where this has been attended to has it failed. [ref. 1.9]

Three hundred twenty successes without a failure is an unbelievable success rate. Rowbotham summarized several of his cases. Five patients were cured of severe heart palpitations. Several were cured of rheumatism, paralysis, and scrofula. A three-year-old boy, afflicted with a hideous skin condition, was restored to health. Rowbotham concluded that with proper diet, humans can live for an indefinable period without any medicine.

The pamphlet is a curiously-tossed salad of research and rationalization. Rowbotham displayed an uncommon knowledge of basic chemistry, and he had done some experimenting of his own. His citations of published experimental results and statistical studies prove that he read widely. His text reveals no monetary motive beyond selling the pamphlet. But he learned fast.

In 1845, Abel Heywood published a two-part second edition of An Inquiry into the Cause of Natural Death. Part 1 is based on the first edition, but it is substantially revised and enlarged. Part 2, somewhat longer, is a separate pamphlet with page numbers continued from part 1. The author, "S. Rowbotham," is described as author of Essay on Human Parturition. [note 1.6]

The second edition of part 1 differs significantly from the first edition. For one thing, it is much more hard-hitting. Wheat bread is not only the "Staff of Death," but Rowbotham charged that unscrupulous millers adulterated their flour with ground-up chalk or other earthy substances. Some millers, Rowbotham hinted darkly, might grind up bones from charnel houses:

Ay! start not reader; perhaps the last morsel of bread which found its way to thy stomach was contaminated with the bony remains of thine own grandmother! [ref. 1.10]

Lime phosphate still causes aging and death. Sickness and disease are still deemed proportionate to food intake, and readers are advised to eat less if they wish to live longer. But the healthful effects of tartaric, nitric and hydrochloric acids, so prominent in the first edition, are gone from the second.

Part 2 introduces free phosphorus as the touchstone of life. Phosphoric acid reduces appetite while providing healthful free phosphorus. Continuous use of phosphoric acid reduces the desire for narcotics like alcohol and opium, and it reduces sexual desire (a pious Victorian touch) while increasing sexual potency. [ref. 1.11] In fact, Rowbotham declared pointedly, some men and women in their seventies had all powers restored through its use. [ref. 1.12] Not until the second to the last page did he finally get to the point:

The dose of phosphoric acid for an adult, one drachm, to half-an-ounce; but the reader had better seek the advice of the author, which will be given freely. [ref. 1.13]

Perhaps. But in later years, Rowbotham's advice was anything but free.

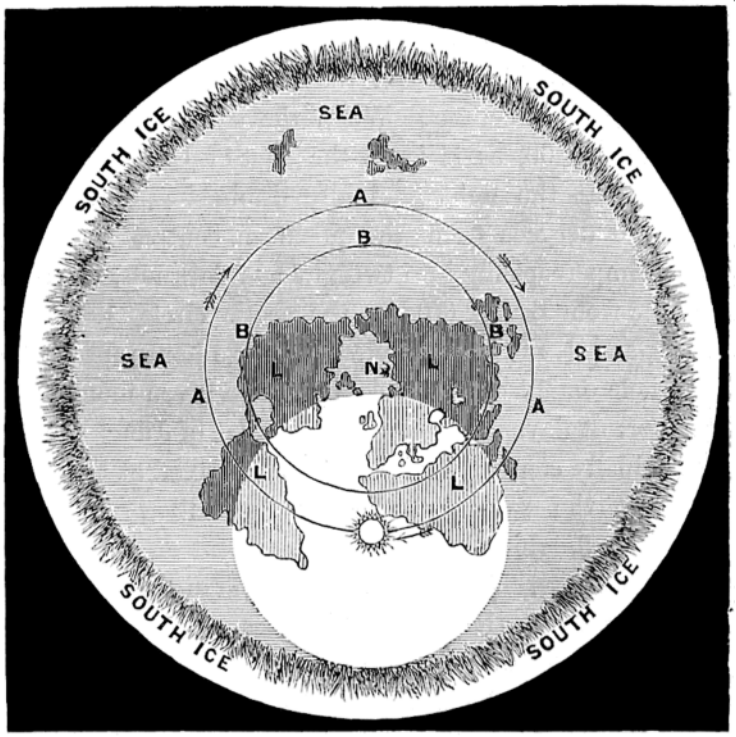
Neither edition of Inquiry into the Cause of Natural Death mentioned the shape of the earth, but Rowbotham had not lost interest in the question. All his life, he never let his medical business interfere with his campaign against astronomy. Perhaps he lectured intermittently from the time he was thrown out of the Manea Fen colony, but his real career as a flat-earth lecturer began about 1848. By then, he had found an alternative to the spherical system.

In 1819, an anonymous author published a 38-page pamphlet entitled The Anti-Newtonian: or, A True System of the Universe, with a Map of Explanation, Proving the Sun to Be a Moveable Body and Central Circling Equator of Equal Time, etc. The work was printed in London at the author's expense, but it contains no hint of who the writer was, where he lived, or any other

biographical information except that he had previously published a work pointing out "the dangerous consequences of speculative astronomy."

According to The Anti-Newtonian, the earth is a vast circular plain enclosed by a wall of ice. A map in the pamphlet shows the north pole at the centre, the south pole at 12 o'clock, east and west respectively at 3 o'clock and 9 o'clock, and an "unknown pole" at 6 o'clock. The sun's path is a circle whose centre moves back and forth along a line connecting the south pole and the unknown pole to cause the seasons. The half of the earth beyond the east–west line toward the unknown pole is unknown and uninhabitable.

Rowbotham never mentions The Anti-Newtonian in any of his writings, but he almost certainly based his own system on it. He discarded the circumferential poles and the unknown, uninhabitable parts of the earth as unworkable. He left the north pole at the centre, but he declared that there is no south pole; the impassable wall of ice encircling the known, inhabitable world forms the "southern limit." East and west are merely those directions at right angles to the compass needle. The equator is a circle centred on the north pole and lying halfway between it and the southern limit. The sun circles above the earth in the region of the equator, moving north or south of the equator to suit the season. Rowbotham called his system zetetic astronomy.



Rowbotham's map of the world, showing the sun's path above it (from Earth Not a Globe, 1873 edition).

England was then on the brink of an economic renaissance. The 1840's had been known as "the hungry forties," a time of economic depression, unemployment, and radical labour agitation. The worst abuses of the Industrial Revolution were being curbed. The Factory Act of 1847 prohibited women and boys under 18 from working more than ten hours per day, effectively cutting everyone's workday to ten hours. Several prominent churchmen who called themselves "Christian Socialists" preached a social gospel and promoted the cause of labour. England weathered the socialist storms, and the decade gave way to prosperity, the years 1851 and 1852 being unprecedented.

Rowbotham seized upon the growing desire for self-education among the British citizenry. Public education was popular and, with a shortage of university appointments, many scientists and scholars supported themselves and their avocations as travelling lecturers. Besides the more

or less respectable scientists, scholars, and clergymen, there were quacks, phrenologists, itinerant preachers, and assorted other opportunists. A popular forum for such lectures was the Mechanics' Institute.

In 19th century England, a mechanic was someone who worked in a manual occupation, especially a handicraftsman or someone skilled with machinery. The first Mechanics' Institute was founded in London in 1823 to afford members facilities for self-education through classes and lectures. The idea caught on, and Mechanics' Institutes sprang up all over England. Many of these institutions evolved until only a small portion of the members belonged to the artisan class.

Late in 1848, Rowbotham sent a description of zetetic astronomy to the Royal Astronomical Society in London. Soon afterward, he hit the road for Trowbridge, a Wiltshire market town lying eight miles southeast of the ancient Roman city of Bath and about a hundred miles west of London. Site of a weekly market and an annual fair from 1200 A.D., Trowbridge was a center for woolen manufacturing by the time of Henry VIII. By 1849, it had a population of about 5,000 and a thriving Mechanics' Institute, to which Rowbotham delivered a series of lectures beginning on January 15, 1849.

Two correspondents commented on Rowbotham's lectures in the pages of the Wiltshire Independent. The first wrote as follows:

> On Monday and Tuesday evening last, a series of two lectures were delivered here, by Mr. S. Goulden [note 1.7] , to prove modern Astronomy unreasonable and unscriptural, that the earth is a plane or disc, not a globe; the Sun, Moon, and Stars, self-luminous, and the whole within 4000 miles of the earth, &c., &c. His lectures were well attended, were delivered with great skill, the lecturer proving himself thoroughly acquainted with the subject in all its bearings.—In fact the lectures will probably be prolonged for a few evenings longer. [ref. 1.14]

Rowbotham's lectures were indeed prolonged, and he spoke to the Mechanics' Institute again on Wednesday evening. Another correspondent, far more critical than the first, wrote as follows:

Considerable amusement, if not instruction, has been afforded at the Rooms of the above Institution the past three evenings by a travelling lecturer who professes to overthrow the Newtonian theory of the universe, and prove that the world is a circular flat surrounded by an infinite boundary of ice and a mass of ice in the centre, the north pole. That the land floats on the ocean, that the ocean is supported by vapour and the vapour by infinite fire; that the sun, moon and stars are wholly phosphoric and all within a thousand miles of the earth. … These absurdities were followed by others still more absurd, such as that the sun was gradually nearing the earth, would ultimately consume all its oxygen and then go out, but phospherus [sic] would so impregnate the atmosphere and all things that there would be universal light, and every human being would be a brilliant walking luminary. Then there would be no oxygen to consume animal matter, men would require no food, contract no disease, and consequently never die. [ref. 1.15]

The cosmology so briefly outlined is consistent with that promoted by Rowbotham to the end of his life. His fascination with phosphorus is consistent with his other writings, but his prediction that humans would eventually walk the earth as phosphorescent immortals must have been too much for most listeners. Whatever Rowbotham's private thoughts on the matter, this idea never again appears in reports of his lectures, nor does it ever appear in his writings. From the reviews, however, it is clear that he had already adopted the modus operandi he would use for the rest of his life.

By the end of 1849, Rowbotham had abandoned the pseudonym S. Goulden and begun calling himself "Parallax." According to Webster, parallax means "the apparent change in the position

of an object resulting from a change in the viewer's position." Astronomers use the apparent shift of a star's position in space, as seen from opposite points in the earth's orbit, as a measure of distance. Rowbotham probably adopted the name because his theory of perspective involved a parallax-like shift, though cynics suggested it was a synonym for "shifty."

Early in his lecture career, Rowbotham sometimes had difficulty dealing with objections. At Trowbridge, for instance, one correspondent reported that a townsman, Mr. Stapleton, had effectively refuted Rowbotham's arguments. However effective Stapleton's arguments might have been, they were presumably tame compared to what Rowbotham ran into at Burnley.

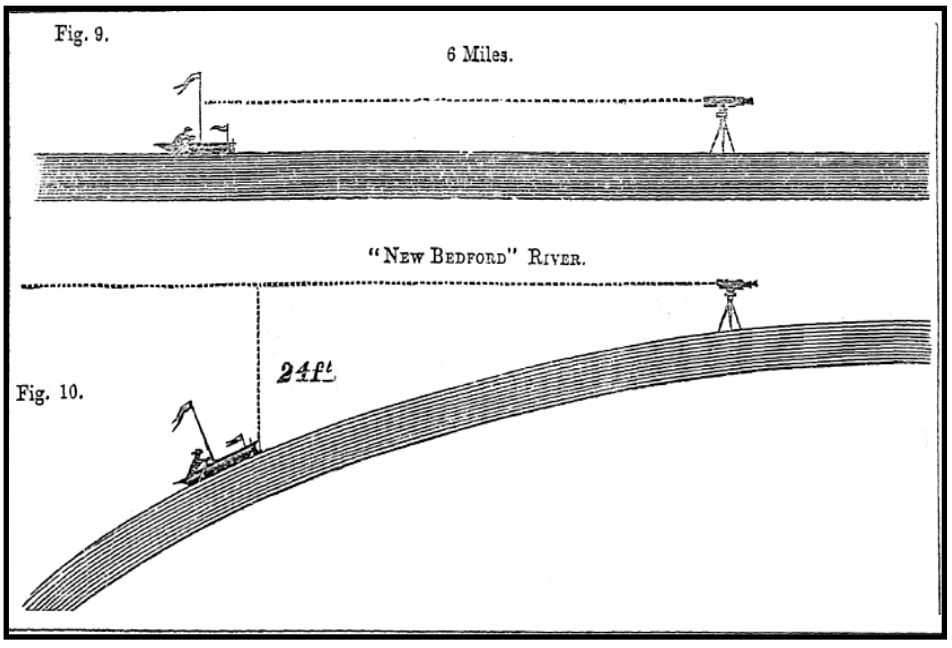
As Parallax, Rowbotham scheduled two lectures on zetetic astronomy at the Working Men's Newsroom, Burnley, for Wednesday and Friday evenings, December 5 and 7, 1849. The attendance for the first lecture was small, but the audience was lively and interested. Two listeners questioned Rowbotham closely about how, if the earth is indeed flat, the hull of a ship can disappear from view before the masts. Rowbotham didn't have a satisfactory answer, and he evaded by saying the subject properly belonged to his second lecture. He promised to answer this and other hard questions after his second lecture on Friday evening. A correspondent for the Blackburn Standard described the result:

Friday evening came—the fire was comfortably lighted, and the company collected, but no 'Parallax' appeared!! The persons present of course concluded that he had slipped off the icy edge of his flat disc, and expect to see him again when he peeps up on the opposite edge. [ref. 1.16]

It was also in 1849 that Rowbotham published his first flat-earth work, a modest 16-page pamphlet entitled Zetetic Astronomy: A Description of Several Experiments which Prove that the Surface of the Sea Is a Perfect Plane and that the Earth Is Not a Globe! The pamphlet describes six experiments with a surveyor's theodolite. For example:

Between the Counties of Huntingdon and Norfolk, across the Fens of Cambridgeshire, there is an artificial river called the "New Bedford;" it is upwards of 20 miles in length, nearly a straight line, and without a lock or other interruption to its continuity: nor is there a current except at the ebb tides of the German Ocean. So that if the Earth is a Globe, the water in this canal is an arc of a circle. A small boat was sent out 6 miles from the Theodolite—as represented in fig. 9, but no convexity whatever could be detected! the surface of the water was perfectly level!!

In 6 miles there should have been a fall of 24 feet from the line of sight!!!



As represented in fig. 10. [ref. 1.17]

Figures 9 and 10 from Rowbotham's 1849 pamphlet

To judge from the pamphlet, the arguments Rowbotham sent to the Royal Astronomical Society had borne fruit. The title page identifies Zetetic Astronomy as "the substance of a paper read before the Royal Astronomical Society on the evening of Dec. 8, 1848." Broadsheets (posters) advertising Rowbotham's lectures made the same claim. One of the broadsheets fell into the hands of mathematician Augustus De Morgan, who explored unorthodoxies of science and scholarship in a weekly column "A Budget of Paradoxes" [note 1.8] in the Athenæum magazine. As it happened, De Morgan could shed light upon what happened at the Royal Astronomical Society. Quoting Rowbotham's claim, he commented:

No account of such a paper appears in the Notice for that month: I suspect that the above is Mr. S. Goulden's way of representing the following occurrence: Dec. 8, 1848, the Secretary of the Astronomical Society (De Morgan by name) said, at the close of the proceedings,—"Now, gentlemen, if you will promise not to tell the Council, I will read something for your amusement:" and he then read a few of the arguments that had been transmitted by the lecturer. [ref. 1.18]

In the 1850's, Rowbotham stumped much of England, lecturing and learning. As Parallax, his platform technique was simple. Zetetic, he would explain, is from the Greek zeteo, meaning to seek or inquire. He claimed to inquire only after facts, leaving mere theories to the likes of Copernicus and Newton. He argued that the facts show the earth is flat, and the theory that it is round is untenable. Recovering from the Burnley disaster, he developed an argument which explained ships disappearing over the horizon hull first as a trick of perspective. His bottom line was always that the surface of still water is level, which he had verified himself with a series of experiments on the waters of the Old Bedford Canal.

The lectures were followed by a question and answer period, and that was where Rowbotham's rhetorical skills shone. By the time he reached the end of a lecture, the better-educated members of his audience were itching to get at him. They were usually in for a shock. Rowbotham had a ready answer for just about any objection they could raise. Hadn't the earth been circumnavigated? Surely, but sailing around the world is simply sailing in a circle. One can circumnavigate Britain. Is Britain a sphere? Next question.

The discussion was usually a case of the unarmed assaulting a fortress, with Rowbotham easily repelling all attacks. If a persistent questioner backed him into a dangerous position, Rowbotham would shut him off with, "Now, Sir, you have had your share of the discussion. Let someone else have a turn." After an hour of so of this, the spherical contingent of the audience would be foaming at the mouth, and sometimes the lecturer was even threatened with violence. The calm, witty, and ever-courteous Rowbotham was impressive by contrast. Those who accepted his scriptural arguments were rarely impressed by any objections the opposition could throw at him, and many went away convinced that they had been deceived all their lives about the shape of the earth.

The early adventures of "Parallax" were not recorded in any detail, but reviewers for many provincial newspapers were impressed. The Liverpool Mercury, January 25, 1850, remarked that "the matter is sufficiently important to claim the attention of the scientific world." Reviewing another lecture series, the Athlone Sentinel, May 21, 1852, noted:

The audience listened with the deepest attention, and appeared astonished at the revelations of the lecturer. At the close of each lecture several gentlemen entered the lists with "Parallax," and a lively and interesting discussion ensued. "Parallax," however, maintained his principles with infinite tact and ability, and answered his opponents in a masterly manner. The audiences left strongly impressed with the startling facts to which they had been listening. …

Everywhere he went, Rowbotham left behind a few converts, and by the mid-1860's, "Parallax" was a household word in England.

Rowbotham was often challenged to repeat his experiments. Sometimes, he would bluff his way out. On one occasion, he agreed to duplicate one of his Bedford Canal experiments on the Teign River. Markers were to be set up at intervals, all at a fixed height above the river, and the row of markers was to be inspected by telescope for curvature. Parallax was late, so the committee of auditors from the previous lecture set up the markers without him. When Parallax arrived, he claimed that the committee had shown bad faith by setting up the markers in his absence, was trying to swindle him, and so forth, and he left in a huff. [ref. 1.19] But it was not always necessary to evade experiments.

Let Richard A. Proctor, science writer, astronomer, and good-humored arch-enemy of Parallax, describe another experiment:

Mr. Rowbotham did a very bold thing … at Plymouth. He undertook to prove, by observations made with a telescope upon the Eddystone Lighthouse from the Hoe and from the beach, that the surface of the water is flat. From the beach, usually only the lantern can be seen. From the Hoe, the whole of the lighthouse is visible under favourable conditions. Duly on the morning appointed, Mr. Rowbotham appeared. From the Hoe a telescope was directed towards the lighthouse, which was well seen, the morning being calm and still and tolerably clear. On descending to the beach it was found that, instead of the whole lantern being visible as usual, only half could be seen—a circumstance doubtless due to the fact that the Air's refractive power, which usually diminishes the dip due to the earth's curvature by about one-sixth part, was less efficient that morning than usual. The effect of the peculiarity was manifestly unfavourable to Mr. Rowbotham's theory. The curvature of the earth produced a greater difference than usual between the appearance of a distant object as seen from a certain low station (though still the difference fell short of that of which would be shown if there were no error). But Parallax claimed the peculiarity observable that morning as an argument in favour of his flat earth. It is manifest, he said, "that there is something wrong about the accepted theory; for it tells us that some much less of the lighthouse should be seen from the beach than from the Hoe, whereas still less was seen." And many of the Plymouth folk went away from the Hoe that morning, and from the second lecture, in which Parallax triumphantly quoted the results of the observation, with the feeling which had been expressed seven years before in the Leicester Advertiser, that "some of the most important conclusions of modern astronomy had been seriously invalidated." [ref. 1.20]

No one ever accused Parallax of lacking audacity. Dodges of this sort were not always necessary, however, for Rowbotham always had a favourite trick ever up his sleeve. As Proctor continued:

Another experiment conducted by Parallax the same morning was creditable to his ingenuity. Nothing better, perhaps, was ever devised to deceive people, apparently by ocular evidence, into the belief that the earth is flat—nor is there any clearer evidence of the largeness of the earth's globe compared with our ordinary measures. On the Hoe, some ninety or a hundred feet above the sea-level, he had a mirror suspended in a vertical position facing the sea, and invited bystanders to look in that mirror at the sea-horizon. To all appearance the line of the horizon corresponded exactly with the level of the eye-pupils of the observer. Now, of course, when we look into a mirror whose surface is exactly vertical, the line of sight to the eye-pupils of our image in the mirror is exactly horizontal; whereas the line of sight from the eye to the image of the sea-horizon is depressed exactly as much as the line from the eyes to the real sea-horizon. Here, then, seemed to be proof positive that there is no depression of the sea-horizon; for the horizontal line to the image of the eye-pupil seemed to coincide exactly with the line to the image of the sea-horizon. It is not necessary to suppose here that the mirror was wrongly adjusted, though the slightest error of adjustment would affect the result either favourably or unfavourably for Parallax's flat-earth theory. It is a matter of fact that, if the mirror were perfectly vertical, only very acute vision could detect the depression of the image of the sea-horizon below the image of the eye-pupil. The depression can easily be calculated for any given circumstances. Parallax encouraged observers to note very closely the position of the eye-pupil in the image, so that most of them approached the image within about ten inches, or the glass within about five.

Now, in such a case, for a height of one hundred feet above the sea-level the image of the sea-horizon would be depressed below the image of the eye-pupil by less than three hundredths of an inch—an amount which could not be detected by one eye in a hundred. [ref. 1.21]

Proctor goes on to describe a variation of the same experiment which would easily show the dip of the horizon—if it exists.

Rowbotham first published Earth Not a Globe in 1865. [note 1.9] The foundation work of zetetic astronomy, this 221-page book presumably contains the substance of his lectures and perhaps some additional arguments. The first major flat-earth work since Cosmas Indicopleustes, it opens with these words:

The term "zetetic" is derived from the Greek verb zeteo; which means to search or examine—to proceed only by inquiry. [ref. 1.22]

Presumably, he opened his lectures the same way. Rowbotham argued that the Copernican system is without a proven foundation. It is based on premises that are unproven and cannot be proved. Rather than grounding their system in facts, astronomers speculate and advance metaphysical theories. The zetetic method, as used in courts of law, is the only legitimate method of scientific inquiry:

Let the practice of theorising be cast aside as one fatal to the full development of truth; oppressive to the reasoning power; and in every sense inimical to the progress and permanent improvement of the human race. [ref. 1.23]

Throughout the book, Rowbotham disparages theories and theorists at every opportunity:

Whosoever creates or upholds a theory, adopts a monster which will sooner or later betray and enslave him, or make him ridiculous in the eyes of practical observers. [ref. 1.24]

And furthermore:

The very construction of a theory at all, and especially such as the Copernican, is a complete violation of that natural and legitimate mode of investigation to which the term zetetic has been applied. [ref. 1.25]

Modern philosophers consider theories the essence of science. Rowbotham's ideas were grounded in the Scottish "Common Sense" Realism of philosopher Thomas Reid (1719–1796). Reid rejected abstract speculations and metaphysics, arguing that some things are self-evident (for example, the external world exists). Early in the 19th century, Reid's views were popular among conservative Protestants seeking to stem the tides of astronomy and geology. Combining ideas selected from Reid and Sir Francis Bacon, they sought absolute proof in science and rejected all theories. [note 1.10] [ref. 1.26] Thus, Rowbotham's attacks on theories probably were familiar to many readers.

In setting forth zetetic astronomy, Rowbotham presented arguments in favor of a flat earth and rebuttals against the common arguments for sphericity, with alternative explanations. His fundamental arguments for the flat earth were: (1) Standing still water is flat, (2) the earth does not appear convex when viewed from a balloon, (3) lighthouses are seen at distances impossible on a sphere, (4) surveyors make no correction for curvature, and (5) the earth is immobile. He supported these with experimental, observational, or documentary evidence. Rowbotham treated the following as serious arguments for sphericity: (1) Ships seem to disappear over the horizon, (2) the sea horizon appears to dip, (3) sunrise and sunset, and (4) the earth eclipses the moon. For these, he constructed alternative explanations, including the zetetic law of perspective.

The fundamental argument of zetetic astronomy is that standing still water is flat. If the earth is a globe, the surface of large bodies of water must be convex. As in his 1849 and 1851 pamphlets, Rowbotham described an experiment on the six miles of water between Welney Bridge and Welche's Dam on the Old Bedford Canal:

The observer, with a good telescope, was seated in the water as a bather (it being the summer season), with the eye not exceeding eight inches above the surface. The flag and the boat down to the water's edge were clearly visible throughout the whole distance! [ref. 1.27]

This was, of course, the location of Rowbotham's former Owenite colony. He also described numerous other experiments, including the mirror experiment discussed by Proctor.

In the 1860s, the cutting edge of aerial technology was the balloon. For some reason, numerous early balloonists reported that from high altitude, the earth looks positively concave. Perhaps Elliott, an American balloonist, was first:

[T]he view of the Earth from the elevation of a balloon is that of an immense terrestrial basin, the deeper part of which is that directly under one's feet. [ref. 1.28]

Quotations from balloonists became a mainstay of flat-earth argumentation.

Under normal viewing conditions, at least, the sphericity of the earth would limit the distance at which any given lighthouse could be seen. Rowbotham argued that lighthouses were frequently seen at far greater distances, and he gave numerous documented instances.

It was commonly understood that surveyors laying out railways or canals corrected their sights for the curvature of the earth. Rowbotham insisted that this was not done in practice. Furthermore, the British government tacitly acknowledged that the earth is a plane. As proof, he cited standing order No. 6 of the House of Lords, which regulated plans submitted to the government for public works:

[A] datum HORIZONTAL LINE, which shall be the same throughout the whole length of the work, or any branch thereof respectively; and shall be referred to some fixed point stated in writing on the section, near some portion of such work; and in the case of a canal, cut, navigation, turnpike, or other carriage road, or railway, near either of the termini [emphasis presumably added by Rowbotham]. [ref. 1.29]

To a flat-earther, horizontal means flat, not some uniform distance above sea level.

If the earth is a revolving globe, Rowbotham argued, the speed of its surface in England should be about 700 miles per hour. To determine if this is true, he fastened an air-gun to a post and adjusted it to true vertical with a plumb-line. [ref. 1.30]

On discharging the gun, the ball … invariably (during several trials) descended within a few inches of the gun. …. [T]wice it fell back upon the very mouth of the barrel. The average time that the ball was in the atmosphere was 16 seconds … [ref. 1.31]

Allowing half the time for the ascent and half for the descent, Rowbotham calculated that the earth should have moved 5600 feet in the meantime and the balls should have fallen more than a mile away.

A major problem for zetetic astronomy—one Rowbotham obviously hadn't solved when he ignominiously ran away at Burnley—is why outward-bound ships seem to sink below the horizon, first the hull disappearing, then the lower sails, and so forth. Rowbotham explained this effect by the zetetic law of perspective.

Illustrators construct perspective drawings using a geometric concept called the vanishing point, the distant point upon which a group of parallel lines appears to converge. In conventional perspective, the real vanishing point is at infinity. In zetetic perspective, the vanishing point is the limit of visibility, which depends upon the apparent size of an object. To make this point, Rowbotham quoted a popular compendium of facts, Mayhew's Wonders of Science:

The smallest angle under which an object which can be seen is upon average for different sights the 60th part of a degree, or one minute in space; so that when an object is removed from the eye 3000 times its own diameter, it will only just be distinguishable; consequently, the greatest distance at which we can behold an object, like a shilling, of an inch diameter is 3000 inches or 250 feet. [ref. 1.32]

Rowbotham argued that zetetic perspective explains ships apparently going "hull-down" over the curvature of the earth:

[I]f the surface of the hull be ten feet above the water it will vanish at 3,000 times 10 feet; or nearly six statute miles; but if the mast-head be 30 feet above the water, it will be visible for 90,000 feet or over 17 miles; so that it could be seen upon the horizon for a distance of eleven miles after the hull had entered the vanishing point! Hence the phenomenon of a receding ship's hull being the first to disappear, which has been so universally quoted and relied upon as proving the rotundity of the Earth, is fairly and logically a proof of the very contrary! [ref. 1.33]

This explanation has a distinct consequence, which Rowbotham met directly: "If now a good telescope be applied the hull will be distinctly restored to sight!" [ref. 1.34] On a flat canal, the telescope will always bring the object back into view, but this is not always possible on the undulating sea because a telescope magnifies the waves:

[T]hus the phenomenon is often very strikingly observed—that while a powerful telescope will render the sails and rigging of a ship when beyond … the optical horizon, so distinct that the very ropes are easily distinguished, not the slightest portion of the hull can be seen. [ref. 1.35]

This flatly contradicts his frequent statements that a telescope invariably brings the hull back into view!

Another serious objection to zetetic astronomy is the apparent dip of the horizon. Rowbotham confronted the problem directly:

If a theodolite or spirit-level be placed upon the sea-shore, and "levelled," and directed towards the sea, the line of the horizon will be observed to be a given amount below the cross-hair of the instrument, to which a certain dip, or inclination from the level will have to be given to bring the cross-hair and the sea horizon together. [ref. 1.36]

This is fairly stated. The dip of the horizon is generally attributed to the sphericity of the earth. [note 1.11] According to the zetetic law of perspective, however, the horizon always should appear at eye level.

Rowbotham acknowledged that this phenomenon seems convincing, but he argued that it is actually an illusion caused by the lens system of the theodolite. He pointed out that if a convex lens is held in front of a straight line, the apparent position of the line shifts whenever the lens is the slightest bit off center. [ref. 1.37]

Sunrise and sunset seem an even greater problem. If the sun is always above a flat earth, skeptics asked, why does it appear to set? Rowbotham explained that the sun's light at any given time falls in a circle, like a spotlight. Although the path of the sun is parallel to the earth's surface, it appears to ascend when approaching and to descend when receding. [ref. 1.38] He used a

drawing to explain how the apparent position of the sun varies with its actual position. He concluded that sunrise and sunset are a matter of zetetic perspective:

Thus "Sunrise" and "Sunset" are phenomena dependent entirely upon the fact that horizontal lines parallel to each other appear to approach or converge in the distance. … [ref. 1.39]

Both conventional and zetetic astronomy attribute solar eclipses to the moon's passing between the sun and the observer. Lunar eclipses are another matter. Rowbotham argued that the conventional explanation, that the earth passes between the sun and moon, is impossible, for "cases are on record of the Sun and Eclipsed Moon being above the horizon together." [ref. 1.40] (To quell doubts about the latter, he cited numerous references from conventional scientific sources.) He concluded that an unseen dark body is responsible. As for predictions of eclipses, they are simply cyclic phenomena. Ptolemy calculated all eclipses for 600 years, and the Babylonians are known to have calculated eclipses in 719 B.C. [ref. 1.41]

Rowbotham also described his vision of the known universe. Using reported observations of the sun's angular altitude, he calculated its actual height as less than 4,000 miles. He concluded that its path is roughly circular, as explorers in the polar regions have actually observed the sun describing a circle upon the southern horizon. [ref. 1.42] Actually, he argued that the solar path is a spiral that increases and decreases in diameter, taking the sun somewhat north or south of the equator, and this phenomenon causes the seasons. The moon is self-luminous. Its exhibits phases because not all of its surface is luminous, and it rotates to present more or less of the luminous part to the earth.

The earth is like a great ship floating at anchor on the waters of the great deep, but volcanoes are proof that it has a fire in the hold! [ref. 1.43] Rowbotham concluded that the interior of the earth is on fire, and that under the right circumstances it could be annihilated in a conflagration. [ref. 1.44]

In the final section, which amounts to more than a fifth of the book, Rowbotham took his gloves off. He charged that the Copernican theory is completely baseless, and he challenged its advocates to show a single instance where a phenomenon is explained, a calculation made, or a conclusion advanced that does not depend upon assumption! He insisted that conventional astronomy is all assumption and fraud.

The whole system taken together constitutes a monstrous absurdity. It is false in its foundation; irregular, unfair, and illogical in its details; and its conclusions inconsistent and contradictory. Worse than all, it is a prolific source of irreligion and atheism, of which its advocates are, practically, supporters! [ref. 1.45]

Zetetic astronomy would strike at the root of atheism, which depends upon modern astronomy:

The doctrine of the Earth's rotundity and motion is now shown to be unconditionally false; and therefore the scriptures which assert the contrary, are, in their philosophical teachings at least, literally true. In practical science therefore, atheism and denial of scriptural authority have no foundation. [ref. 1.46]

Zetetic astronomy supports the inspiration of the Bible. Some argued that the Bible was intended to teach people how to go to heaven, not how the heavens go, and Rowbotham dismissed them harshly:

To say the Scriptures were not intended to teach science truthfully, is in substance to declare that God himself has stated, and commissioned his prophets to teach things which are utterly false! [ref. 1.47]

He insisted that conventional astronomy threatened the very foundations of Christianity, and he fired a barrage of scriptures. Deuteronomy 26:15, Exodus 19:20, Psalm 102:19, Isaiah 43:15, Psalm 103:11, 2 Kings 2:11, Mark 16:10, and Luke 24:51 teach that up and down are absolute, with heaven above the earth. Conventional astronomy holds that up and down are relative, and Rowbotham demanded:

Where is the true and unchangeable "palace of God?" In what direction is Heaven to be found? Where is the liberated human soul to find its home—its refuge from change and motion, from uncertainty and danger? Is it to wander for ever in a labyrinth of rolling worlds? [ref. 1.48]

He concluded that the belief in heaven is endangered or destroyed by astronomy. Numerous scriptures call the moon a light, not a reflector (Genesis 1:14,16; Psalm 136:7,9; Jeremiah 31:35; Ezekiel 32:7–8; Psalm 148:3; Isaiah 13:10; Matthew 24:29; Isaiah 9:19–20; Psalm 136:7 9; Job 25:5; Ecclesiastes 12:2, Isaiah 30:26; and Deuteronomy 33:14). [ref. 1.49] If the sun becomes black as sackcloth, how can the moon only get red as blood if it is merely a reflector? The fact that the moon will continue to glow when the sun is darkened proves that it shines by its own light. [ref. 1.50]

Revelation says the stars will fall on the earth. How can thousands of stars fall on earth if they are larger than the earth and millions of light-years away? [ref. 1.51] The very distances attributed to stars contradict the Bible:

[T]hey must have been shining, and must have been created at least one hundred million nine hundred thousand years ago! The chronology of the bible indicates that a period of six thousand years has not yet elapsed since "the Heavens and the Earth were finished, and all the Host of them." [ref. 1.52]

The arguments made by skeptics against the Deluge collapse on the flat earth. [ref. 1.53] The Deluge waters would run off the earth like a wave running off the deck of a ship.

Finally, if the earth is a globe, how could Jesus be taken to a high mountain and shown all the kingdoms of the world? How can every eye see him when he comes in the clouds? [ref. 1.54]

But it has been demonstrated that the Earth is a Plane and motionless, and that from a great eminence every part of its surface could be seen at once; and, at once—at the same moment, could every eye behold Him, when "coming in a cloud with power and great glory." [ref. 1.55]

With those words, Rowbotham closed the book. Presumably, he closed his lectures on a similar note.

Earth Not a Globe is a small book, less than 50,000 words. It is organized into 14 sections, but the first occupies 60 pages and the last 46 pages, leaving 113 pages for the remaining 12 sections. Thus, the treatment of topics is inconsistent and the organization somewhat chaotic. One section on the sun's path merits a single page. Zetetic perspective is dealt with in two sections, the second sometimes contradicting the first. In fact, some sections look as if Rowbotham hurriedly threw his lecture and research notes together and handed them to a printer.

If Earth Not a Globe was hurriedly published, perhaps it was rushed into print to forestall a potential rival. Early in 1865, a disciple who styled himself "Common Sense" began publishing 16-page installments of Theoretical Astronomy Examined and Exposed. "Common Sense" was in fact William Carpenter, who in 1864 had published an 8-page pamphlet entitled Earth Not a Globe under the same pseudonym. A printer by trade and Pitman shorthand expert by avocation, he was born in Greenwich in about 1830. His present home in Greenwich was but a few hundred yards from that of the first Astronomer Royal, the estimable and irascible Reverend John

Flamsteed, and his printing shop was nearby. Controversy was not unknown to William Carpenter when he adopted zeteticism.

In September 1858, Carpenter had launched The Spiritual Messenger: A Magazine Devoted to Spiritualism, Mesmerism, and Other Branches of Psychological Science. His third branch of psychological science was phrenology, and Carpenter called this holy trinity "the noblest Sciences that can engage the attention of man." [ref. 1.56] Spiritualism was a relatively recent import to England, the modern-day versions dating from the 1848 manifestations in the bedroom of the Fox girls in Hydesville, New York. Mesmerism and phrenology, the other members of Carpenter's trinity, were already well-established among British mystics. The new magazine of noble sciences was founded with a noble purpose:

It is intended that the '***SPIRITUAL MESSENGER***' shall be a messenger of Truth and nothing but the Truth:—the Standard being the Gospel of Jesus Christ according to the New Testament. … In a word:—its object will be to strengthen the connecting link between Science and Religion. [ref. 1.57]

Where human nature is concerned, there is nothing new under the sun. Spiritualism is now called channeling, the spirit of phrenology lives in foot reflexology, mesmerism survives in acupuncture, and the search for Truth goes on. Thus, William Carpenter was a cross between Shirley MacLaine and Pat Robertson, part New Age mystic and part Fundamentalist. Like Robertson, he believed in the New Testament Gift of Healing, and he sometimes healed the sick using Mesmerism. Like MacLaine, he received messages from the dead. Then as now, most conservative Christians believed such messages come from Satan.

Carpenter vehemently disagreed. In the Spiritual Messenger, he gave six Biblical reasons for believing in spiritualism (for instance, Saul consulted the spirit of Samuel). Perhaps more important was his own experience. He was associated with a powerful medium:

I have had as many as 12 spirits—the spirits of good men and women, John Knox, William Law, and General Havelock [note 1.12] amongst the number—speak to me in the course of two hours … [ref. 1.58]

John Knox became a regular visitor, though he assured Carpenter that he hadn't spoken to another living soul since he had been dead! Another ethereal regular was Captain Hedley Vicars, "late of the 97th Regiment." Carpenter often used his shorthand expertise to preserve séance messages. Vicars's appearance at a séance on Sunday evening, April 25, 1858, was so memorable that Carpenter published it verbatim under the title Communion with Ministering Spirits. (The message: Repent, for your End is near!)

Late in 1858, Carpenter lost two children in rapid succession. When the second, ten-month-old Lewis, died on November 26, the distraught father went straight to his medium friend. She asked about the sick child, but Carpenter put her off with a noncommittal answer and said he wanted to mesmerize her. She understood. Immediately after she went into her trance, she had a vision of Lewis, to the amazement and relief of his father.

Carpenter was then holding regular séances in his home, and he published the following ad in Spiritual Messenger:

SPIRIT DISCOURSES
Mr. W. CARPENTER

Respectfully informs Spiritualists, and all who are earnestly in search of the truth, that his Spirit-Medium has kindly consented to allow the introduction of strangers to the Sunday Evening Meetings usually held at his residence, Alma Place, near Christchurch, Greenwich, and at which

Spirit Discourses are delivered through her mediumship. The engagements of the evening commence at Seven o'clock, after which time no person can be admitted.

A Collection is made towards defraying the expense of printing the "Spiritual Messenger."

It's not clear how many takers he had. In any case, he folded the Spiritual Messenger after the March 1859 issue.

Carpenter was converted to flat-earthism when he attended one of Rowbotham's lectures in 1861. In 1864 he published Earth Not a Globe, a short pamphlet mostly in verse. He produced the first installment of Theoretical Astronomy Examined and Exposed in 1865, and the eighth and last installment appeared by mid-1866. Remaining copies of the individual pamphlets were then bound together as chapters of a 128-page book dedicated "To 'PARALLAX,' The Founder of Modern Zetetic Philosophy." Carpenter also added a short introduction that included the verse from his Earth Not a Globe. The first eight lines are as follows:

Time was, they said the Earth was flat; but now they say it's round!
But strange enough, though true, it is, no PROOF has yet been found.
Astronomers will tell you, if you ask them, o'er and o'er,
Proofs are by no means wanting, by the dozen or the score.
Copernicus has told us this, and Newton, and the rest;
And people say, "These are the men who, surely, should know best!"
Herschel, indeed, says in his book, "We'll take it all for granted;"
But "COMMON SENSE" says, now-a-days, that something else is wanted.

Theoretical Astronomy is entirely derivative, even though the early chapters were published before Rowbotham's Earth Not a Globe. Carpenter had obviously absorbed the material from Rowbotham's lectures, and he evidently had a late and possibly expanded edition of Rowbotham's old Zetetic Astronomy pamphlet. [ref. 1.59] Besides reviewing Rowbotham's major arguments, Carpenter lashed out at proponents of sphericity. In the first three chapters he attacked various minor writers, but then he turned his sights to bigger game. Chapters 4 and 5 attack astronomer Sir William Herschel, and Chapters 6 through 8 focus on Astronomer Royal Sir George Biddell Airy.

Like his mentor Rowbotham, Carpenter insisted that science can only be based on facts, and he disparaged theories.

Zetetic Philosophy admits of no theories, no assumptions, no suppositions, no speculations, and no anticipations; and it, therefore, has no absurdities, no contradictions, no delusions, no sophistications, and no things but facts! [ref. 1.60]

The sphericity of the earth was unproven and un-provable, he claimed. Not long before, everyone understood that the earth is flat, and Carpenter thought this general understanding had been perverted through fraud. He was out to set things right. Reverend Robert Main had written in Rudimentary Astronomy that inbound ships rise up over the horizon. Carpenter chided him sternly and disposed of his "delusive implication" with the following argument:

Away, now, to the sea-side: and let us look Nature full in the face! How beautiful! No sophistry furls her brow. List to her teachings: they require no "proof," since nothing could be plainer. As we stand at her feet, where the briny waves bid us keep a respectful distance, we begin to learn the lesson that we would not dare doubt. As we look over the outstretched waters, we see the horizon, on a level with our eyes; and yonder ships are homeward-bound! Are they coming up? It does not appear so. We ascend the cliff; and we have a still more extended view. Is it further down? No! We see more ships. Are they coming up? No! The horizon is still level with our eye. We will ascend yonder light-house,—on the highest crag. Still more extended is the

view! Still more ships are visible! Are they coming up? NO! This is enough. The horizon is always on a level with the eye. [ref. 1.61]

This insistence that the horizon is always level with the eye occupies Carpenter for much of the book. Of course, he avoided suggesting that one might measure the dip of the horizon. [note 1.13] Instead, he followed "Parallax" and quoted balloonists who said that from altitude the earth's surface looks concave rather than convex. Unfortunately, this was not unanimously reported.

Between July 17, 1862 and May 26, 1866, James Glaisher made 28 balloon ascents for the British Association for the Advancement of Science. On September 5, 1862, Glaisher estimated that he and his instrument-laden balloon reached a peak altitude of 37,000 feet, [note 1.14] but he passed out from lack of oxygen at 29,000 feet! These flights caused a sensation in England, and they were widely reported. Glaisher had the temerity to state that—contrary to popular opinion—the earth below did not look concave, and Carpenter spent two pages excoriating him for this. Glaisher also thought that the earth looked "unnatural" from altitude, for which Carpenter lectured him as follows:

"Observation!" Take Counsel. If you can help yourself, be neither fool nor slave. Get wisdom, and get rid of your jokes. Abuse not your faculties, and you will retain them. Shake off the shackles of prejudice, and be free. Remember that your master's reputation is in your keeping. Wash your hands, therefore, from all those impurities which lie about your path … [ref. 1.62]

In their Manual of Astronomy, the Reverends Joseph A. Galbraith and Samuel Haughton wrote that astronomers (such as themselves) had been "led to believe" certain things about the universe. Carpenter was beside himself:

"**BELIEF**!" Is there a more noisy thing in the world than this? Conceited, malicious, bigotted, presumptuous, tyrannical. Such is belief! This is a lamentable statement, but no less true. Proof is not required to substantiate it. [ref. 1.63]

Carpenter insisted upon proof, and he had his own ideas about what that meant. In his Lessons on General Astronomy, Dr. Robert J. Mann compared a ship sailing around the earth to a fly walking around an orange. Carpenter would have none of that. He argued that a fly can walk on a globe because God has organized its parts to allow it to do so. The same cannot be said of ships:

[B]ecause they have not been provided with anything analogous to this organization, ships cannot sail round a globular surface; therefore, it cannot be a globular surface round which they do sail; and the Earth cannot be a globe! [ref. 1.64]

In other words, if ships are not organized like flies, the earth must be flat. It's hard to argue with zetetic logic.

Theoretical Astronomy does not describe zetetic astronomy and is almost devoid of attempts to explain the world on zetetic principles. Indeed, Carpenter flatly denied that zetetics had any obligation to do so:

[W]e repudiate at once and for ever the idea that because we promise to pull down a false system of Astronomy we are bound by any tie whatever to build up the true, whilst we pay the astronomers for the doing of it. [ref. 1.65]

Carpenter attacked opponents hammer and tongs, and he made no apology for it.

We are doing that with regard to others, which we would not that others should be doing unto us: namely, exposing folly and error, or what may be worse than either. We should not feel at all comfortable, were the shafts of ridicule or well-deserved sarcasm directed towards us; and we do not intend, if we can help it, to give any just cause for such a course of procedure. [ref. 1.66]

In Chapters 4 and 5, Carpenter turned his guns on Sir John Herschel, only son of Sir William Herschel. The elder Herschel discovered the planet Uranus and was the first to recognize double stars as gravitationally bound systems. The son became an eminent astronomer in his own right, famed for mapping the southern heavens. [note 1.15] In 1833, Sir John Herschel published A Treatise on Astronomy, and it was this popular book that exercised Carpenter.

Among his other sins, Herschel called the earth a heavenly body and used terms like "conceived to be" and "imagination." He had the temerity to write about the "dip of the horizon" and describe how it could be measured. He said that ships go out of sight hull first because of the curvature of the earth. Carpenter castigated the language of imagination and denied the dip of the horizon outright. Herschel's description of hull-down ships was more than he could bear. Comparing Herschel to Baron Munchausen, he wrote, "We cannot say, indeed, that the Treatise on Astronomy is intended to be deceptive; but it appears so, and the fault is not with us." [ref. 1.67] Carpenter insisted that a sufficiently powerful telescope would always bring a hull-down vessel completely into view.

In 1848, Astronomer Royal George B. Airy delivered a course of six lectures to the working men of Ipswich, which were later published in a volume of 250 pages. Among other things, Airy explained how an instrument called a zenith sector is used to measure the angle of a star from vertical. He said the earth's size can be calculated using observations taken with zenith sectors at two locations a known distance apart. Indeed, expeditions to Lapland and Peru made such measurements, and the results showed that the earth is spheroidal rather than strictly spherical. Carpenter asserted that these observations proved the earth is flat, though he neglected to provide a simple diagram showing why and how this is so. As for the poor deluded Astronomer Royal, Carpenter recommended that he study the system of "Parallax":

[H]is system is the true. It is not within the power of man to overthrow it. It will be rejected by the coward, by the bigot, by the fool: but it must be received by—the man! [ref. 1.68]

Like Rowbotham, Carpenter ended his book with a religious appeal. He warned against attempts to harmonize conventional astronomy with the scriptures, quoting 2 Peter 3 about willful ignorance. "The fact is," he wrote, "one or the other must be wrong—Peter or Copernicus: and he who says that both are right, proclaims himself devoid of reason." [ref. 1.69] The final sentence of Theoretical Astronomy is 201 words long. Carpenter appealed to readers to reject theoretical astronomy and "to hold up a Philosophy which has GOD as the Author of it,—which has Nature always at hand to illustrate it,—Reason to support it,—the Bible, to agree with it,—and which has 'COMMON SENSE' to recommend it." [ref. 1.70]

In reading Theoretical Astronomy, one's opinion of Carpenter shifts rapidly from outspoken critic to tiresome scold to monumental pain in the posterior. His bloated and extravagant prose, filled with irrelevancies and rhetorical flourishes, must have put off all but the most dedicated readers. A certain shrillness is expected in a controversial pamphlet, but a pamphleteer is also expected to say something. Carpenter had absolutely nothing new to say about zetetic astronomy, and it is remarkable how devoid of argument his tract is. Take away the endless carping and quibbling; the straw men pulverized down to the last broken stem; the accusations of fraud; the paroxysms of italics and CAPITALS; the raging about delusion, absurdity, fallacy, speculation, whim, deception, trick, mistake, hoax, and misfortune; and nothing remains.

Nevertheless, a reviewer for the Greenwich Free Press wrote that "'Common Sense' argues his position in a very able manner: the highest authorities are quoted, and, to our minds, demolished like a pack of cards." [ref. 1.71] The reviewer for the Anglican periodical Church Times was less enthusiastic, writing, "to tell the truth, we never began to despair of Scripture until we discovered that 'Common Sense' had taken up the cudgels in its defence." [ref. 1.72] One measure of Carpenter's ambiguity is that reviewers for at least two newspapers, the Family Herald (p. vii) and the Morning Advertiser of January 21, 1865, wrote that Carpenter thought the sun returns to the north under the earth. This is what happens when a crank refuses to expose himself by saying what he is really talking about. In discussing the reviews, Carpenter appealed to pity, saying that not one of the hostile reviewers tried to refute him.

Actually some "hostile reviewers" did refute flat-earth claims, if not Carpenter's specifically. So many people took the flat-earthers seriously that two writers published replies to "Parallax."

Early in 1868, Rowbotham visited the ancient walled town of York, 188 miles north of London. Originally settled by the prehistoric British, York became the military capital of Britain under the Romans. The emperor Hadrian visited the outpost in 120 A.D., and the emperor Severus died there and was cremated on a hill outside the town. With the coming of Christianity, York gained an archbishop, and in the 7th century it became capital of the Angle kingdom of Northumbria. Its magnificent cathedral of St. Peter (better known as York Minister) reached its present form in 1470, though portions are centuries older. A few blocks from the Minster, on Coney Street near the River Ouse, stands the church of St. Martin's. The vicar of this modest edifice, Reverend Major Rider Bresher, [note 1.16] saw the advertisements for the lectures on zetetic astronomy but thought them unworthy of attention. Many of his fellow citizens thought otherwise.

Rowbotham delivered his usual course of lectures, denouncing conventional astronomy as "utterly absurd in itself, and utterly subversive to all belief in the inspiration of the Bible." [ref. 1.73] As usual, many sincere and trusting Christians were convinced by Rowbotham's rhetoric and adopted zetetic astronomy. The new converts and some old skeptics jousted in the York newspapers about its merits. The vicar of St. Martin's, who knew something about both astronomy and the Bible, was appalled by the number and enthusiasm of the new zetetics. Having saved 6d by not attending Rowbotham's lectures, Reverend Bresher now spent 3s 6d for a copy of his book. He was impressed, but not favorably. Within a few months, he produced a 173-page pamphlet entitled The Newtonian System of Astronomy: With a Reply to the Various Objections Made against It by "Parallax".

Reverend Bresher, ever the shepherd of his flock, sought to lead his straying sheep back into the conventional fold. He wrote:

My object in publishing this pamphlet is to help my fellow-citizens who feel an interest in the matter, to form a correct estimate of the merits of this new system of astronomy …" [ref. 1.74]

In fact, he found few merits.

Bresher began by pointing out that zetetic astronomy was not as strictly Biblical as Rowbotham claimed. For example, to explain the tides, Rowbotham claimed that the surface of the earth rises and falls rhythmically. This conflicts with the frequent Biblical statements that it is immovable. Rowbotham's ideas often reverted to the astronomy of the ancient Greeks. As its title suggests, Bresher's book was more an explication of conventional astronomy than a refutation of zetetic astronomy. Nevertheless, he followed the order of Earth Not a Globe in discussing his points.

In his book, as in his lectures, Rowbotham claimed hull-down ships could be restored to view with a sufficiently strong telescope. Bresher consulted several members of his parish who had

been to sea, and all insisted that a telescope cannot restore a hull-down vessel to view. A friend of Bresher's, a young merchant marine officer reported otherwise:

I have seen the top gallant masts of a ship when on deck, the sea being quite smooth, and have gone aloft, and seen her hull; I have come down, and could see nothing but her masts again; if the earth were flat, how do they account for this? [ref. 1.75]

Bresher noted that zetetic astronomy suggests that navigation should be markedly different in the southern and northern hemispheres.

Now, whether the earth is a globe, or in a form like a round table, as 'Parallax' asserts, it is evidently capable of being circumnavigated. But the length of a voyage around it, say on the parallel of 45° south latitude, would, on the supposition that the earth is a globe, be only 15,300 nautical miles; while on the supposition that its form is that of a round table, it would be 32,400 miles. This of course makes an immense difference to all practical navigators in the southern ocean, and if "Parallax" can establish his assertion, it will cause an entire revolution in the whole theory of navigation. [ref. 1.76]

None of his sailor friends had experienced any difficulty navigating in the southern hemisphere, and all used the conventional theory to do so. Bresher had even examined the log kept by a ship sailing in southern latitudes and satisfied himself that the length of a degree of longitude there is appropriate for a globe. [ref. 1.77]

The Bible implies that the moon is self-luminous, and that it was created to give light to the earth. To explain its phases, Rowbotham claimed that only half of the moon is luminous. Bresher neatly turned this argument back on him, pointing out that the moon's luminous face is always turned toward the sun:

Hence it would appear that the moon shines primarily for the sun, and only secondarily for the earth. It may occasionally benefit the earth, but it is by the way. To the sun its whole illumed disc must be turned; to the earth, a part may be turned. This is strange, wonderfully strange! [ref. 1.78]

Furthermore, the part of the moon which is self-luminous varies, since the moon always shows the same face to the earth.

A substantial section of Earth Not a Globe is devoted to lighthouses that can be seen at greater distances than should be allowed by the earth's rotundity. Rowbotham drew most of his examples from Lighthouses of the World by Alexander Findlay, and Bresher examined this work closely. He wrote:

"Parallax" gives about twenty cases of this kind, collected from a book, "Lighthouses of the World," which contains a list of upwards of 2000 lighthouses, and then says (page 173,) "Many other cases could be given from the same work, shewing that the practical observations of mariners, engineers, and surveyors, entirely ignore the doctrine that the earth is a globe." [ref. 1.79]

Bresher called this a bold but unwarranted assertion. He had himself examined Findlay's book and found therein entries for about 2000 lighthouses. As far as he could tell, Rowbotham had found and listed almost every one that seemed to be visible at too great a distance. But there was more:

Now while "Parallax" was attentively scanning the "Lighthouses of the World," to find out some that could be seen farther than they ought to be seen, on the supposition that the earth is a globe

of about 25,000 miles in circumference; he could not but find many more which cannot be seen as far as they ought to be, on the above assumption. [ref. 1.80]

Somehow Rowbotham neglected to mention these. Bresher promised that "for every instance 'Parallax' can quote, where the distance given is greater than the theory requires, I will quote another where it is less." [ref. 1.81] As a down payment he listed ten lighthouses that (from the information provided) couldn't be seen far as they should. [ref. 1.82] Bresher suspected that misprints or local peculiarities accounted for many of the apparent discrepancies. Besides, Findlay wrote that the lights used were typically powerful enough to be seen for 60 miles or more, and refraction sometimes made lighthouses visible farther than they should be. In any case, Bresher argued that a few aberrant examples (about one percent) do not negate the earth's sphericity.

In one case, Rowbotham used erroneous data published in a popular weekly, the Illustrated London News, which gave the wrong elevation for the light, when he could have found the correct figures in his favourite reference. [ref. 1.83] Reverend Bresher discussed this in detail and wrote:

The above, I am sorry to say, is but a fair specimen of the manner in which "Parallax" conducts his "search after truth;" and I do not think it will commend itself to any right-minded man. Anything he hears or reads, which can, by any means, be twisted into an argument against the Newtonian system, he seizes with avidity; not caring to ascertain its truth or untruth, even when he has the means of doing so, at hand. [ref. 1.84]

At one of Rowbotham's lectures in York, he described yet another version of his Bedford Canal experiment. In this version, flagstaffs 6′ high were placed in seven boats spaced a mile apart along the canal, and the observer in the first boat sighted along the top of them, finding them all in line. [ref. 1.85] A listener hinted that a little more evidence about the Bedford Canal might be useful. Rowbotham became irate, demanded that the listener go there himself, and meanwhile apologize for his presumption. [ref. 1.86] Having paid 3/6 for Rowbotham's book, Bresher could sympathize with the listener. He wrote:

We have both paid our money to hear the evidence against the Newtonian system of astronomy, which 'Parallax' gave us to understand he could adduce. But, unless we consider the bare assertion of a nameless stranger, whose information on the subjects he discusses is neither extensive, nor accurate, and whose blunders would disgrace a 6th form boy at a good grammar school, to be evidence, 'Parallax' gives us none. [ref. 1.87]

Bresher stated that trigonometrical surveys had shown beyond doubt that the earth is round, citing in particular the surveys by General de Schubert in Russia and Captain A.R. Clarke in Britain. He noted that Rowbotham's account of the Bedford Canal experiment in his York lectures was different from that in his book Earth Not a Globe. According to the book, as we saw above, a boat sailed six miles along the canal and remained visible the whole time through a telescope placed only a few inches above the water. Bresher remarked:

This certainly is strange; but since we have the names of the two gentlemen who have lately conducted the trigonometrical survey, and we have not the names of any of those who were present at the "Old Bedford;" for the present I shall be content to believe, notwithstanding "Parallax's" reiterations to the contrary, that the earth is a globe.

Several of Bresher's arguments show his sound understanding of conventional astronomy. The stars must be at a great distance, he argued, because their positions relative to each other don't vary no matter where on earth they are viewed from. [ref. 1.88] Multiple star systems show that gravitation operates in deep space. [ref. 1.89] Neptune was found by calculations made with the conventional theory. [ref. 1.90] Conventional theory predicted the return of Halley's comet with

great precision. [ref. 1.91] The planets are obviously illuminated by the sun; how is this possible if the sun's light is restricted to a small area? [ref. 1.92] The sun should be closer to England in the summer, and thus appear larger, when in fact it appears largest in December. [ref. 1.93]

Bresher was especially offended by Rowbotham's claim that astronomy promotes atheism. Said he, "I have known a great many Newtonians, but never met with one who was not a profound believer in the existence of God, and in His moral government." [ref. 1.94] He also invited readers to compare Rowbotham's logic with Newtonian logic.

Bresher closed with a religious note, saying that man is made in the image of God, even if the earth is astronomically insignificant. [ref. 1.95] He reserved scriptural arguments for the appendix. He ended with a long quote from Kepler about those too weak to believe the Copernican system without harm to their piety.

Bresher was not the only one who considered zetetic astronomy a threat to public education. Another who took it seriously enough to respond to it was J. Dyer. In 1866, Dyer published a pamphlet entitled Thoughts on the Laws of Health, and Suggestions for Their Promotion. He followed this in 1870 with The Spherical Form of the Earth. A Reply to Parallax, in Letters to a Friend, a 96-page pamphlet. [ref. 1.96]

Dyer noted that most people necessarily rely on the statements of others for much of their information. Frequently, they are in no position to evaluate statements supported with specious reasoning. Philosophers might laugh at the flat-earthers, but while they laughed Rowbotham was making progress and unsophisticated listeners were being prejudiced against science. Dyer hoped that his pamphlet would help readers understand the true nature of zetetic astronomy. This was what induced him to put his thoughts on the subject in writing.

Dyer's pamphlet is in the form of letters. A friend of his had read Rowbotham's book and was frustrated at neither being able to refute it nor believe it. He wrote to Dyer and asked why no one had replied. Dyer first met Rowbotham in about 1858. Dyer then lived in Northampton, and he owned a lecture hall there. Rowbotham came through doing his "Parallax" lectures on zetetic astronomy, and he gave four lectures, two at the Northampton Mechanics' Institute and two at a hall owned by Dyer. The latter was struck by the way many of Rowbotham's listeners were impressed with his stuff, and he gave a series of lectures in reply. Until his friend inquired about it, however, he didn't know that Rowbotham had published a book. He found that the book contained the substance of the lectures he had heard many years previously.

Dyer noted that ships approaching each other at sea see each other's masts first, and when they part, masts last. The curvature of the earth is the only way to account for this. Regarding zetetic perspective:

He argues this point with some apparent reason, and very speciously; so that any one not understanding the true principles of perspective, and not having studied those phenomena at sea or by the sea-shore, would be easily misled, and unable to disprove his statements. [ref. 1.97]

Dyer argued that things vanish from sight either by going behind something or by their apparent size becoming too small to be distinguished. A telescope is useless in the former case but works in the latter. Rowbotham argued that ships at sea vanish from becoming too small to be seen, and he claimed that a telescope would bring them back into view. Dyer denied this, and cited his own experience:

For the past fourteen or fifteen years I have been in the habit of spending some weeks yearly by the sea-side, and the phenomena on the waters have mostly occupied my attention, but more especially so since I first became acquainted with Parallax. I have visited several parts of the coast on the north of Wales, east of Scotland, south and east of England, and the west of France,

and, wherever I have been I have witnessed the same phenomena. I may say that I have seen hundreds of vessels (sometimes several at the same time) hull-down when looked at by means of the telescope, but whose hulls I distinctly saw after elevating myself a few feet more or less. [ref. 1.98]

The latter was not as conclusive an argument against zetetic astronomy as Dyer might have wished, because Rowbotham also claimed that the hull of a vessel would sometimes disappear behind the swells. Nevertheless, the latter seems to have been a fall-back position, and Dyer quoted Rowbotham saying repeatedly that a telescope of sufficient power will bring a hull-down vessel back into view. [ref. 1.99]

Eclipses of the moon are another proof. Dyer pointed out that the whole scenario for a lunar eclipse, the rate of motion of the shadow, its position at any moment, and so forth, can be worked out mathematically using the conventional system. [ref. 1.100] He quoted Rowbotham's examples in extenso. Dyer had not seen the works referred to, but he presumed that they contained the correct explanation. He explained how atmospheric refraction can do the trick. He noted that in every case the person quoted used the word "appeared" or "apparently" when referring to the positions of the sun and moon.

Regarding the moon, Rowbotham claimed that a sphere cannot reflect light. [ref. 1.101] Dyer pointed out that all the planets are spheres, and they reflect light. He said that the most convincing proof that the moon is not self-luminous is the shadows it casts upon itself. The lunar mountains can be seen with a good amateur's telescope, and they cast quite long shadows at the terminator. Dyer had personally made extensive observations of the moon. [ref. 1.102] Among other claims, Rowbotham claimed that the light of the moon was different from the light of the sun, and that it did not react with photographic plates. Dyer scoffed:

How such a statement as this could have been made in the face of what has been done in lunar photography, and what must be well known to many thousands, I know not. I can scarcely imagine that ignorance can be pleaded here. … At the South Kensington Museum … large photographs of the moon by Mr. De la Rue, have been exhibited for several years past, and are still (December 2, 1869) on view. [ref. 1.103]

Dyer gave several quotes from Ross that refute Rowbotham, including an explicit statement by Ross when he was in 78° south that "in this latitude" a degree of longitude is "less than a quarter mile of distance." [ref. 1.104] According to zetetic astronomy, a degree of longitude in 78° south latitude should be nearly two nautical miles. Dyer could not understand how Ross could confuse a quarter mile with two miles.

Dyer also analysed Rowbotham's claims about the dip of the horizon. He discussed Rowbotham's experiment with a convex lens and scornfully dismissed it. If a theodolite's level sight is incorrect, he noted, all of its other sights must be incorrect, too. Isn't it remarkable, he asked, that all makers of these instruments make exactly the same error? In Rowbotham's experiment, if the lens is centred slightly above the line, it apparently shifts the line that way. On the other hand, if centre of the lens slightly below the line, the line apparently shifts down. Why does the theodolite cross-hair never appear below the horizon? And why did Rowbotham merely make assertions? Why didn't he examine a theodolite to determine the supposed error? [ref. 1.105]

Dyer described Rowbotham's famous air-gun experiment, quoting his account of it at length. [ref. 1.106] As it happened, he was well-prepared to shed some light on this experiment. He wrote:

The account of the air-gun experiment is not correct in its most essential part. During his stay at Northampton, Parallax gave four lectures—two in the hall of the Mechanics' Institute, and

two in Milton Hall, then belonging to me. In one of the lectures delivered in the latter place, he stated that "if bullets were propelled from an air-gun, fixed perpendicularly to a post or other suitable object, they would return to the barrel of the gun again." [ref. 1.107]

Dyer owned an air-gun, and at the end of the lecture, he publicly challenged Rowbotham to make the experiment, offering him five shillings for every ball of twenty that fell back into the barrel. Rowbotham could hardly refuse, and a committee was selected from the audience to observe the experiment and make a report at the next lecture. Dyer continued:

The experiment was carried out on a piece of land at the back of my house. The twenty bullets were propelled from the gun, but in place of "invariably descending within a few inches of the gun," or "back to the place of their detachment," as stated by Parallax, they fell in all directions, and from ten to twenty feet from the gun.

* * *

You can therefore fancy my surprise and astonishment when I saw it stated in his book that "the balls invariably descended within a few inches of the gun," and also "back to the place of detachment." He likewise states that "twice it fell upon the very mouth of the barrel." Not two of the twenty balls that were propelled from the gun and formed part of the experiment. [ref. 1.108]

Two balls did strike the barrel, however, after the experiment. When Dyer was letting the remaining air out of the gun, Rowbotham brought him two balls and asked him to try them again. There was barely enough air pressure to pop them out of the barrel, and they rose a few inches and fell back onto the muzzle! [ref. 1.109]

Dyer noted that a southern Parallax would claim the sun circles the south pole, as it appears to do from the Antarctic circle. He pointed out that Ross, one of Rowbotham's favorite sources, reported seeing the sun two degrees above the southern horizon at midnight on January 22, 1841 from latitude 74° 15′ S. On another occasion, Ross observed the sun with a sextant at 28 minutes after midnight, determining his latitude to be 77° 56′ S. How, Dyer wondered, did Rowbotham miss these observations? [ref. 1.110]

Dyer had much to say regarding sunset over the zetetic plane. He noted that sunset strains the zetetic law of perspective. Rowbotham claimed the sun's altitude is about 4000 miles and the stars perhaps 6000 miles. All points on earth more than 6250 miles from the point directly below the sun are in darkness. Thus, for every mile the sun moves horizontally, it must apparently sink two-thirds of a mile vertically. [ref. 1.111] The stars, being higher, must sink at virtually a one-to-one rate. Dyer commented:

Why perspective should appear to lower the sun two feet for every three passed over, and the stars and planets one foot for every foot passed over, I cannot say. Is it that there is one kind of perspective for the sun and another for the stars? [ref. 1.112]

Rowbotham claimed that the principle of perspective is modified for luminous bodies, but Dyer insisted that it is not, and he suggested an experiment with a candle to demonstrate this.

Regarding Rowbotham's claim that navigators fail to sail completely around the Antarctic circle, Dyer says Rowbotham's version of the accounts he quotes is a tissue of error. [ref. 1.113] The only difficulty in navigating extreme southern waters is the tremendous amount of ice encountered. Rowbotham quoted Ross as saying that when navigating in southern latitudes he frequently found himself in advance of his reckoning, but he neglected to mention that Ross specifically attributed this to strong currents.

Addressing the friend to whom the letters were written, Dyer ended his pamphlet with the following words:

I have now examined every question of any scientific importance in the book entitled "Earth Not a Globe;" and in doing so, my patience has often been sorely tried. The great number of dogmatic assertions, the incorrect statements, the suppression of facts, and the misrepresentations found in its pages, have more than once tempted me to throw the book into the fire, as undeserving of a serious reply. If, however, the reading of what has been written shall have the effect of removing the uneasiness of your mind, caused by the book in question, my object will be accomplished, and I shall not have laboured in vain. [ref. 1.114]

Dyer laboured in vain. When The Spherical Form of the Earth was published in 1870, flat-earthism had already spread throughout the British Isles. And that same year a new champion arose who brought zeteticism more attention than it ever got before.

Chapter 2
Hampden and the Old Bedford Canal

ON MARCH 5, 1870, A SMALL GRIM-FACED PARTY, principals and seconds, met near the end of the Old Bedford Canal, 80 miles north of London. There was no possibility of reconciliation; gleaming instruments were removed from felt-lined cases, and they proceeded to the task at hand. One principal was Alfred Russel Wallace, the renowned naturalist who shared with Darwin the discovery of evolution by natural selection; the other was John Hampden. Their purpose was not to fight a duel, but to settle a £500 bet about the shape of the earth. Hampden swore roundly that the earth is flat; Wallace said flatly that it is round. [ref. 2.1] Each confidently expected to pluck a £500 pigeon. [note 2.1]

On this historic Saturday morning, the flat-earth movement was hardly yet a movement, despite two decades of public lectures by "Parallax." Most respectable Britons had managed to ignore the flat-earthers, although Augustus De Morgan had satirized the zetetics in his "Budget of Paradoxes" column in the Athenæum magazine, and provincial newspapers reviewed lectures by "Parallax," sometimes favourably. While "Parallax" undoubtedly had many converts in the provinces, only two were real activists. William Carpenter, whom we met in the last chapter, had written his "Common Sense" works a few years previously. John Hampden had just appeared on the scene. The flat-earth movement badly needed two things, public exposure and a rallying cry to unify the scattered faithful. The Bedford Canal experiment would provide both for the next thirty years.

John Hampden, history's most colorful zetetic, was born in 1819 or 1820. His father, Reverend John Hampden, a Church of England clergyman, was related to a powerful churchman, Bishop Renn Dickson Hampden. When young John was ten years old, his father was made rector of Hinton Martel in Dorset, where he wrote a strange commentary on the prophecies of Daniel. At age 19, young John left Dorset to attend St. Mary Hall of Oxford University, matriculating on February 14, 1839. He apparently dropped out without graduating. He didn't really need a university education. A gentleman of comfortable means, he could devote himself to whatever pursuits interested him. [ref. 2.2]

Whatever adventures John Hampden had during the 30 years after he entered Oxford are lost to history. He married and fathered children—at least a son and a daughter—but his writings contain few hints of his other activities. Somewhere, perhaps from his father, he acquired a literalist view of the Bible. In mid-19th century England, many orthodox Christians perceived the recently established uniformitarian geology and the new-fangled theory of evolution by natural selection as assaults on the Bible. Hampden was one of these.

Hampden lived in Swindon, 77¼ miles west of London station on the Great Western Railway. Bristol lies about 30 miles to the west and, swinging an arc counterclockwise, Bath, Trowbridge, and (due south) the ancient Stonehenge monument. Situated on a hill overlooking White Horse Vale and the chalk uplands of Marlborough, Old Swindon was a market town with a church, a market hall, a town hall, and a corn exchange. New Swindon was a child of the railroad, a major junction point for western England and site of a locomotive works and railway car factory. Together, Old and New Swindon comprised a grubby but bustling town of about 20,000.

In 1869, Hampden chanced upon a copy of Rowbotham's Earth Not a Globe. He thought it an able refutation of Copernicus and Newton. The Bible says the earth has foundations, and here was proof. The earth isn't a ball, spinning giddily through space, but is a flat, immovable plane, with the north pole at the centre and no south pole. The sun is small, and circles above the earth at a comfortably close distance. When Joshua ordered the sun to stand still, it halted until he let it move again. All the supposed proofs of the earth's rotundity—eclipses, sunset, ships apparently disappearing over the horizon—were explained away. Hampden was converted at the first reading.

The excited convert rushed forth to reshape the world. Discovering Carpenter's "Common Sense" works, he wrote to the author and arranged to buy up the remaining stock of Theoretical Astronomy Examined and Exposed, and also the copyright, for which he paid £100. [ref. 2.3] He also sought out "Parallax" (Rowbotham) and got permission to publish a pamphlet of extracts from Earth Not a Globe. This pamphlet, entitled The Popularity of Error, and the Unpopularity of Truth, was apparently Hampden's first publication. It is a curious mixture, with Hampden sometimes speaking for himself and sometimes presenting extracts from "Parallax."

In one respect, Hampden's pamphlet broke new ground. Rowbotham (as "Parallax") and Carpenter (as "Common Sense") were generally circumspect in their language. Not Hampden! He lambasted Newtonian astronomy:

But I have not the patience to "answer fools according to their folly," or I might proceed to expose the absurdity of every theory which has been devised to bolster up this preposterous system of Sir Isaac Newton and his predecessor, Copernicus, endorsed and accepted by men wise in their own conceits, but sheer infidels when brought to the test of Scripture. The Word of the living God, the Creator of Heaven and Earth, does not give the slightest shadow of authority in support of such a notion. [ref. 2.4]

The crux of the matter for Hampden was astronomy's inconsistency with a literal reading of the Bible. Especially glaring was the alleged motion of the earth around the sun:

Both Isaiah, Job, Solomon, and David, in all their references to the Sun and to the Earth, speak of the motion of the one and the immobility of the other. So does every writer, from Moses to John of Patmos. Dare we, then, venture to accuse these inspired historians of ignorance, or rather of making statements directly contrary to the evidence of their senses? No! May our united answer be, "Let God be true, and every man a liar" who speaks not according to His word. [ref. 2.5] Furthermore, the scriptural problems extended beyond mere astronomy. Hampden was convinced, for instance, that the universal Deluge recorded in Genesis, with its rains falling from the windows of heaven, could not have occurred on a spherical earth:

If the Earth be indeed a globe, then the whole history of the flood is palpably imperfect and untrue. Unless the Earth were a Plane, Moses invented all the particulars connected with that event, from the beginning to the end. [ref. 2.6]

Sharp language, contempt for conventional science, and a fierce Biblical literalism would be hallmarks of Hampden's writing throughout his long public career. Hampden was not one to sit still for nonsense.

While he saw the value of Rowbotham's writings and "Parallax" lectures, with their subtle jibes at scientists, Hampden saw that the scientific world was ignoring Rowbotham. To confront scientific orthodoxy in a more direct fashion, he placed the following advertisement in the January 12, 1870 issue of Scientific Opinion:

The undersigned is willing to deposit from £50. to £500., on reciprocal terms, and defies all the philosophers, divines and scientific professors in the United Kingdom to prove the rotundity and revolution of the world from Scripture, from reason, or from fact. He will acknowledge that he has forfeited his deposit, if his opponent can exhibit, to the satisfaction of any intelligent referee, a convex railway, river, canal, or lake.

John Hampden
Wallace accepted the challenge.

Alfred Russel Wallace knew the world is round, for his studies of plants and animals had carried him round the world. From 1848 to 1852, he had traveled in the Amazon jungle of South America, exploring and collecting plant and animal specimens. On the voyage home, his ship sank, and Wallace's priceless specimens went to permanent storage in Davy Jones's Locker. (Fortunately, he had sent some material ahead.) Wallace remained in England barely long enough to publish Travels in the Amazon and Rio Negro (1853). During 1854 to 1862, he travelled in the Malay Archipelago, observing and collecting plants and animals. His discoveries led him to formulate a theory of evolution by natural selection, and in 1858 he sent a paper describing his theory to Charles Darwin, who had been working on the same idea for 20 years. Wallace's paper and another by Darwin were read before the Linnean Society on July 1, 1858, and Darwin, forced into action, finally published his Origin of Species the next year. When Wallace returned to England again in 1862, this time with his collections intact, he found himself famous.

By the time Hampden issued his challenge, Wallace had long settled into a more normal life. In 1866, he had married 20-year-old Annie Mitten, daughter of botanist William Mitten, and they now had two children. He had sold most of his Malaysian specimens and invested the money, and his financial situation looked secure. He was 47, president of the Entomological Society, Fellow of the Royal Geographical Society, recipient of the Royal Medal (1868), and otherwise covered with scientific honours—not bad for a self-educated former land surveyor in a class-conscious society.

Besides his scientific interests, Wallace was a socialist, spiritualist, and freelance do-gooder. The latter quality led him into the wager. The flat-earth movement offended Wallace's missionary instincts. He saw Hampden's challenge as an opportunity to spike the flat-earth nonsense and, just incidentally, improve his bank balance. He wrote to Sir Charles Lyell, father of modern geology, for advice on the matter. On receiving a favourable reply, he wrote to Hampden and accepted the challenge.

Wallace and Hampden made the arrangements for the experiment by correspondence. Their goals, motives, and methods differed radically from the beginning. Wallace wanted to spare Hampden public embarrassment, so he suggested a simple private demonstration. Hampden wanted to publicly humiliate Wallace, and he refused vehemently. Wallace suggested Bala Lake, in Wales, as an experimental site. Hampden, however, was taking no chances. In Earth Not a

Globe, Rowbotham claimed he had performed experiments at the Old Bedford Canal which proved its surface flat, so Hampden recommended the canal to Wallace as a suitable place for the experiment. As stakeholder and referee, Wallace suggested a man known to him only by his reputation for scrupulous fairness, John Henry Walsh, editor of the weekly country gentlemen's paper, The Field. Hampden agreed, but then he wrote to Wallace and asked to appoint a second referee. Wallace replied:

Your wish to have a second referee is quite reasonable, and I accede to it at once, only stipulating that he shall not be a personal acquaintance of your own, and shall be a man in some public position as Editor, Author, Engineer, etc. [ref. 2.7]

Hampden appointed one William Carpenter, journeyman printer and author!

Wallace saw his mission clearly. He would make a simple demonstration, collect the money, and leave the flat-earth movement in shambles. Old Bedford Canal it would be. Between Old Bedford Bridge [note 2.2] and Welney Bridge, a 6-mile stretch of the canal ran straight and unobstructed. It suited his purpose perfectly. He described his proposal as follows:

The test I am going to use is very simple and conclusive. I have prepared half-a-dozen signal posts each six feet long and with red and black circles attached to them, so as to be distinctly seen at a long distance. I shall set these up a mile apart on the water's edge, and then look along them with a powerful telescope. If the water is straight and flat, the tops of these poles will of course be straight and flat, too … [ref. 2.8]

Even allowing for atmospheric refraction, the center marker should appear elevated about 5 feet above the line of sight from bridge to bridge. Nothing, it seemed, could be simpler.

Hampden was even more confident. Rowbotham's works described several experiments similar to what Wallace proposed, some of them conducted on the very same stretch of the Old Bedford Canal. Rowbotham claimed none of them detected any curvature in the waters of the canal. It was all cut and dried. Carpenter would observe Wallace's humiliation and bring back the money. Hampden himself would skip the experiment.

The final agreement for the wager differed slightly from Hampden's original challenge, so it was put into writing and signed by both parties:

The undersigned having each deposited the sum of £500. in Messrs. Coutts' Bank, do hereby agree, that if Mr. Alfred R. Wallace, on or before the 15th day of March, 1870, proves the convexity or curvature, to and fro, of the surface of any canal, river, or lake, by actual demonstration and measurement, to the satisfaction of Mr. John Henry Walsh, of 346, Strand, London, and Mr. William Carpenter, of 7, Carlton Terrace, Thornford Road, Lewisham Park, London, (or, if they differ, to the satisfaction of the umpire they may appoint) the said Alfred R. Wallace is to receive the above-mentioned two sums amounting to £1000., by cheques drawn by Mr. John Henry Walsh to his and the said Alfred R. Wallace's order;—and if the said Alfred R. Wallace fails to show actual proof of the convexity of any canal, river, or lake, the above-mentioned sums are to be paid in like manner to Mr. John Hampden. Provided always that if no decision can be arrived at, owing to the death of either of the parties the wager is to be annulled, or if owing to the weather being so bad as to prevent a man being distinctly seen by a good telescope at a distance of four miles then a further period of one month is to be allowed for the experiment or longer as may be agreed upon by the referees. [ref. 2.9]

Eventually all was ready. At 5:00 p.m. Monday, February 28, Carpenter met Wallace at London's Bishopsgate train station for the three-hour journey to Downham Market, near the Old Bedford Canal. That morning, Carpenter had received a note from Hampden confirming his decision not to attend personally:

My Dear Sir,—As I am not disposed to travel so far, my printer, Mr. Bull, of Swindon, who is thoroughly with us, will attend for me. It will I think be satisfactory to you to have some one to consult with and second any suggestions you may wish to make. He is an exceedingly shrewd and clever little man, with heart and soul in the subject. You will feel more confidence with him to refer to or consult with, otherwise you will be alone. I do not know how many Mr. W. may bring. Do not let them make it a drawn battle, which they may try and do. J. Hampden [ref. 2.10]

Alfred Bull was not at Bishopsgate station, so Wallace and Carpenter journeyed together. Upon arriving in Downham Market, Carpenter took a room at the widow Howe's boarding house, and Wallace checked into the Crown Hotel. Over dinner that evening, the two men discovered that they were both spiritualists.

On Tuesday morning, Carpenter and Wallace rode the 2½ miles from Downham Market to the Old Bedford Bridge with five signal posts, a hatchet, and two assistants. Each signal post was a long pole bearing two red disks with a black one between them. The weather was appropriate for March 1—cold, grey, and damp. Welney Bridge was not to be seen from Old Bedford Bridge on this day. They set out on foot along the canal, placing a marker in the edge of the water every mile, with the center of the upper red disk 6 feet above the surface. Lacking a surveyor's chain, they paced off the distance as best they could. Clumps of willows on the edge of the canal threatened to obstruct their view, and they disposed of these with the hatchet. A bitter March wind blew directly into their faces. Numerous drainage ditches emptied into the canal, obstructing their way, and Wallace fell into one of them. When the shivering party finally got back to the Crown Hotel, Carpenter found a note waiting; Hampden had changed his mind and would come. Later that evening, Walsh arrived.

Hampden joined them on Wednesday morning, having arrived the previous evening and spent the night at a tradesman's house. The party was now complete, and they departed for Welney Bridge. With them in the vehicle was a large astronomical telescope Wallace had borrowed in Brighton. On the way, Carpenter pointed out to Walsh the Old Bedford Bridge and two wooden disks Wallace nailed to it the previous day.

When they arrived at Welney, they found three barges moored in the canal near Welney Bridge. Wallace set up his telescope on one them, while a score of Welney residents collected on the bridge to watch the proceedings. Among his other talents, Carpenter was an expert in Pitman shorthand, and he recorded dialogue along with details of the proceedings:

Carpenter: Where is your level?

Wallace: I've got a level, that's all right. [ref. 2.11]

Wallace and Walsh looked through the telescope at the line of markers. With four men waltzing around on it, the barge kept shifting position at its moorings and had to be repositioned. Carpenter was constantly underfoot, and several times bumped the tripod so that everything had to be realigned. Pressed into service to hold a tripod leg in place, he kept letting go at inopportune times. Wallace and Walsh were both satisfied with the view through the telescope, but Carpenter thought they gave conflicting reports. He was very upset because the telescope was not level.

Carpenter: It's no use taking observations, Mr. Wallace, with a telescope not having cross-hairs.

Wallace: Aha! We've nothing whatever to do with cross-hairs, Mr. Carpenter!

Carpenter: I beg your pardon, Mr. Wallace: you will find that you can do nothing without. [ref. 2.12]

Finally, it was Carpenter's turn to look through the telescope. He recorded the following information:

Of five six-feet signals, surely enough, two only can be seen, each with its two red and one black circular discs, by the water's edge; and whether they are the first and second, or first and third, is very doubtful. Two red discs appear high up in a line with the centre of the white toll-board on the bridge: but what are they? All the five signal-posts which we erected were six feet above the surface of the water, and the bottom of this white board is seven feet above it! [ref. 2.13]

Of course, the curvature of the earth would make the centre markers appear on a level with the distant toll-board, but Carpenter would hear nothing of that. Besides, he had another explanation.

Hampden sat passively on the next barge and watched. Eventually, all agreed that the demonstration was inconclusive. Hampden and the telescope rode back to Downham Market. Carpenter, Wallace, and Walsh walked back to Old Bedford Bridge so that Walsh could see for himself the placement of the markers.

They found that at least one signal had been knocked down and replaced—at the wrong height. Others apparently were obscured by objects near the shore. Wallace decided higher markers were necessary. Indeed, a marker at each end and one in the middle would serve the purpose. Carpenter insisted that valid observations could only be made with a surveyor's level, so Wallace agreed to borrow one to mollify him.

Walsh had to return to London the next day to finish work on Saturday's issue of The Field, so Martin W. B. Coulcher, a local surgeon and amateur astronomer, was appointed substitute referee. Wallace sent a man on horseback to measure the height of the parapet of Welney Bridge above the water; he reported 13 feet 3 inches. Carpenter handed Wallace his notebook and asked him to make a sketch in it showing exactly what he intended to demonstrate this time. Wallace obliged, grudgingly, Carpenter thought. During the course of the evening, Carpenter noted that he was inclined to the flat opinion. Relations were a bit strained after that, and conversation did not flow easily.

On Thursday morning, Wallace set out for King's Lynn, a marketing and seaport town at the mouth of the canal about ten miles north of Downham Market, where he hoped to borrow a surveyor's level. Carpenter and Hampden went along for the ride. While the two flat-earthers amused themselves examining ornithological specimens at the King's Lynn Athenæum, Wallace located a surveyor who would loan him a Troughton's level, a fine instrument made by Stanley of Holborn.

Friday was foggy, useless for their purpose, but Saturday dawned a fine day. The little party met briefly and then split up. Hampden and Coulcher went directly to Welney Bridge with the instruments. Carpenter and Wallace headed for the nearby Bedford Bridge. Wallace had made up two white calico banners, 3 feet deep and 6 feet wide, with a black horizontal stripe in the middle. He affixed one of these to the bridge with its centre 13 feet 4 inches above the water, a height selected to agree with the optical axis of a telescope placed on the parapet of Welney Bridge. They walked the three miles to the centre station, the wind at their backs and the sun warm on their faces.

At the centre station, Wallace produced a gimlet (a T-shaped hand-drill used like a corkscrew) and a screwdriver from his pocket. With these, he spliced together two of the old signal poles, leaving the two red disks at the top, 4 feet apart. He erected the pole in the canal with the upper disk, like the banner on the bridge, positioned so its centre was 13 feet 4 inches above the water. It was nearly 1:00 p.m. when they joined Hampden and Coulcher on Welney Bridge, and where a small crowd was in attendance.

Wallace immediately set up the astronomical telescope on the parapet of Welney Bridge. Focusing it on Old Bedford Bridge, he took a quick look. The centre disk showed well above the banner. Coulcher looked, too, and as he did so, Carpenter noted a copy of the Astronomical Register protruding from the breast pocket of his coat.

They asked Carpenter to look through the telescope and note that the central marker appeared higher than the banner on Old Bedford Bridge. Coulcher made a sketch, and he asked Carpenter to sign it, verifying its accuracy. Carpenter complied, but he noted on the sketch that he considered this observation useless for their purpose, as the large telescope could not be levelled.

Meanwhile, Carpenter had personally fetched the Troughton's level from the carriage and helped Wallace set it up. The former surveyor carefully centred the levelling bubble and focused the instrument on the distant bridge. Carpenter looked through it and actually jumped for joy.

Wallace: Well, then, it can be decided at once.

Carpenter: Not so!

Wallace: Well, then, fetch the parson of the parish.

Carpenter [at the Troughton's level]: O dear, no! Mr. Wallace, look through this telescope! This is beautiful! beautiful:—as level as possible!—All three objects in a line! There's the bridge, the centre signal, and the horizontal cross-hair, in a regular …

Wallace: We've nothing to do with the cross-hair! The position of the eye settles that point: the telescope is the same height above the water as the signal and the bridge, and you can't move your eye to alter its position more than an eighth of an inch! Send for the parson of the parish: he'll settle it.

In a cold fury, Wallace began packing up the Troughton's level, and one of the locals was heard to remark:

Oi say, Bill, they want to say the water ain't level. Oi know it is, though. Oi've been 'ere these ten years, and Oi know if 't ain't level there's no level anywhere.

Carpenter insisted on having the Troughton's level set up again. He made his own rough sketch and showed it to Coulcher, saying:

Please observe the equal distances which appear between the three points—the cross-hair, the three-mile signal, and the distant bridge. Will you subscribe your name to my sketch under the words I have written—'This is correct.'?

Coulcher signed. As far as Carpenter was concerned, it was all settled. The equal apparent distances between the cross-hair, the centre signal, and the distant bridge proved that the three points lay in a straight line!

Wallace was flabbergasted and frustrated. He had done precisely what he set out to do! The centre marker was, by Carpenter's own sketch, well above the line of sight from the parapet of Welney Bridge to the banner on Old Bedford Bridge! But Carpenter couldn't or wouldn't understand its significance, and Hampden flatly refused to look through the telescope. While the great naturalist alternately spluttered to himself or appealed to the crowd, Carpenter and Dr. Coulcher reviewed their sketches.

Eventually, the little party packed the gear in the coach and headed back to Old Bedford Bridge. Hampden played coachman, saying that he would get up from the best dinner in the world for

the chance to drive a pair of handsome horses five miles. [note 2.3] No one else enjoyed the ride.

Arriving at Old Bedford Bridge, the experimental party repeated the observations, with essentially the same results. Viewed through the large telescope, the central marker appeared above the parapet of Welney Bridge. The Troughton's level showed the marker below the cross-hair and the parapet below the marker. Again, Carpenter and Coulcher signed each other's diagrams to certify their accuracy. Again, the referees could not agree upon the significance of what they saw. They retired to the Crown Hotel, mostly in silence. There, Hampden accosted Wallace and demanded that he admit he had lost. Wallace did not reply.

On Sunday evening, Carpenter and Hampden met with Wallace and Coulcher to discuss the events of the previous day. Wallace was more communicative, but he was obviously not in a good mood, and his nerves were on edge.

Wallace: I can't think what this ticking is. I've heard it all day long—just like a death-watch! there: don't you hear it?—at perfectly regular intervals—tick, tick, tick! [ref. 2.14]

When they listened, they all heard it. Coulcher suggested it was the stove, but Carpenter, ever the spiritualist, was convinced that the sound was a psychic phenomenon brought on by Wallace's guilt. Nothing was settled that evening, but Carpenter and Coulcher agreed to meet again on Monday morning.

Martin W. B. Coulcher lived and practiced surgery in an old-fashioned house just east of Downham Market, on the road to Stowe. When Carpenter arrived on Monday morning, Coulcher got right to the point. Wallace had won, he said, and because he and Carpenter couldn't agree, they must (according to the terms of the wager agreement) appoint an umpire to decide the matter. Carpenter insisted that they could agree.

In truth, there was nothing they agreed on. Coulcher produced a sketch showing how Wallace had won, and he demanded that Carpenter sign it. Carpenter refused. Coulcher affirmed on his oath that Wallace won and tried to excuse himself to attend to his patients. Carpenter refused to leave, so Coulcher sent his servant to fetch a constable to show Carpenter out. Carpenter insisted that Coulcher sign a statement saying that Hampden won. Coulcher refused. Finally, the constable arrived and told Carpenter, "Go! or I'll take you!" The constable gave Carpenter a helpful shove across Coulcher's threshold, and the interview ended.

Nothing further could be accomplished at Downham Market. Hampden and Carpenter returned together to London. At a stop along the way, Carpenter bought a copy of the latest Field and found in it a note by Walsh saying that the experiment was in progress. Wallace rode in another carriage of the same train. They encountered each other at the Bishopsgate station, and Wallace was less than friendly.

Carpenter was not about to lose control of the situation by appointing an umpire to act in his stead. He wrote a letter to Wallace, beginning as follows:

Sir: Since Mr. Coulcher, the referee on your part, obstinately refuses to attempt to show me in what way you prove that which you say you have proved, I beg leave to request that you appoint some gentleman—I care not whom—to wait upon me at my residence, and to do that which Mr. Coulcher refuses to do: thus acting as referee in his stead. [ref. 2.15]

Wallace was beginning to understand. In a letter to Carpenter dated March 8, he wrote: Sir, In reply to your extraordinary demand, I beg to say that Mr. Coulcher was quite right in not attempting to show you anything or to convince you of anything: that was not his duty. I showed you the experiment I undertook to show, and if you require any other person to explain to you

what it means and how it proves my case, that only demonstrates your utter incapacity to perform the duty you have undertaken. I positively decline to appoint any other referee. The agreement gives me no power to do so, whereas it does distinctly state, that if the Referees differ, an umpire is to be appointed by them. By refusing to appoint an Umpire with Mr. Coulcher or even to discuss the subject with him, you have put yourself entirely in the wrong, and broken the terms of the agreement. I shall therefore take the customary steps to have an umpire appointed, and to him you can explain your views in whatever way you see fit. Yours truly, Alfred R. Wallace. [ref. 2.16]

Carpenter responded on March 9, writing in part:

Do just what you think is best in the matter; but pray take my word for it that I will never consent to sign away my right to see justice done to Mr. John Hampden. [ref. 2.17]

As it happened, Carpenter's consent was not required. The previous day, Hampden had written to Wallace suggesting that Walsh be appointed umpire. Walsh would review the reports and sketches made by the two referees and settle the matter. Wallace eagerly seconded this suggestion. Thus, Carpenter found himself on the outside looking in, while the editor of the Field again found himself in the middle.

John Henry Walsh was a fellow of the Royal College of Surgeons before he abandoned surgery to write about his true love—the sporting life. Now he was 59 years old, editor of England's leading sporting paper, and author of several highly successful books written under the pseudonym "Stonehenge," including The Shot-Gun and Sporting Rifle (1859), The Dog in Health and Disease (1859), The Horse in the Stable and in the Field (1861), and Dogs of the British Isles (1867). A respected member of the British sporting set, he had held the stakes for many wagers. None had caused him so much trouble.

Carpenter had little choice but to submit his sketches and a written report to Walsh. Coulcher did likewise, presumably more willingly. The sketches were reproduced as copper-plate engravings and the written reports set in type for publication in the Field. Carpenter's report repeated and amplified his claim made at the canal. Referring to the view through the Troughton's level, he wrote:

The stations appeared, to all intents and purposes, equi-distant in the field of view, and also in a regular series: first, the distant bridge; secondly, the central signal; and, thirdly, the horizontal cross-hair marking the point of observation; showing that the central disc 13ft. 4in. high does not depart from a straight line taken from end to end of the six miles in any way whatever, either laterally or vertically. For, if so, and (as in the case of the disc 9ft. 4in. high) if it were lower or nearer the water, it would appear, as that disc does, nearer to the distant bridge. If it were higher, it would appear in the opposite direction nearer the horizontal cross-hair which marks the point of observation. As the disc 4ft. lower appears near to the distant bridge, so a disc to be really 5ft. higher would have to appear still nearer to the horizontal cross-hair of the telescope.

And therefore it is shown that a straight line from one point to the other passes through the central point in its course, and that a curved surface of water has not been demonstrated. [ref. 2.18]

In case this argument wasn't accepted on its merits, Carpenter included a list of thirteen objections to the claim that Wallace had proved the curvature of the earth, as required in the written agreement. The first three were as follows:

1. If it be decided that the curvature is proved in consequence of experiments that will not stand strict investigation or repetition, it would be unwise.

> 2. If it be decided that the curvature is proved because at first sight it would appear to be so, it would be jumping to a conclusion.
>
> 3. If it be decided that the curvature is proved because the objects at three and six miles were not coincident with the cross-hair, since surveyors know that, with one of their ordinary levelling instruments, they could not be expected to be so, it would be unfair. [ref. 2.19]

The third objection was as remarkable as it was damning. Here the man who vehemently insisted on a telescope which could be level ed—who still insisted on the importance of the cross-hair—was arguing that the appearance of the markers below the cross-hair was irrelevant because the instrument couldn't really be levelled!

The packet of papers Carpenter sent to Walsh was also notable for an omission. At the Crown Hotel on the evening of March 2, Carpenter had insisted that Wallace sketch for him exactly what he intended to demonstrate, and Wallace had complied. This sketch was not in the packet, and it's tempting to guess why.

No doubt Walsh conscientiously studied the sketches and written reports submitted to him by Carpenter and Coulcher, although a glance at either set of sketches was sufficient. At Hampden's request, he also consulted an optician at the London firm of Solomons. Walsh wrote to both sides that he would announce his decision at one o'clock on March 18.

Carpenter arrived at Walsh's office promptly at the appointed time. Wallace was already there. Walsh immediately told them that he had no difficulty in reaching a decision in favor of Wallace. One suspects that Walsh also said a few other things to Carpenter, judging from his comments in the March 26, 1870, issue of The Field:

> [B]oth Mr. Hampden and Mr. Carpenter assented to the details of this experiment in our presence as conclusive, although we regret to say that Mr. Carpenter alleged his opinion was founded upon theory alone, and that it had never, as far as he knew, been tried. Now, the fact really is, that in a little treatise published by "Parallax," and which we have now in our possession, with Mr. Carpenter's name on the title-page, in his own handwriting, an experiment similar in its nature is described as having been made on the very same piece of water as that on which we were then occupied, with a result exactly the reverse of that which recently occurred. Mr. Carpenter was, in fact, engaged to decide a disputed question, of which he and his principal professed to be practically ignorant, although it was in print on the authority of the head of their sect, that it had already been tried in the same locality; and this must have been known to Mr. Carpenter, and has since been admitted by him in our presence. The good faith and perfect fairness of Mr. Carpenter were not, therefore, quite of the nature we then believed them to be, and we have no hesitation in affirming that he was a most improper person to be selected to act as referee in such a matter.

In the same issue, Walsh published the reports of Carpenter and Coulcher and his own decision, as follows:

> Mr A. R. Wallace, by means of the experiment agreed on as satisfactory to Mr Hampden and his umpire by both of these gentlemen, has proved to my satisfaction "the curvature to and fro" of the Bedford Level Canal between Welney Bridge and Welch's Dam [note 2.4] (six miles) to the extent of five feet, more or less. I therefore propose to pay Mr A. R. Wallace the sum of £1000, now standing in my name at Coutts' Bank to abide the result of the above test, next Thursday, unless I have notice to the contrary from Mr Hampden. J. H. Walsh
>
> 346, Strand, March 18

Walsh also mailed a copy of his decision to Hampden on March 18, probably immediately after the meeting with Wallace and Carpenter. Meanwhile, Hampden had written and published a pamphlet entitled God's Truth or Man's Science, Which Shall Prevail? Upon receiving Walsh's decision, Hampden apparently wrote smoking letters to both Walsh and Wallace, enclosing copies of the pamphlet. While God's Truth has not survived, its contents can be surmised from Wallace's response:

Now for the assertions and challenges in your pamphlet you were so good as to send me. Your proposed further tests are some very good, some quite worthless. All those which in any way depend on an apparent slope up or down, as judged of by the unaided eye, are utterly worthless; because, of all things, the eye is least able to judge accurately of a level, and if a line deviated as much as eight feet instead of only eight inches in a mile, I would defy you to tell by the eye alone if it were level, or sloped up or sloped down. [ref. 2.20]

Obviously, Hampden hoped for further experiments. Wallace had regained the patience and composure lost at the canal, and he deemed three of Hampden's proposed tests reasonable:

First. The test proposed at p. 5, to place a spirit-level at the middle station, and take a sight both ways to Welney Bridge and Old Bedford Bridge (not Welche's Dam as you state) the water at the two ends would certainly be shown to be about five feet below the horizontal straight line touching the water at the middle station. The only difficulty would be in getting the level placed high enough to be above the vapours and unequally heated air close to the ground; but I have no doubt, if it were placed on the elevated towing path, its height above the water would be about five less than the height of the points on the two bridges cut by the cross-hair, which determines the true level line.

2nd. As to the continuation of the curve beyond the three miles in each direction. This is also a good experiment, and I maintain that a signal staff placed one mile further off than either bridge, would show the water there to be eight or nine feet below that at the middle station, and at two miles further off, fourteen or fifteen feet, as it should be if the curve continues—not less than at the Bridge, as it should be if your theory of a series of short curves, thus ^^^^^^^^^^^^ is true.

3rd. The test of the lamp (p. 8) 18 inches above the water on a clear night at one Bridge, being visible by an eye or telescope situated, say three feet above the water at the other Bridge six miles distant. I maintain that it would not be visible; while at the same time, it would be distinctly visible from the Bridge at an elevation of about fifteen feet.

Now, on each or all of these three points I am ready, after the present wager has been finally settled, to meet you on any fair terms you may propose, the umpire being any well-known civil engineer, surveyor, optician, or scientific man—the questions all being simple matters of fact, which it requires merely good eyesight, some knowledge of instruments and experiment, and a true tongue, to pronounce upon justly. [ref. 2.21]

Thus, Wallace was not satisfied with being pronounced the winner. Hampden was not convinced that decision was just, and Wallace was perfectly willing to make further experiments to help Hampden understand.

John Henry Walsh read Hampden's latest letter with astonishment. Wagers were common as riding crops in the sporting circles Walsh travelled, but it was almost unheard of for a gentleman to welsh on a bet, especially a bet he had initiated. In a letter dated March 23, 1870, he asked:

Am I to understand that you give me formal notice to return you the stake? I am unwilling to believe this, as I had hoped you would have admitted the correctness of the award, at all events, as far as it went. I have thought it my duty, in justice to Mr. Wallace, to state the matter fairly this week, but I hope you will, for your own sake, reconsider your decision. [ref. 2.22]

Hampden did not reconsider. Neither did Walsh. Despite threats from Hampden and confrontations with Carpenter, he delivered the stakes to Wallace—on April Fools' Day!

Chapter 3

The Bedford Canal Swindle Detected and Exposed

HAMPDEN AND WALLACE has a nice ring to it, like "Laurel and Hardy," and it would have made a good name for a vaudeville act touring Victorian music halls. In fact, the Hampden and Wallace act entertained England for two decades, but their farce was played out in the public press and courtrooms rather than on music hall stages. Wallace's ill-fated attempt to spike flat-earthism only brought it increased attention and gave it a unity it had never had before. "The Bedford Canal Swindle" became the zetetic theme song and rallying cry. Believers saw in Hampden a David who boldly attacked Goliath only to be diddled out of his victory. Secret flat-earthers came tumbling out of the woodwork.

John Henry Walsh's decision in favor of Wallace left John Hampden shaken. For once in his life, he experienced self doubt. He sent "Parallax" £10 and asked him to return to the Old Bedford Canal and repeat his experiments. "Parallax" obliged. He and several others spent three days on the site making further observations. Rowbotham and his team returned to London on the evening of April 18, and they reported the canal still as flat as it was when Rowbotham lived there in 1838. [note 3.1] Even this did not satisfy Hampden, and he subsequently spent another £10 to have printer Alfred Bull conduct further (and equally satisfactory) experiments.

First, however, Bull had another task to perform. Within days of Rowbotham's return, Bull printed and published a pamphlet entitled Is Water Level or Convex After All? The Bedford Canal Swindle Detected and Exposed. The title page names no author, but the style and tone are unmistakably Hampden's. (Hampden was as hardnosed and mean-spirited a controversialist as ever hurled an epithet in lieu of an argument.) His opening words show he was in no mood to take prisoners:

Perhaps there is not upon record a more palpable illustration of the notorious rascality of the scientific world than has been recently exhibited in the trial between Mr. Hampden, of Swindon, and Mr. Wallace, Fellow of the Royal Geographical Society, of London, aided and abetted by a local "sawbones" of Downham Market, who acted as Mr. Wallace's referee, and the Editor of The Field newspaper, who was his chosen umpire. [ref. 3.1]

On the same page, Hampden states his motives for making the challenge:

Mr. Hampden took up the subject, simply and solely relying on the fact that the Bible, or Scriptural evidence, as far as it went, uniformly ignored, if it did not directly oppose the notion of a globular earth. Not a single verse throughout the whole Scriptures hint [sic] at any expression confirmatory of the Newtonian theory. Mr. H. knew this would be impossible if a revolving globe were really a fact … [ref. 3.2]

Hampden briefly described the experiment, dusting off Martin W. B. Coulcher as "a local apothecary, who, if all reports were true, was not over scrupulous in making assertions according to circumstances." After censuring Coulcher for refusing to argue with Carpenter, Hampden trained his guns on his primary targets:

If there is one class of men, next to horse dealers and jockeys who bear the unenviable reputation of being the most trickey [sic] and unscrupulous in their assertions, it is the members of our scientific societies. [ref. 3.3]

The remark about horse dealers and jockeys was obviously aimed at sporting editor Walsh. In case that shot missed, Hampden fired another volley:

Take these editorial functionaries away from their scissors and paste-pot, and they are found to be as great blockheads as other men—mere slaves to the popular taste, and most of them as venal as any hireling in existence. There is no doubt some moral or pecuniary pressure was brought to bear on the late decision, and, like all cowards, Mr. Walsh was afraid to uphold the truth and the palpable evidence of the reports … [ref. 3.4]

Having now libeled everyone in sight, Hampden briefly addressed the form of the earth. He insisted that Wallace's experiment had failed to demonstrate any curvature, and the diagrams of the referees proved it. He found Wallace's explanations contradictory, Walsh afflicted with ignorance and stupidity, and the conventional view of the universe utterly unsupported by evidence:

[T]hose who assert the earth to be a globe must be utterly regardless of the truth of their system, and merely uphold it simply because it contradicts the Bible, which is all these infidels seem to care about. They have never made a single experiment the truth of which can be incontestably proved, and they stick to their insane theory because it is ingenious, and makes thoughtless blockheads stare with amazement. One single proof would be worth a thousand mere assertions. [ref. 3.5]

This was the sort of refutation he would always prefer. Returning to Walsh, Hampden wrote:

He has … placed a rod in the hands of Mr. Hampden, who, perhaps of all men in the world, is most ready to inflict the severest retaliation on those who dare attempt to force their lying frauds upon his acceptance. Deception and falsehood, meanness and cowardice always excite in his mind an intensity of loathing that few, perhaps, are able to realise. [ref. 3.6]

As we will see, Walsh and Hampden took turns applying the rod to each other.

In closing, Hampden noted that Wallace had agreed in principle to another experiment. If the new experiment demonstrated the convexity of a body of water, Hampden would pay all expenses and admit to libel and slander. If it failed, he would claim the £1000 and demand a full apology. If his challenge was ignored, he would sue everyone in sight.

Is Water Level or Convex After All? was difficult to ignore. Hampden had initiated the Bedford Canal fiasco with an advertisement in Scientific Opinion, so perhaps its editors felt a proprietary interest in (or professional responsibility for) the matter. In any case, the magazine reacted to the pamphlet with a full-page editorial in the April 27, 1870 issue. It says in part:

This brochure, written anonymously, is a species of abusive Jeremiad of the very lowest and most offensive type, and we can only say of it that, if it is not beneath the contempt of Mr. Wallace, it is a publication which that gentleman would do well to put into his lawyer's hands; for it is the most libellous and disgraceful tirade we have ever been pained by reading.

And further:

We can well comprehend how painful it must be to Mr. Hampden to have to pay £500 for indulging in the nonsense he has enjoyed so long, but that by no means justifies the course either he or his friends have taken in publishing this pamphlet; and we trust that Mr. Wallace, who has had the courage to put the cap and bells on Mr. Hampden's head, will equally apply the legal flagellum to the individual who has had the audacity and bad taste to write the pamphlet, and the cowardice to publish it anonymously.

Despite this advice, Wallace tried to ignore Hampden's libels. Hampden considered silence an admission of guilt, and he produced a blizzard of letters-to-the-editor denouncing Wallace. He also bombarded Wallace's friends and colleagues with sulfurous letters and postcards. At length, Wallace grew tired of being publicly branded a knave, liar, thief, swindler, imposter, rogue, and felon. In January of 1871 he sued Hampden for libel. Flat-earther B. Charles Brough described the result as follows:

The City Remembrancer, before whom the trial was heard, considering the affair a "most curious thing," directed the jury to return a verdict for the plaintiff, and to assess the damages which would be likely to repair Mr. Wallace's integrity. Accordingly to counterbalance the effect which the charges of "swindling" were calculated to produce, a verdict for £600 was duly returned. [ref. 3.7]

Characteristically, Brough neglected to mention why Wallace won a directed verdict. Hampden never contested the libel suit, for he had another strategy. While Wallace was in court, Hampden signed all his assets over to his solicitor son-in-law and declared bankruptcy. Wallace's judgment for £600 was un-collectible, but he ended up with a whopping bill for legal costs.

Soon afterward, Walsh, also bespattered with the fallout of Hampden's rage, brought a criminal action for libel at London's famous Old Bailey. The evidence was overwhelming, so Hampden pleaded guilty and apologized. He was ordered to keep the peace for a year, equivalent to being put on probation.

Hampden's peace ended long before his probation expired. On June 28, 1871, Annie Wallace received the following letter:

Madam—If your infernal thief of a husband is brought home some day on a hurdle, with every bone in his head smashed to a pulp, you will know the reason. Do you tell him from me he is a lying infernal thief, and as sure as his name is Wallace he never dies in his bed.

You must be a miserable wretch to be obliged to live with a convicted felon. Do not think or let him think I have done with him. John Hampden [ref. 3.8]

Twelve days later, Hampden was brought up before the Stratford bench of magistrates on a charge of writing a threatening letter. Annie Wallace testified that she had previously received a similar letter, which she could not produce. Alfred Wallace testified that the handwriting and signature appeared to be those of John Hampden. The same was true of another letter introduced as evidence, this one addressed to the Committee of the Entomological Society, of which Wallace was president. It read as follows:

Gentlemen,—Cannot you get some low, pettifogging attorney to try and defend your president from being a thief and a swindler—a rogue and imposter? Of course no respectable men would have the name of such an infernal rogue on their books. If I were to meet him in the middle of Regent-street or the Strand, tell him from me that I would spit in his face and kick him into the gutter. John Hampden

The bench said that it seemed to be a case of a crazy man writing crazy letters. Regarding his letter to Mrs. Wallace, Hampden told the court that some young friends of his were very much disturbed about the way Wallace had treated him; fearing violence, he had tried to warn Wallace. The skeptical judge ordered Hampden to put up £100 as a surety that he would keep the peace for three months and to find two other sureties at £50 apiece. Hampden spent a week in jail before two additional sureties came forward. [ref. 3.9]

Criminal libel became a habit with Hampden; in the next four years he would be convicted three times. Wallace apparently got little sympathy from his scientific colleagues. Darwin, at least, expressed his condolences regarding the threatening letters, writing, "I was grieved to see in the Daily News that the madman about the flat earth has been threatening your life. What an odious trouble this must have been to you." [ref. 3.10] Most thought he should never have gotten involved, and there were presumably whispers about a former land-surveyor trying to act the gentleman.

William Carpenter remained silent for more than a year after his controversy with Coulcher and Walsh in The Field. Not until the summer of 1871 did he publish his first pamphlet on the Bedford Canal experiment, Water, Not Convex: The Earth Not a Globe. The first really detailed description of the Bedford Canal experiment and its aftermath, it is generally reliable despite Carpenter's obvious bias. It is particularly interesting because of Carpenter's expertise in Pitman shorthand, and some of the dialogue he preserved is quoted in the previous chapter. Unfortunately, Carpenter was a tedious writer with a penchant for petty quibbling and a genius for misunderstanding simple English. In a letter to Hampden, Wallace noted that if one sighted along a line of poles between Old Bedford Bridge and Welney Bridge, the tops should appear to be "rising higher and higher to the middle point, and thence sinking lower and lower to the furthest one." Carpenter commented as follows:

The surface of the earth is to be seen "rising" and "falling!" How strange! Why, have we not just been provided with the exact amount of curvature in one continuously progressive scale, without any "ups" and "downs," from eight inches in the first mile, to 130 feet in the fourteenth mile? Is Mr. Wallace right, and all the other scientific men wrong? Does the surface of the earth curvate continuously upwards, or continuously downwards, or, first upwards, then downwards? Is there a gradual incline, a gradual decline, or is there first one then the other? These are questions every thoughtful man will ask.

Nonsense! A thoughtful man would easily understand what Wallace meant. Carpenter carped continuously in everything he wrote, and after a few pages of his stuff, Hampden's rages sound almost reasonable. Unlike Hampden, Carpenter knew how to walk the thin line between fair comment and libel. His innuendoes contain the same accusations Hampden made, but he was never sued. His penchant for detail made some of his tiresome works informative, but Hampden's tirades are more interesting reading.

Meanwhile, the flat-earth movement thrived on the controversy. For the first time in its history, the movement got national publicity. True, the publicity was all bad, but the zetetics finally gained recognition. Rowbotham, Carpenter, and Hampden no longer stood alone in the public eye. The Bedford Canal experiment brought in new blood and spawned the first genuine outpouring of zetetic literature. One writer brought into the flat-earth controversy by the Bedford Canal controversy was Empson Edward Middleton.

Some benighted souls imagine that no practical seaman could ever be a flat-earther. Empson Edward Middleton, the first to circumnavigate England single-handed, is an excellent counterexample. To a modern landlubber, a voyage that rarely left sight of land sounds unimpressive. But sailing vessels rarely sank in the open sea. The rocks, shoals, and tides found close to shore were (and still are) the greatest danger. Middleton brought the Kate in to shore nearly every night, thus traversing the danger zone twice daily for much of his voyage. In the

days before auxiliary engines, electronic navigation systems, and large-scale piloting charts, putting a 21-foot yawl into a strange harbor single-handed was not for the faint of heart, and Middleton's survival sometimes depended upon heroic feats of rowing. He described his hair-raising experiences in The Cruise of the Kate, first published in April 1870 and still in print.

Empson Edward Middleton was not exactly born to the sea, but his maternal grandmother came from a ship-owning family, the Tindals of Scarborough. The Middleton family tree was sufficiently distinguished that grandfather Empson had tried unsuccessfully to wangle a title. When young Empson was born in Jamaica in 1838, his father Boswell was governor of the island. Boswell Middleton died in the cholera epidemic of 1853, and Empson was put aboard a Tindal ship, the Albemarle. He proved himself a gifted helmsman, so good at steadying a wallowing vessel that when the crew went aloft in foul weather, they asked that he be put at the helm. He served in the British Army in India, but Lieutenant Middleton was not a happy man, and he returned to England in 1864 or 1865 and retired from the Army by selling his commission. Being a gentleman, Middleton had no need of (or taste for) employment or profession. Instead, he decided to translate Virgil's epic Latin poem the Aeneid into rhymed English pentameters. It was a daunting task, from which his voyage on the Kate was intended as a temporary respite.

The successful author leaped into the flat-earth fray in late 1871. As a youth aboard the Albemarle, Middleton had questioned the rotundity of the earth. Now he took exception to some antizetetic letters-to-the-editor sent to a British newspaper by an anonymous "Globe-ite." Middleton engaged "Globe-ite" in one of those letters-to-the-editor battles beloved by the 19th century British press. Middleton's four contributions, later published under the title The Trigonometreadidit Letters, illustrate his unique style. His response to Globe-ite's first published letter began thus:

Sir—Kindly permit me in all humility to arouse, wake up, alarm, terrify, freeze Globe-ite with a burning sensation that I wonder. Would Globe-ite be sensitively pricked up to the distant rumbling, mighty roaring, all-earth-clashing, sea-nonconvexing, air-spitting, gentle ear-tickler? Then let Globe-ite be aware that I quiver, shake, nay—rattle with amazement to know, would he (Globe-ite) allow, recognize, and determinedly swear that there is such a thing as perpendicular! Swear, Globe-ite, swear! affirm yea! It is affirmed. Globe-ite has graciously condescended that he acknowledges an ordinance of nature called (according to position) vertical, upright, perpendicular, or otherwise." [ref. 3.11]

Middleton argued that if there is on earth such a thing as a perpendicular, there must also be such a thing as a horizontal. If horizontal, then flat, Q.E.D. Unfortunately, Middleton's arguments were rarely clear to anyone but himself, and when prose failed, he switched to verse. For example, in his third letter, he wrote:

The earth's a plane! the earth's a plane!
Hurrah for "Parallax" then;
Hurrah, hurrah! hurrah, hurrah!
For Carpenter and Hampden!

Another cheer for publishers,
And printers, too, who boldly
Set forth the truth! set forth the truth!
And shun the false and mouldy. [ref. 3.12]

It is hard to argue with this kind of logic. One suspects that most globites kept out of Middleton's way as much as possible, though not for the reasons he imagined. He followed The Trigonometreadidit Letters with more of the same in his Controversy on the Shape of the Earth between a Newtonian Astronomer and a Poet (1872).

With secret flat-earthers coming out of the closet and new converts coming into the fold, the time was ripe for a zetetic periodical. Hampden tried to start one in 1871, [ref. 3.13] but he never got it off the ground. More successful was B. Charles Brough, who brought forth the first issue of The Zetetic: A Monthly Journal of Cosmographical Science on July 1, 1872. Brough opened The Zetetic as follows:

ADDRESS TO THE READER

If any explanation were necessary for the appearance of The Zetetic in the ranks of journalism, it might be found in the fact that while almost every phase of scientific, political, and social problems has its own particular organ, and medium of communication, those who have been led to believe in the principles of Zeteticism have been hitherto totally unrepresented; and, owing to the partiality and intolerance of the press, frequently misrepresented.

The Zetetic was published in Brough's hometown of Stafford, a small market town 25 miles north of Birmingham, then England's industrial powerhouse. Stafford's best-known native son was Izaak Walton (1593–1683), who probably wet his first line in the river Sow, which flows through the town. Little is known of Brough's background, but he seems to have been a middle-class professional, perhaps an attorney (or solicitor). He had already published a pamphlet entitled What Is the Shape of the Earth? and perhaps other works, but none survive.

The Zetetic is a gold mine of flat-earth trivia. Correspondence published in the premier issue indicates that an informal network of flat-earthers was already in place. One of Brough's aims was to formalize this network, and the August 1872 issue of The Zetetic announced that "a Zetetic Society … is now in the course of formation …" The Zetetic Society remained in the course of formation for as long as The Zetetic was published, but nothing came of it. [note 3.2]

The early issues of The Zetetic are a showcase of flat-earthism in the years immediately following the Bedford Canal experiment. Rowbotham contributed a series of autobiographical essays, which are our primary source of information about his background and early life. Hampden and Carpenter made cameo appearances with letters-to-the-editor. Several flat-earthers we will meet again in later chapters first appeared in The Zetetic: Frederick D. Evans, pamphleteer James Naylor, and pamphleteer and zetetic lecturer William Bathgate.

Brough himself was already attacking conventional astronomy in public forums. In the first issue of The Zetetic, he alludes a recent public debate on the shape of the earth, apparently with our old friend J. Dyer, but he gives no details. As part of his flat-earth ministry, Brough offered a lecture program entitled "Impeachment of Modern Astronomy." The full program took three evenings. Brough gave formal lectures on the first and second evenings, and (at his option) held an open discussion on the third "in towns where there are Newtonians sufficiently competent to handle the subject." [ref. 3.14] Brough delivered his lecture series twice in the week of December 15–21, 1872, in Stafford on Monday through Wednesday (December 16–18) and in Liverpool on Thursday and Friday. [note 3.3]

Neither lecture series was well-attended. The hometown lecture was reported in the Staffordshire Advertiser as follows:

"IMPEACHMENT OF THE NEWTONIAN ASTRONOMY."—Such was the heading of the placards which announced three lectures to be delivered in the Lyceum on the evenings of Monday, Tuesday, and Wednesday, by Mr. B. Chas. Brough, but notwithstanding its taking character the audiences were not numerous. On the first evening, the Mayor, B.P. Wright, Esq., presided, and, in his opening remarks, stated that his presence there by no means committed him to the views propounded by the lecturer, he merely attended to give countenance to a townsman in explaining those views, which his worship good-humourlessly observed, might be so dear to him as to lead him to anticipate the time when he would be placed on the pedestal of fame, and

persons point to him and say, “A greater man than Newton is here.” Mr. Brough then proceeded with his lecture, in which, with no lack of ability, he attempted to enforce those ideas respecting astronomy which our correspondent “Common-sense” so completely refuted, and which are contrary to the experience alike of the man of sense and the untutored sailor [italics added by Brough]. [ref. 3.15]

Brough took umbrage at this report (especially the italicised passages), and he printed his rebuttal in the January 1873 issue of The Zetetic. The mayor said no such thing, he insisted. As for the refutation by “Common-sense,” Brough made a revealing statement:

It is not true that the utter inaccuracy of “Parallax’s” system, would, in the slightest degree, invalidate the truth of Mr. Brough’s Impeachment; neither is it true that Mr. Brough advocated, or permitted the discussion of, Zetetic Astronomy … [ref. 3.16]

This suggests that Brough’s public approach was pure obscurantism. He attacked Newtonian astronomy hammer and tongs but refused to present or defend any alternative. Obscurantist tactics work best with unsophisticated audiences, and modern creationists mimic Brough’s approach by assaulting conventional science while refusing to say what they think should replace it.

Brough was a prickly sort, and he filled the pages of The Zetetic with barbs directed at the spherical opposition. Though his knowledge of the Bedford Canal affair was entirely secondhand, he persisted in commenting on it to Wallace’s disadvantage from the first issue to the last he edited. Brough seemed to think that some combination of insult and innuendo would persuade Wallace to participate in a rerun of the experiment. One example of his technique should suffice.

Between battles with flat-earthers, Wallace spent most of 1871 and part of 1872 planning and building his dream house in an old chalk pit near Grays, Essex, about 20 miles east of London and just north of the river Thames. With unfailing naiveté, he hired a notoriously crooked contractor who cost him considerable time and money and eventually left him managing the project himself. The Wallaces finally moved into the new house, named The Dell, in mid-1872. Some letters Brough subsequently sent to Wallace’s old address in Barking were returned by the post office. Commenting on this, Brough wrote:

About this time Mr. Hampden had commenced to institute legal proceedings for the recovery of his £500, but no-one would insinuate, for a moment, that this was the cause of Mr. Wallace’s exodus, any more than he would attribute the ‘journey’ of discretionary French patriots, during the late Franco-German war, to the most distant sea-ports, to any fear, however remote, of the fortunes of war. [ref. 3.17]

Wallace had actually been negotiating a new experiment, but this cheap shot, so characteristic of Brough, apparently eliminated Wallace’s interest in communicating with him. Besides, Brough’s career at The Zetetic was rapidly drawing to a close.

With the September 1872 issue, Brough became joint editor with “Parallax,” although the editorial style continued to bear Brough’s mark. (Brough was afflicted with that unctuous intellectual dishonesty so common among sectarian controversialists.) In March 1873, the title was changed to The Zetetic and Anti-Theorist: A Monthly Journal of Practical Cosmography, and “Parallax” was listed as the sole editor. On the first page, Rowbotham described his favorite Bedford Canal experiment, one he claimed to have worked successfully many times. He proposed that a boat equipped with a flag 6 feet high be rowed 6 miles down the canal and observed with a telescope 8 inches above the water. According to the spherical theory, the boat and flag should go out of sight behind the curvature of the earth. In numerous repetitions of this experiment, said Rowbotham, the observer had never failed to keep the boat and flag in view for the full 6 miles. He concluded, “Trial of the above experiment is the challenge here solemnly given, in

the interest of truth alone, to the scientific men of the whole world." [ref. 3.18] There were no takers.

For his own part, Rowbotham was still lecturing actively. On April 21, 22, 28, and 29, 1873, he gave a series of lectures in the Penge Hall, near Anerly Railway Station, Penge, about 7 miles south of the Tower of London. Each lecture started at 8:00 p.m. General admission was 6d. and reserved seats 1s. for each lecture, or 1s. 6d. and 2s. 6d., respectively, for the whole course of four lectures.

The discussion period following the first lecture included some fireworks. "Parallax" reported the event as follows:
On Monday evening last, April 21st, Mr. J. Dyer, a gentleman who some time ago published a pamphlet entitled 'Parallax Answered,' [note 3.4] attended the first of the second course of lectures delivered in the Penge Hall. At the close, when discussion was invited, Mr. D. walked to the foot of the platform, and boldly declared that he was able to show that the whole of the lecturer's statements and arguments were absolutely false. [ref. 3.19]

Dyer was feisty and somewhat abusive, and the chairman addressed him in strong language. Rowbotham ended the discussion by challenging Dyer to debate the issue at another time. Dyer accepted.

The "Parallax" vs. Dyer debate was held at the Penge Hall on May 5, 1873. Again, the tickets were 6d. for general admission, 1s. for reserved seats. Each speaker gave a 15-minute opening address, and then they spoke alternately for 10 minutes each until the end. Rowbotham gave a third-person account of the debate in The Zetetic, beginning as follows:

"Parallax" opened the debate, by remarking that the subject they were met to discuss was one of the most important which it was possible for the human mind to grapple with. The doctrine that the earth was a globe was so interwoven with different other subjects, that to show its fallacy was practically to pull down all the vast superstructure of modern science and philosophy; and it was not to be wondered at therefore that so many of the learned professors of the day were so anxiously determined to resist the advance of contrary teaching. But they were divided as to the best means of accomplishing their object. Many declared it was better to leave it unnoticed; to "pooh, pooh," and treat it with apparent indifference. Others, as our friend Mr. Dyer, thought otherwise, that it ought to be attacked and battled with on every possible occasion. He called Mr. Dyer a friend, because, however savage and impatient in his manner of opposition, he afforded an opportunity, by discussing the subject, of shewing its true importance and strength if it were true; and its insignificance and weakness if it were false. [ref. 3.20]

Rowbotham argued that if the surface of water were horizontal, then Newtonian astronomy is dead. Dyer (if we are to believe Rowbotham) opened as follows:

I am here to affirm that all that "Parallax" has said is a mass of error in every respect. I object entirely to his telling you of certain experiments; and requiring you to take his word. Neither I nor you shall take his or any other man's ipse dixit. [ref. 3.21]

Dyer implied that Rowbotham lied about his experiments. Rowbotham said that Dyer should not make such statements before going to the canal and making experiments himself. He then issued the following challenge:

He [Rowbotham] now gave him a formal challenge to do so; and in order that he might have no excuse, he would undertake to pay all his expenses, there and back, on the sole consideration that he should agree to present himself before a public meeting, called for the purpose in that hall, to state explicitly and without reserve what he had seen with his own eyes. [ref. 3.22]

Dyer declined, supposedly as follows:

Yes, this is the way "Parallax" is in the habit of dealing with his opponents; and it really takes the wind out of us! It seems to an audience so fair and above-board that very often they think we ought to go, and that we haven't a leg to stand on unless we do. But I beg to say that I entirely decline to do anything so foolish—who knows what would occur when we got there? Who knows what would be the conduct of "Parallax" and his party? what would they say and do, and what version would they give on their return? I have no doubt that the whole thing would be so muddled and cooked that no satisfaction would be felt by the public. [ref. 3.23]

Rowbotham insisted that Dyer and others didn't have the courage to do the experiment. Dyer argued that Wallace's experiment had settled the matter, and there was no point in doing further experiments. Rowbotham then appealed to the audience as follows:

You see, ladies and gentlemen, how the matter stands. Mr. Dyer refuses to make experiments to test the matter at issue; and he relies upon the unsatisfactory and inconsistent results obtained by Mr. Wallace, who declined, and still declines, to try the plain, simple experiment I described. Why do these people so strangely shrink from the only proper test which can be instituted? I leave the matter with you, for your own individual consideration. [ref. 3.24]

At that point, Dyer was beaten. He went on to argue that ships disappearing over the horizon prove the earth's sphericity, but Rowbotham had been answering that one for more than two decades. He knew how this well-known illusion occurred, he said, and he explained and illustrated the zetetic law of perspective. (The latter depends upon zetetic geometry, which, like creationist thermodynamics, sounds plausible enough to a lay audience.) He challenged Dyer to refute his explanation with a demonstration.

Dyer declined. He said he had twenty proofs that the earth is a globe, and began presenting them. He had barely begun arguing from the sun's motion when Rowbotham interrupted to say that Dyer was talking about the consequences of the earth's shape rather than the shape itself. He would be happy to debate that topic on another night, but it was not this evening's subject. It was now about eleven o'clock, and they broke up, Dyer no doubt going home a sadder (if not wiser) man.

Dyer's refusal to participate with Rowbotham in another Bedford Canal experiment was nothing new. Rowbotham had been repeating his challenge in every issue of The Zetetic without result. Finally, in the July 1873 issue, he directed it specifically to Alfred Russel Wallace. To be sure Wallace didn't miss it, Rowbotham sent him a copy of the issue. For a great scientist, Wallace was a remarkably slow learner. In a letter dated July 14, 1873, he accepted Parallax's challenge.

Again, a voluminous correspondence ensued, and Rowbotham reproduced much of it in the August–September 1873 issue of The Zetetic. Wallace agreed that Rowbotham's experiment would be conclusive, saying that he would "cheerfully abide the result of the trial with any impartial judges to decide whether the boat continues to be seen or not." [ref. 3.25] He insisted, however, that the observer must be someone accustomed to using a telescope and suggested that Rowbotham should appoint "any professional land surveyor or civil engineer from the neighbourhood" [ref. 3.26] to make the observations. As for himself, he would get Martin W. B. Coulcher to observe for him again. Eventually, Parallax agreed to accept a surveyor named by Wallace, saying he would himself make "collateral observations." Coulcher, whose home was in Downham Market, near the canal, advised that July was not favorable, due to mirage. Coulcher recommended October or November, but "Parallax" cited his own experience there and insisted there should be no problem. They eventually settled on August 26, 1873.

Wallace had made a dangerous concession. The successful canal experiments Rowbotham described in his lectures and literature invariably had the observer's eyes close to the canal waters.

Parallax suggested that the experimenters use punting boats—narrow, flat-bottomed, very low-profile boats often used for wildfowl hunting. Instead of a punt gun, a huge boat-mounted shotgun used for massacring sitting ducks, one of the boats would be equipped with a powerful telescope mounted inches above the water. Another boat with a short flagstaff mounted on it would row off down the canal. The observer would note whether the flag remained in view for the 6 miles from Old Bedford Bridge to Welney Bridge or went out of sight behind the curvature of the earth. On a cool morning in late August, with the canal water warmer than the air, the flag just might remain in view! Either Wallace didn't understand air refraction or he trusted Coulcher and the surveyor, one Burton, not to attempt the experiment with an inversion layer near the water.

Rowbotham was insistent on getting the observer's eye into the mirage layer. In case the experimenters couldn't get suitable boats, he borrowed "an improved diving dress" from Messrs. Heinke & Company, Submarine Engineers, explicitly so that the observer's eye and telescope could be kept "within a few inches of the surface." [ref. 3.27]

Neither Wallace nor Rowbotham went to the Bedford Canal for the new experiment. Wallace never intended to go, and Rowbotham had to cancel at the last minute. Coulcher proved a better weather prophet than Rowbotham; the experiment had to be called off due to mirage. [note 3.5] Rowbotham complained in The Zetetic that they got started too late (ten o'clock), and he proposed a new experiment. Nothing came of it.

The Zetetic was by this time probably struggling financially. Rowbotham was not as mean-spirited as Brough, which improved its tone, but overall The Zetetic went downhill under his editorship. From the day Rowbotham took over as sole editor, The Zetetic never carried a major article by another flat-earth writer. He printed letters-to-the-editor, miscellaneous notes, more of his reminiscences, and sections from his book.

Rowbotham's own interests apparently were shifting. For instance, he was advertising a new book, The Life and Teachings of Jesus Christ, Zetetically Considered, which he continually assured readers would be released soon. [note 3.6] He was also promoting his ideas on patriarchal longevity and publishing Earth Life, a periodical tract promoting "Dr. Birley's Syrup of Free Phosphorus." The patent medicine business was strong and profitable, and Carpenter, Hampden, and other flat-earthers were peddling the stuff for him.

The Zetetic folded with a double issue dated October–November 1873. Rowbotham continued to give occasional flat-earth lectures, but his reduced activity left something of a power vacuum in the zetetic world. By default, Hampden became the leading zetetic spokesman. To Rowbotham's chagrin, many thought Hampden was the famous "Parallax."

Hampden's pen, of course, had not been idle during this time. In late October 1872, Wallace had again prosecuted him for libel at London's Old Bailey. The November 1872 Zetetic reported the case as follows:

[A] few days ago, Mr. John Hampden was charged, at the Bow-street Police Court, before Mr. Flowers, with libelling Mr. Alfred Russell [sic] Wallace. [ref. 3.28]

The case was heard before Mr. Commissioner Kerr. The editor of The Zetetic was not pleased with the result.

On Monday, the 2nd ult., the Wallace "libel" case was unseemingly disposed of. At an early stage in the proceedings the prosecutor, apparently desirous of avoiding a critical examination, pressed for an apology to be made; and, as Mr. Commissioner Kerr, before whom the trial was heard, received the suggestion with favour, this course was eventually agreed on. Such a denouement may be very palatable to Mr. Wallace—doubtless it is so—but we cannot help

thinking that, throughout the transaction, he has asserted an honesty which may be better described as legal than moral. [ref. 3.29]

The prosecutor referred to was, of course, Wallace. In a letter published in the next issue, Wallace charged that the Zetetic had again misrepresented him. Rather than pressing for an apology himself, he was pressed to accept one by one of Hampden's friends. Whoever made the suggestion, Mr. Kerr let Hampden off on his promise to apologize to Wallace in twelve newspapers and magazines. The Zetetic carried the apology in the December 1872 issue:

"PUBLIC APOLOGY"—I, JOHN HAMPDEN, of 33, Warwick Street, New Cross, do hereby make a full and complete apology to Mr. Alfred R. Wallace for having falsely accused him of unfair or dishonourable conduct, and I acknowledge that all the accusations I have made against him since April, 1870, are wholly without foundation, and I hereby retract and withdraw everything I have said, written, or published reflecting on his character as a man of honour and integrity. John Hampden

Hampden didn't mean a word of it. In January 1873, Wallace again had Hampden brought up for libel. Again, Hampden expressed contrition. Again, he was ordered to print an apology and to keep the peace. Again, the judge neglected to confiscate his ink bottle, and the never-peaceful John continued as before.

By this time, Hampden had moved to Croydon, Surrey, a suburb 10 miles south of London Bridge. While the editors of The Zetetic were still trying to get a Zetetic Society organized, Hampden established the New Geographical Society. The headquarters seem to have been Hampden's home, and it's not clear that the society had more than one member. In the ensuing years, the New Geographical Society published numerous items, all of them written or edited by Hampden himself. An early example, issued in June 1873, was a relatively innocuous four-page tract, A Few Scriptural Inconsistencies with the Newtonian Theory. Other items from Hampden's pen, especially his letters-to-the-editor published in various newspapers, were not innocuous.

In the summer of 1873, while he was negotiating with Rowbotham for further experiments at the Old Bedford Canal, Wallace had Hampden brought up at the Norwich Assizes for further libels. [note 3.7] Once again, Hampden had been defaming Wallace in letters-to-the-editor published in various newspapers. This time, the judge rejected Hampden's apologies and promises of good behavior. Hampden spent two months in Newgate prison.

Newgate must not have agreed with Hampden, for he didn't publish a single pamphlet in 1874. By the following year, he had caught his wind, and on March 6, 1875, he was indicted at the Chelmsford Assizes for new libels against Wallace. Chelmsford was a marketing and manufacturing town 30 miles northeast of London. A 12th century stone bridge over the river Chelm had once guaranteed the town's importance. The Chelmsford Assizes were held in the handsome shire hall near the ancient bridge. On the outskirts of town stood the Chelmsford Gaol, a forbidding stone edifice dating from the 17th century. Considering the evidence and Hampden's record, the judge ordered Hampden incarcerated in the Chelmsford Gaol for a year, and he further ordered him to keep the peace for two more years, under heavy sureties.

Hampden's second jail term in as many years ensured his martyrdom. The renewed controversy brought a relative outpouring of flat-earth material. Carpenter returned to the fray with two pamphlets, Wallace's Wonderful Water and Proctor's "Planet Earth". The former was admirably summarized by Carpenter himself in his advertisements for the pamphlet:

WALLACE'S Experiment was chiefly for the gaining of £500. from J. Hampden; and it is tolerably well known that Mr. Wallace succeeded in doing so. But it is not by any means well known in what manner this was effected. To supply this deficiency is the object of the author.

He was an eye-witness of the Experiment for the whole of the week that was occupied with it, and is, consequently, able to say what he knows of the subject, and not merely what he imagines. He does not libel Mr. Wallace. Oh, no! He uses a more WONDERFUL and effective weapon than that which the law can put down. He trusts to the power which TRUTH alone affords, and to FACTS which are too stubborn to be put down by any law whatever. The subject is bound to interest the Reader: for Truth is stranger than Fiction; and, moreover, its importance to the student of Nature cannot easily be over-estimated. If it is simply a fact that the surface of water is level—and not curved upwards in the middle of any six miles of its extent that may be chosen, as "science" puts it,—we owe much to—WATER! For it shows us the true form of the Earth. As is the water so must be the Earth in its general features. It is not a globe: but it is scientifically demonstrated to be just what the Scriptures declare that it is:—an immovable body, "Stretched out above the waters." Modern Astronomical Theory, is false! [ref. 3.30]

In other words, the pamphlet rehashes the Bedford Canal experiment from Carpenter's point of view. Wallace's Wonderful Water was written and published while John Hampden resided in Chelmsford Gaol. So was Proctor's "Planet Earth", an attack on Lessons in Elementary Astronomy by astronomer and prolific science writer Richard Anthony Proctor, who was emerging as a major opponent of zeteticism. (We will meet Proctor later in this chapter.)

Hampden remained in Chelmsford Gaol for six months before friends secured his release. As soon as he got out of the slammer, Hampden turned the tables. In January 1876, he sued John Henry Walsh, stakeholder for the Bedford Canal wager, for his £500 deposit. The Gaming Act of 1845 had made all wagers null and void. Its ramifications were by this time well established in case law. In a decision handed down on January 17, Chief Justice Cockburn explained:

[T]hough, where a wager was illegal, no action could be brought either against the loser or stakeholder by the winner, a party who had deposited his money with the stakeholder was not in the same predicament. If, indeed, the event on which the wager depended had come off, and the money had been paid over, the authority to pay it not having been revoked, the depositor could no longer claim to have it back. But if, before the money was so paid over, the party depositing repudiated the wager and demanded his money back, he was entitled to have it restored to him, and could maintain an action to recover … [ref. 3.31]

Walsh was damned by a single, undisputed fact: Immediately upon receiving the decision, and long before Walsh delivered the stakes to Wallace, Hampden had demanded his money back. [ref. 3.32] Legally, Walsh should have complied, so judgment was given in favor of Hampden.

Wallace felt morally obligated to bear Walsh's expenses in the suit. As Wallace still had a £600 claim against Hampden, and Hampden's bankruptcy was obviously (and perhaps provably) fraudulent, an accommodation was reached whereby Wallace paid £120 and the costs of the suit and retained a claim of £410 against Hampden. He never got a penny.

The jubilant Hampden lost no time in launching his first major venture into flat-earth journalism. On May 1, 1876, he published the first issue of The Truth-Seeker's Oracle and Scriptural Science Review, also identified as "Terra Firma," "John Hampden's Monthly," and "Organ of the New Geographical Society." The price was threepence, and the text was vintage Hampden. He opened the first issue with these words:

The very announcement of our name will sufficiently assure our readers as to what is the object, and what will be the principal subject of our small Monthly. With the first dip of our pen we throw down the gauntlet to the whole scientific world, and declare our intention to show, in the most unreserved manner, that all the geographers, all the astronomers, all the philosophers, all the scientific and educational professors of Europe are, on one particular subject, all wrong, all in error, all guilty of maintaining and upholding one of the most baseless theories, one of the most delusive fictions ever imposed on the ignorance and credulity of mankind. We shall prove

from Scripture, from reason, and from fact, the World to be neither globe nor planet, neither rocket nor wheel, neither mystery nor myth, but a stationary and level plane, over which the sun, moon, and stars horizontally revolve, at very moderate distances above us. We shall contend for the maintenance and defence of the ancient systems of philosophy and Scriptural science against the modern theoretical astronomy; and for the resolute and persistent exposure of the unscrupulous falsehoods, and the fabulous and baseless theories of the royal professors; with constant and special reference to the Bedford Canal survey by one of their principal members, in the year 1870; unfolding step by step, the inexcusable blundering and the palpable iniquity of the whole affair, both morally and scientifically.

Hampden was as pugnacious as ever. He fully expected that his enemies would try to shut down The Truth-Seeker's Oracle:

If there is neither sagacity nor intelligence enough among all our bigoted and vindictive opponents to silence our arguments before the issue of our second number, the disgraceful incompetence of the scientific professors and their literary hacks, will be most unsparingly denounced. We ask for no quarter, and it will be very shortly seen we intend giving none. [ref. 3.33]

He certainly didn't. Hampden lashed out at his enemies from every page, and he had enemies everywhere. He blasted the religious publications of the Society for Promoting Christian Knowledge, calling them "spurious, baseless, bastard, and infidel trash." He fumed that the Committee of the Council on Education had refused to show his flat-earth map at an exhibition. He raged at spherical ministers of the Church of England. He called a planned expedition to the north pole "a disgraceful waste of the public money" and challenged scientists instead to circumnavigate the mythical south pole. He hinted strongly that Christ would return to deal with "hypocritical professor[s]" and other degenerates within five years.

Needless to say, Hampden had neither forgotten Wallace, nor was he cowed by the prospect of further prosecution for libel:

[I]n spite of all the law courts and lawyers in England we shall persist in publishing Mr. A. R. Wallace a defaulter in the sum of £725, till the last fraction of our claim against him as a man of honour has been cancelled. [ref. 3.34]

One of Hampden's projects, promoted in The Truth Seeker's Oracle, was his New Geographical Society, for which he published a prospectus:

Its object is the revival and re-establishment of the original and only true system of GEOGRAPHY and ASTRONOMY, of 5,500 years duration, designed by the Almighty Creator, believed in and maintained by all the inspired historians, and never doubted or disputed till mankind had abandoned their reverence for God's word, and astrology and superstition had supplanted the faith in the evidence of their own senses. [ref. 3.35]

There is no evidence that anyone joined. Indeed, there's no internal evidence that anyone even read The Truth-Seeker's Oracle, though many flat-earthers undoubtedly did. The publication consisted exclusively of Hampden's tirades and a few advertisements. There were no articles by other contributors, not so much as a letter-to-the-editor. Perhaps that explains why it lasted for only three issues.

Zetetics may not have flocked to the banner of the New Geographical Society or the subscription list of The Truth-Seeker's Oracle and Scriptural Science Review, but Hampden's court victory over Walsh and Wallace gave flat-earthism a tremendous psychological lift, especially coming as it did on the heels of his incarceration in Chelmsford Gaol. His fellow flat-earthers considered him vindicated, and zetetic discussions of the case rarely mention that the decision was based on a technicality rather than the outcome of the experiment. A flurry of action ensued. The year

1874 had passed without the publication of single zetetic work. Carpenter had published two in 1875, while Hampden was jailed. During the years 1876 through 1879, at least a dozen zetetic works were published, not counting The Truth-Seeker's Oracle.

Empson Edward Middleton, last heard from in 1872, brought forth two pamphlets in 1876, The Great Liberator! The Great Solvent! The Great Liberator! and On the Variation of the Needle in Connection with the Shape of the Earth. That same year, he also published a map entitled Middleton's Pioneer Map of the World (not to be confused with his Chart of the World, as Middleton was quick to caution potential buyers). In 1877, he followed with The Variation of the Needle in Connection with the Construction of the Globe on Navigator's Course. It is difficult to determine his place in the flat-earth movement, if indeed he was linked to the movement by anything other than similar beliefs. A prolific writer, Middleton operated from isolation, sitting in the outskirts and firing his oddly-shaped darts of wisdom almost at random.

Indeed, Middleton often felt neglected, and it did not sit well with him. The heroic voyage of the Kate was not (he felt) properly recognized by the public, and literary critics were unkind to his partial translation of Virgil's Aeneid. The latter was completely ignored, and he lamented about "the gross injustice shown to myself as a poet, after my having published a poetical work of such unapproachable excellence …" Some people can only get justice from themselves. Middleton never seemed to fit in anywhere, not even with his fellow flat-earthers. Being born of wealthy parents, he never learned to wait on himself, which no doubt made life more difficult for him. As he grew older, he continued to publish occasional flat-earth works, but he also sank deeper and deeper into eccentricity and obscurity. He died virtually unknown in 1916.

In the mid-1870s, Carpenter lived in Lewisham, a southeastern metropolitan borough of London, where he ran a book shop specializing in "works on Total Abstinence, Vegetarianism, Mesmerism, Spiritualism, Dietetics, Hydropathy, Phonography, etc." [ref. 3.36] He also peddled Birley's Syrup of Free Phosphorus at 10s. per Imperial pint (a three-month supply at a teaspoonful morning and night). And he continued to churn out flat-earth pamphlets.

Carpenter had developed a penchant for attacking astronomers and/or replying to critics. We previously mentioned his 1875 pamphlets Wallace's Wonderful Water and Proctor's "Planet Earth". These were soon followed by Mr. Lockyer's Logic (1876), The Delusion of the Day: or, Dyer's Reply to "Parallax" (1877), Proctor, Lockyer, Wallace and Dyer, Confuted and Their Fallacies Exposed (1877), and A Reply to Professor Airy's Ipswich Lectures to Workingmen (1878?). Wallace and Dyer need no further introduction, and we will meet Proctor shortly. Astronomer Joseph Norman Lockyer was famous—and eventually knighted—for his investigations of the solar atmosphere. Sir George Biddell Airy was Astronomer Royal from 1835 to 1881.

We can form an idea of Carpenter's method from The Delusion of the Day: or, Dyer's Reply to "Parallax", which is dedicated to the schoolmasters of Great Britain (their number included Dyer). The pamphlet is in the form of a dialogue between Frank (flat) and John (spherical). Frank is a tiresome quibbler whom Carpenter undoubtedly modeled on himself. John has brought his flat friend a copy of Dyer's The Spherical Form of the Earth to examine. We can pick up Frank's method from a single example:

Frank: Your schoolmaster goes on with his picking from "Parallax" in this way:—"'That from this northern centre the land diverges and stretches, out of necessity, towards the circumference, which must now be called THE SOUTHERN REGION, which is a vast circle, and not a pole or centre.'" Does "Parallax" say that the land stretches; or, does he say that it stretches out?

John: What nonsense it is for you to talk that way, Frank! Why, the comma is put in the wrong place, that's all! [ref. 3.37]

A misplaced comma seems trivial enough, but Frank smells a plot. In the same quoted sentence, Dyer also changed "a circumference" to "the circumference." Elsewhere in his book, he committed other sins greater and less, which Frank is determined to root out. By the end of the pamphlet, Frank has refuted Dyer and the globe as thoroughly as any creationist has ever refuted Darwin and evolution. Poor John grabs his book and exits in confusion.

Carpenter would soon grab his own books and follow suit. The "journeyman printer" (as he frequently styled himself) apparently had his hands full supporting his family with his book shop, shorthand tutoring, and printing. Beginning in the mid-1870s, England entered a prolonged period of economic hard times. The demands for her exports were decreasing. Steel was replacing iron for many uses, and British industry was slow to adapt. William Carpenter and his family emigrated to America in 1879, presumably seeking a more prosperous life.

Like the British economy, the zetetic movement was somewhat chaotic. Besides the visible zetetics, numerous shadowy figures were chipping away at the sphere from behind the scenes. Much zetetic energy was expended, but it was not well-directed. The flat-earthers needed a zealot with charisma and (more important) leadership ability to lead them out of the wilderness. Rowbotham lacked the leadership psychology, and he was slowly reducing his flat-earth activity to concentrate on selling Dr. Birley's Syrup of Free Phosphorus. The only alternative candidates for leadership were Empson Edward Middleton, B. Charles Brough, and John Hampden. Middleton, as usual, was somewhere out in left field. Brough had vanished from the scene (unless he was the "Scaevola" who in 1877 published What Is the Shape of the Earth?). Opportunity was hammering on the door demanding a zetetic who could persuade, cajole, motivate, manipulate, organize, and generally make things happen. Only John Hampden answered.

Unfortunately, Hampden was no leader; a quintessential loner, he was utterly unfit for the role the fates thrust upon him. In his own way, he tried. He founded flat-earth organizations with every other dip of his pen and flat-earth journals when he had the money.

The zetetics had by now gained substantial recognition. Many provincial newspapers treated the controversy seriously and regularly printed zetetic letters-to-the-editor. Most "respectable" national publications turned up their journalistic noses and ignored the zetetics, as a proper Victorian might ignore an inebriate in the gutter, but there were exceptions. The English Mechanic and World of Science, the weekly tabloid-format science paper that was the model for Rufus Porter's Scientific American, boasted an eclectic readership—scientists, scholars, engineers, clergymen, shopkeepers, mechanics, students, and freelance thinkers like Hampden. Written in a popular style, English Mechanic ran a conglomeration of feature articles, news stories, science notes, descriptions of new inventions, letters-to-the-editor, chemical recipes, craft tips, and whatever else the editors thought suitable and worthwhile. From the 1860s onward, English Mechanic took a skeptical but relatively tolerant attitude toward unorthodoxy, and flat-earthers, moon-nonrotators, perpetual motionists, and miscellaneous misfits had their doings reported and their letters published in its pages.

One who jousted with Hampden and Rowbotham in the pages of English Mechanic was Richard Anthony Proctor, who had risen from a humble background to become England's best-known astronomical writer. Proctor was a trained astronomer, one of the first to map Mars, and the first to suggest that meteorite impacts caused the moon's craters. He is best remembered, however, as a 19th century Asimov who produced respectable books at a prodigious rate. Proctor apparently began following the flat-earthers in October 1864, when he heard Rowbotham speak at Plymouth. Having listened to his arguments, examined his works, and analyzed some experiments he claimed to have performed, Proctor concluded that Rowbotham was a cynical fraud who didn't believe his own theory. [note 3.8] He dismissed Hampden as a dupe of Rowbotham and a refugee from the puzzle factory. On this basis, Proctor exchanged barbs with Hampden and Rowbotham in the English Mechanic for years.

In 1881, Proctor founded Knowledge, a popular science magazine. A regular feature of Knowledge was "Our Paradox Corner," a column devoted to examining unorthodoxies. Proctor regularly treated the flat-earthers under this heading. In March 1883, he agreed to give Hampden space for rebuttal. Knowing Hampden's propensity for billingsgate, Proctor warned him that only arguments from evidence would be printed and polemics would be mercilessly edited out. Hampden, of course, was constitutionally incapable of writing anything else. After several of his submissions were printed in severely edited form, Hampden wrote Proctor a blistering letter:

Dear Sir,—I gave you most distinctly to understand that any exhibition of bad faith in the treatment of my articles would compel me to denounce and expose as severely as I have the conduct of that degraded swindler, Alfred Russel Wallace. I did not ask for the insertion of my notes; and you have no one to blame but yourself, when you find that your contemptible cowardice has entailed upon you a merciless retribution. Your daring to expunge four-fifths of my articles, under the lying pretence that they were denunciatory, is quite on a par with what my friends told me I should be sure to meet with at your hands. You have, I am sorry to say, a most unenviable reputation. Such I would not have for a thousand a year. By giving those lectures in the St. James's Hall, you know that every shilling you take is obtained by false pretences. Every statement you make you know to be a lie; and, before you have finished them, I will compel you to confess it. No one but a mean, contemptible coward would dare to tie his opponent's hands, and forbid him to say a single word in reference to his adversary's statements. How can you wonder at the growing contempt your infidel science is universally provoking? It is you, and such liars and swindlers as Wallace that have brought the very name of science into ridicule and derision. Go and ask that degraded thief Wallace what his villainy has done for him; and before you are many months older you shall be as ashamed to show your face as he is. Remember my words. If others are afraid to tell you what you are, I am not. I have proved you to be a liar and a coward, and I shall so speak of you.

Yours, &c., John Hampden. [ref. 3.38]

Hampden was as good as his word. Six months later, he launched his third or fourth venture into flat-earth journalism [note 3.9] entitled Cosmos: A Geographical, Philosophical and Educational Review, Nautical Guide, & General Student's Manual (hereafter Cosmos). The masthead further identified it above the title as "The only Controversial Paper published in the Kingdom" and below the title as "The organ of the Biblical Science Institute." Cosmos was a small-format, twopenny publication of sixteen pages per issue. The premier (September 1883) issue had this fillip for Proctor:

A Mr. Richard Proctor has lately made himself more conspicuous as an advocate of the delusive frauds of the Copernican superstition; and an ample portion of each month's space will be devoted to an exposure of this writer's opinions, and the palpably reckless and shamefully false character of his attempts to illustrate the shape of the terrestrial and marine surfaces. [ref. 3.39]

As with The Truth-Seeker's Oracle and Scriptural Science Review, all articles were written by Hampden, but he at least ran a few letters-to-the-editor. Mostly, Cosmos is page after page of tirades against Hampden's usual whipping boys, except that astronomer Richard Proctor has almost completely replaced Wallace as the archdemon.

In the October 1883 issue, Hampden asked a curious question: "Where Are the Engineers?"

Does any rational person suppose that if the Astronomers and Geographers had any confidence in the reality of their mathematical device, they would not instantly appeal for a confirmation of their spherical theory to the surveyors and engineers, whose sole business it is to ascertain the exact shape of the various surfaces on which their railways and canals are constructed?

The question is curious because engineers have played prominent roles in virtually every unorthodox scientific movement of modern times. Yet flat-earthism, to this point, could claim none! This lack would soon be remedied.

Once again, the flat-earthers were trying to get organized. In the December 1883 issue of Cosmos, Hampden reported that a Zetetic Society was then being formed. Prospective subscribers were instructed to write to "the President, The Zetetic Society, Welney House, Haverstock Hill, London, or the Editor, Cosmos, Balham, Surrey." The former was Rowbotham's home address, the latter Hampden's. This time, a Zetetic Society was successfully formed, with Rowbotham as President and H. Ossipoff Wolfson, a recent emigrant from Russia, as founding Secretary. As for Cosmos, it folded immediately.

Little resulted from the Zetetic Society, partly because the earlier zetetic momentum had been largely lost and partly because of a serious defection. H. Ossipoff Wolfson had never doubted the earth's sphericity until he met "Parallax" in September 1883. Overwhelmed by his forceful personality, Wolfson became Rowbotham's enthusiastic convert and intimate acquaintance, so trusted that Rowbotham selected him as Secretary of the new Zetetic Society. After working with "Parallax" for six months, however, Wolfson was severely disillusioned. He had looked into the Hampden–Wallace wager and found the zetetic explanation wanting; furthermore, he was severely troubled by Rowbotham's claims for his patent medicine. He went to Proctor and offered to expose Rowbotham in the pages of Knowledge. Proctor ran the first installment in the March 28, 1884 issue.

Unfortunately, Wolfson wrote like a Russian novelist. After two wordy and convoluted installments, he was still backing up to get started. At that point Proctor received a letter from Howard Rumney, Rowbotham's solicitor, threatening legal action. Proctor was convinced that the threat was a bluff, but the series never resumed.

Rowbotham had by this time almost ceased his flat-earth activities. He was now about 68 years old, [note 3.10] and perhaps his health was failing in spite of his phosphorized medicine. The second edition of Earth Not a Globe, published in 1873, was his last published word on zetetic astronomy. [note 3.11] For several years afterward, he had promoted The Life and Teachings of Jesus Christ, Zetetically Considered, but the book was never published. Indeed, though some of his works were reprinted, he never published anything else new, with the possible exception of Phosphorus as Discovered and Prepared by Dr. Birley, a pamphlet published in 1881.

The fact is that Rowbotham had made a bundle on Dr. Birley's Syrup of Free Phosphorus. He had long ago established a critical mass of regular users. The stuff was advertised in cheap tabloids, and he had established a distribution system for it. Several of his faithful followers—including Hampden, Carpenter, and Akester (who features in Chapter 4) had sold it for him. Charles Watkyns de Lacy Evans, the surgeon who replaced Wolfson as Secretary of the Zetetic Society, had written a book extolling the virtues of free phosphorus. [note 3.12] The nostrum was popular enough so that it would outlive Rowbotham by at least 20 years. At this point, all he had to do was let the money roll in.

Rowbotham's relationship with other flat-earthers is unclear. He never mentioned a close associate in his works, and (except for Wolfson) no follower ever claimed to be close to him. He obviously resented the publicity Hampden got from the Bedford Canal experiment, and he was miffed because many thought Hampden was the famous "Parallax." In a letter to Knowledge published during the Wolfson exposé, Hampden touched on his personal relationship with Rowbotham:

His conduct to me individually has been the very reverse of generous or equitable. Some twelve or fifteen years ago, when "Parallax" had not, perhaps, as many sixpences as he now has pounds, I paid him some £130 or £140, when I thought of placing my son as his pupil, besides spending

an additional £30 in advertising his book by a pamphlet of extracts, entirely trusting to his honour to make me some compensation, if the time should ever arrive, when he should be able to do so. All the return I have had has been one pint bottle of his phosphorised medicine, and the privilege of having my name identified with the grand cause of which he is undoubtedly the founder. [ref. 3.40]

"Parallax" seems to have had a number of eccentricities in addition to the more obvious ones, and one of them contributed to his demise. He had a fear of trains, and as he grew older he refused to ride them. Wealthy friends and patients seeking his company would send their carriages for him. In the autumn of 1884, he fell getting out of a cab. First weakened, then incapacitated, his phosphorized medicine couldn't save him. Samuel Birley Rowbotham died December 23, 1884 at age 68, well short the patriarchal longevity promised his customers, and just shy of the Biblical threescore and ten. He was buried in the Crystal Palace District Cemetery on December 31 with the following inscription on his tombstone:

SAMUEL ROWBOTHAM, M.D., Ph.D. (Parallax)

Founder of Zetetic Philosophy,
Died suddenly, Dec. the 23rd, 1884.
"The deepest truths with reason keen
Thy logic could uphold
Thy master mind with science fought,
Those truths but to unfold.
In ages yet to come Mankind
Will glorify thy name,
And none will shine with brighter rays
Upon the scroll of fame." West. [ref. 3.41]

Rowbotham's death must have shocked users of his longevity-producing nostrum, but it probably had little effect on the movement he had founded. In March 1885, Hampden launched Parallax, a journal dedicated to the master's memory. It opened with the following statement from the editor:

PARALLAX is dedicated to the memory of, and designed to perpetuate the principles, of the late SAMUEL BIRLEY ROWBOTHAM, better known by the nom de plume "Parallax," the original founder of the ZETETIC Society, and one of the most genuine philosophers of modern times; who, for upwards of thirty years, maintained his ground as the unconquered champion of the greatest cause ever entrusted to the agency of man. Edited by his grateful disciple and fellow-worker, JOHN HAMPDEN. [ref. 3.42]

In the premier issue of Parallax, Hampden explained his principal theoretical contribution to zetetic astronomy, which was embodied in his "Circular Chart of the World:"

The circular plane is artificially, or for convenience sake, divided into 24 meridians of longitude, and 7 of latitude; the equator being the centre one. The parallels of latitude must be exactly equal to the distance between any two meridians, or radii of longitude on the equator; or, 900 miles. So that from the central north to the navigable boundary of the southern circumference is about 6,900 miles, rather under than over.

The Sun travels from one meridian to another, irrespective of distance, from east to west, in one hour.–The Sun itself never extends its orbit beyond 1,350 miles north or south of the equator–

The diameter of the Sun's June or northern solstice, is 4,200 miles. That is the mean or equinoxial orbit, is 6,900 miles; that is the December or southern solstice, is 9,600 miles; or, a difference of 2,700 miles between each. Each parallel or circuit of latitude is, of course, artificially divided

into 360 degrees; which makes it impossible to give more than 57½ degrees radius from the equator to the northern centre, or (geometrically) to the southern circumference. [ref. 3.43]

The last claim—that it is "57½ degrees" from equator to north pole—is puzzling at first, but it provides insight into Hampden's mental processes. Conventionally, a nautical mile is defined as a minute of arc on the earth's surface, and a degree equals 60 minutes. Hampden would hear nothing of arcs, but he accepted that a degree of latitude is 60 miles. He then asserted (on what grounds he said not) that the diameter of the equator is 6900 miles, [note 3.13] meaning that from equator to pole is 3450 miles. Then 3450/60 = 57½, Q.E.D. On the Hampden scale, 45 north latitude is about 70 degrees 26 minutes conventional latitude.

Parallax lasted only three or four issues. [ref. 3.44] On September 4, 1886, barely a year after Parallax folded, Hampden launched his last and most successful journal, The Earth; Scripturally, Rationally, and Practically Described. A Geographical, Philosophical, and Educational Review, Nautical Guide, and General Student's Manual. Perhaps he finally understood what it takes to make a successful periodical. This time, he had a network of agents and correspondents, and he ran contributions by other writers.

The flat-earth movement was on a roll, if one can believe Hampden. He based his judgment on the quantity and quality of the opposition:

During the past three years, up to the month of July 1885, no less than between 25 and 30 various publications have been issued by nine or ten gentlemen of education and intelligence, in support of the plane or New Geographical system; whereas, but two trashy pamphlets have issued from our opponents—one written by a retired middle-class schoolmaster, and the other by a ship's cement maker of Southampton! [ref. 3.45]

The schoolmaster was, of course, Dyer, and the ship's cement maker was Captain George Peacock. They were, of course, only the human opposition. Hampden made no bones about his real opponent:

The Zetetic or Socratic Society and Biblical Defence Association has earned the everlasting gratitude or every independent truth-seeker and Christian professor by its detection and exposure of that Satanic device and Pagan blasphemy of a round and revolving globe, which sets Scripture, reason, and facts at defiance, and has made the whole world wonder at the usurping dominion of an imposture which can only be overthrown when the Arch fiend himself shall have been bound in everlasting chains, and this curse shall cease to reduce mankind below the level of 'the beasts that perish.' [ref. 3.46]

The year 1887 marked 50 years of Queen Victoria's reign, and England was awash in Jubilee sentimentality, nostalgia, and hoopla. In editorially congratulating Victoria, Hampden expressed the pious hope that she would do something about the spherical fraud.

Her Majesty has to submit to the painful and humiliating reflection that during the whole of the last fifty years, she has been reigning over a nation of senseless idolaters of one of the grossest misrepresentations, one of the most baseless delusions, one of the most religiously and commercially pernicious systems of education that was ever imposed on the ignorance and credulity of mankind. [ref. 3.47]

As had so many others, the queen ignored him.

Hampden was now pushing 70. With Rowbotham dead and Carpenter off in America, he had inherited the Zetetic Society. He called himself Secretary of the Zetetic Society and issued publications in its name, but it was essentially dead. Hampden had lost none of his fire, but perhaps he was tiring a little. The Earth; Sculpturally, Rationally, and Practically Described

folded with the September 1, 1888 issue. Biweekly at first, then monthly, Hampden had produced 27 issues, amounting to some 150,000 words of text. It was his last publication.

So what kind of man was John Hampden? For one thing, he was very much a loner, and he seems never to have had a close ally in the flat-earth movement. Rowbotham apparently had considered him a buffoon who had stolen some of his thunder. Carpenter was an ally and sometime associate, but they were not close. Hampden was the only regular contributor to most of his periodicals, and he often brushed off correspondents. If he was as prickly in his dealings with his fellow flat-earthers as he was with others, he probably didn't have a lot of friends. Indeed, there are hints that Hampden's relationship with other zetetics was not ideal. For instance, James Naylor and William Bathgate were avid flat-earthers who appeared in The Zetetic in 1872 and 1873 and then dropped from sight. As we will see in the next chapter, both reappeared twenty years later as enthusiastic as before. Where were they in the interim? Why don't their names appear in any of Hampden's publications?

Despite his loner instincts, Hampden could found a flat-earth society with a stroke of his pen. At various times he claimed to represent the New Geographical Society, the Society for the Restoration and Extension of Biblical Cosmography, the Biblical Science Defence Association, the Christian Philosophical Institute, the Biblical Science Institute, the Philosophical Society of Christendom, and the Zetetic or Socratic Society and Biblical Defence Association. One can only wonder how many of these organizations ever had more than one member.

Hampden's theoretical contributions to zetetic astronomy were limited at best. His main innovation, the idea that the distance from the equator to the pole is only 57½ degrees, was not generally accepted by other zetetics. Though his writings often seem to be unbroken strings of pejoratives, they are not without substance. Several themes obsessed Hampden:

(1) The Bedford Canal Experiment. He railed about it to the end of his life.

(2) Isaac Newton. Hampden was convinced that Sir Isaac Newton was duped by his own mathematics. A legitimate question in the philosophy of science is this: What connection exists between mathematical abstractions and the real world? Hampden did not recognize any that he could not personally understand.

(3) The indefensibility of the globe. Most scientists declined to argue with him about it, so Hampden assumed the globular model was indefensible. He always insisted there is absolutely no proof for it.

(4) The schools. Hampden was outraged because the schools taught the conventional theory, and he raged against their "pasteboard globes" and "half-witted science."

(5) The Satanic nature of modern astronomy.

(6) The venality and stupidity of scientists. Hampden considered modern science and its practitioners equally corrupt; therefore, he rejected such innovations as gravitation, magnetism, and atmospheric pressure.

(7) The apostasy of the Established Church. Hampden apparently never left the Church of England to join a nonconformist sect, but he was extremely unhappy with conventional views on theology and the Bible.

(8) The Bible. All true science comes from the Bible.

(9) The Creation. Hampden insisted that the Genesis creation story is meaningless if the earth is an insignificant speck of dust suspended in an immeasurable universe; why then was it created before the infinity of stars?

(10) The End of the World. Hampden expected Jesus to return momentarily.

The parallels with modern creationists are striking. Eliminate the Bedford Canal Experiment, which was Hampden's personal tragedy, and substitute Darwin for Newton, evolution for astronomy, and mainstream religion for the Established Church, and you have the outline for several of Henry Morris's best-selling creationist books.

Unorthodoxies multiply like rabbits. The unorthodox seem to reason that delusion knows no boundaries. Again using modern creationists as an example, their doctrine holds that conventional scientists are deluded about biology, geology, geophysics, astronomy, cosmology, geochronology, chemical thermodynamics, and linguistics. If so, it is not unreasonable to assume they are also deluded about relativity, quantum mechanics, quantum electrodynamics, and all of particle physics. [note 3.14] In this light, it is hardly surprising that, in addition to his flat-earthism, Hampden was a wellspring of scientific unorthodoxy. For example:

(1) The calendar. Hampden claimed the calendar should give June 32 days, December 33 days, and all the rest 30 days. "This is not an arbitrary or ideal division; it is in a literal and exact accordance with the Almighty's decision, declared and unmistakably demonstrated by the annual course of the sun." [ref. 3.48]

(2) Squaring the circle. One of the seven traditional follies of science was attempting to find an exact ratio between the circumference and diameter of a circle ("squaring the circle"). [note 3.15] This amounts to determining the value of pi by geometric construction, an impossible feat. Hampden was unconcerned with impossibilities, and he squared the circle as follows:

Q. What is the exact proportion between the diameter and the circumference?

A. As 115 is to 360, so is the diameter to the circumference of any circle. Now, we know the circumference of the Sun's mean circuit to be 21,600 miles, and we are equally sure that the diameter of such a circle can be no more than 6,900 miles, as measured across a flat surface. [ref. 3.49]

Thus, by fiat, Hampden made pi = 360/115 (i.e. 72/23, or approximately 3.130435), and used this value to calculate that a circle with a circumference of 21,600 miles would have a diameter of 6,900 miles.

(3) The compass. According to Hampden, the compass needle receives its north–south orientation from electricity caused by the sun circling above the earth. This fact had not been previously discovered "because the bigots who call themselves scientists had not the remotest conception of the sun's motion in its circular and horizontal orbit!" [ref. 3.50]

(4) Atmospheric pressure. "[W]e shall probably amaze our readers more than ever, when we assure them that the positively asserted fact of atmospheric pressure is as preposterously false and fabulous as the rest!" [ref. 3.51]

(5) The period of a pendulum. "The pendulum, if honestly used, does not vibrate quicker at one spot than another …" [ref. 3.52]

(6) The midnight sun in the Antarctic. "The sun is never seen the whole of the twenty-four hours in the southern regions; and no one has ever ventured to argue that it has been." [ref. 3.53]

(7) Galileo. "[T]hat insane fanatic and apostate, Galileo … with that pitiable cowardice which uniformly accompanies conscious guilt, recanted every statement he had made, and confessed that every word he had uttered, was a lie!" [note 3.16] [ref. 3.54]

(8) Scholarship. "[A]n educated scholar from a classical college, is fit only to be a curate, or a fox hunter, or a Pall Mall lounger." [ref. 3.55]

Some might detect in the last statement a whiff of anti-intellectualism. Hampden considered conventional scientists fools and liars, but he never claimed his own enlightenment made him something special. Hampden never considered himself the chosen instrument of the Almighty, as do some modern fundamentalists. He rose above other men because of their own blindness, not through his own special relationship with God. He found the flat earth was perfectly reasonable, but he would have been astonished to hear a preacher claim his personal prayers had deflected a hurricane.

Hampden lived in a state of perpetual righteous indignation. His most cherished ideas were generally rejected by the human race, and he was infuriated by this universal stupidity. He had an unsinkable sense of his own self-worth, and nothing he could do—deceiving Wallace into accepting Carpenter as referee, welshing on a bet he had instigated, perpetrating a fraudulent bankruptcy, signing utterly insincere apologies to Wallace—nothing could diminish his image of himself as a paragon of rectitude. It would be inaccurate to call him a hypocrite, for hypocrisy requires at least a glimmer of self-consciousness. Hampden had none.

Consider the little pamphlet entitled The Rampart of Steel or a Fancys Sketch for a Permanent Coast Militia and an Army of Reserve by Major-General John Hampden, published in Canterbury in 1852. The author represented himself as a military man of some experience. The Rampart of Steel contains a single autobiographical passage:

The writer is no grumbler or alarmist—has no fear of a fair stand-up fight, and never had. To this add, he has no interest whatever in making any increase to the national force, naval or military. With most of the ports and battle fields of Europe, he is well acquainted: he has seen the field of Hastings, and his name appears in the battle roll of the victors; but at 62 he would lend a hand to "fight it over again," and with anything like equal numbers and a few field works, would have no fear of the result.

Zetetic John Hampden was 33 (not 62) in 1852, almost certainly too young to have been a Major-General, even in the bad old days when military commissions were bought and sold. Besides, the wooden words of The Rampart of Steel lack the verve and venom characteristic of his authentic writings. While he never explicitly claimed to be author of The Rampart of Steel, Hampden regularly advertised it among works undoubtedly his own, and he is generally credited with writing it. [note 3.17]

Hampden's place in history was assured without The Rampart of Steel. His authentic literary output is a monument to the flat-earth movement. Though he never wrote a full-length book, his collected pamphlets would make two substantial volumes, his published letters-to-the-editor another, and his periodicals (he wrote most of the articles himself) a couple more. Though sometimes dreary, he was never dull, and when he was steamed (which was most of the time), he was a brilliant polemicist.

As long as he lived, John Hampden periodically plagued Wallace. After the Walsh lawsuit of 1876, the great naturalist resolutely ignored him. Unlike Hampden, who never doubted his own righteousness, Wallace came to view his part in the Old Bedford Canal wager as an ethical lapse for which he paid dearly in time, money, and embarrassment. His autobiography reveals that Wallace developed a perverse sort of affection for his old Nemesis. Sometime around 1885, Hampden stopped at Wallace's house at Frith Hill, Godalming, when Wallace had some friends over for lunch. Wallace's immediate reaction upon meeting Hampden at the door was to get rid of him as quickly as possible. Later, he regretted not inviting him to join them for lunch. So it was that Wallace, hardly a Christian, developed a genuinely Christian attitude toward Hampden, while Hampden, the avowed Christian, never forgave and never forgot.

Judgmental in the extreme and vindictive to a fault, Hampden was one of those self-infatuated people who create and inhabit realities independent of the natural world. His writings never reveal the slightest suspicion that any of his opinions might be wrong. In his last years, he apparently became obsessed with the impending End of the World. For John, the End came on January 22, 1891, in the form of severe bronchitis. The flat-earth movement has not produced another like him.

Chapter 4
The Universal Zetetic Society

AT THE BEGINNING OF 1892, the flat-earth movement was in a paradoxical state. The death of John Hampden in the previous year left it without a visible leader. It had never had a viable organization. Rowbotham had been more interested in peddling his patent medicine than in leading the flat-earthers. The Zetetic Society, founded only a year before he died, soon faded into oblivion. Hampden was a one-man army, and he marched to a one-man band. Most of the numerous flat-earth organizations he founded only had one member, and they were all buried with him. Yet the flat-earth movement was stronger in numbers than ever before, and many of the stalwarts from previous chapters—Bathgate, Carpenter, Naylor, Evans—were still alive and vigorously kicking.

The climate in England was generally favourable. The British economy was now relatively strong, the long period of relative economic depression having ended about 1888. On May 5, 1892, Queen Victoria turned 73, having already reigned nearly 55 years. By autumn, the pages of the London Times were dominated by the world cholera epidemic, then centred in Russia and Germany (between August 20 and September 17, the city of Hamburg recorded 15,663 cases, 6,764 of them fatal [ref. 4.1]). Stringent sanitary measures protected London from cholera, but its air was polluted by coal smoke. The Adventures of Sherlock Holmes, the first volume of short stories about the great detective, was published the previous year. Gilbert and Sullivan had not released an operetta in nearly three years, their last (The Gondoliers) having produced a temporary rift between them.

The British Empire was near its zenith. India, jewel of the British crown, was becoming more familiar to readers through the writing of Rudyard Kipling, whose Barrack Room Ballads, including the immortal "Gunga Din," was published that year. The Irish still seethed under English rule, but their champion William Gladstone had just become Prime Minister for an unprecedented fourth time. In the South African republic of Transvaal, Afrikaner President Paul

Kruger was easing tension by softening the franchise laws that virtually excluded the English-speaking minority from the polls. (We will hear more of President Kruger in another chapter, for he was an unrepentant flat-earther.)

The Universal Zetetic Society (UZS), founded late in 1892, was dominated by flat-earthers having little connection to the previous organizations. The founding Secretary of the UZS was an Adventist named John Williams. The Honourable Secretary (as he referred to himself) lived in the London borough of Southwark, just off London Bridge on the south shore of the river Thames. In medieval days, all roads coming into London from the south converged here to cross London Bridge, and Southwark was known for its inns. (The Tabard Inn immortalized in Chaucer's Canterbury Tales stood just south of the bridge.) Southwark later became London's entertainment district, and in Shakespearean times it was the site of the Globe, Swan, Rose, and Hope theatres and the Paris Gardens, a famous bull-baiting arena. As time passed, this playground of the wealthy became a spawning-ground for the poor, a seedy semi-slum. Now it became headquarters for a movement to reform the world.

The founding meeting of the Universal Zetetic Society was apparently held on Wednesday, September 21, 1892, at John Williams's Southwark home. [ref. 4.2] It's not clear who besides Williams attended, though probably most of those selected to the UZS Committee were there. The founders decided on a name, a motto, an object, and a set of rules as follows:

OUR MOTTO

For God and His truth, as found in Nature and taught in His Word.

OUR OBJECT

The propagation of knowledge relating to Natural Cosmogony in confirmation of the Holy Scriptures, based upon practical investigation.

RULES

1. Everything extraneous to "Our Object" to be avoided.

2. The so-called "sciences," and especially Modern Astronomy, to be dealt with from practical data in connection with the Divine system of Cosmogony revealed by the Creator.

3. Every honest opponent to be treated with respect and consideration.

4. Members to subscribe not less than six shillings a year, which entitles them to two copies of The EARTH (not-a-globe) REVIEW each issue, and a copy of every paper issued by the Society. Such will be also eligible to be voted to serve on Committees, to vote on motions, to write articles (subject to editorial approval) for the Earth Review, and to propose (subject to Rule 8.) any alteration thought to be beneficial to the Society.

5. Associates to subscribe not less than two shillings and sixpence per year, which entitles them to a copy of every publication issued by the Society.

6. All subscriptions to the Society to be paid in advance (quarterly if desired) and to the Secretary.

7. The financial year to commence on September 21st.

8. Three months notice to be given in writing to the Secretary, before any alterations, or additions to the Rules can be made. The Secretary to bring any suggested alteration or addition before the whole of the Committee, to vote on the final decision.

9. Every meeting of the Society to be opened with prayer and the reading of some portion of the Holy Scriptures.

10. The Society's meetings to be held (pro. tem.) at 32, Bankside, Southwark, London, S.E. [ref. 4.3]

The meeting place was Williams's home address. Though its religious purpose was clearly stated, the UZS was strictly nondenominational. Its principal publication was to be the Earth—Not a Globe!—Review, edited by "Zetetes" (Albert Smith). Generally known as the Earth Review, it was the most ambitious flat-earth periodical ever.

The UZS was governed by a Committee. Besides Secretary–Treasurer John Williams and Earth Review editor Albert Smith, the Committee included Amos Perry of Ashton-under-Lyne, the brothers Isaac and John Smith of Halifax, Edward D'Arcy Adams of London, James Naylor of Birmingham, A. E. Skellam of London, and Lady Blount of Bath. All Committee members except Adams apparently lectured extensively. Little is known about Adams, and we met Williams previously. Let us now meet the other UZS Committee members individually.

When the UZS was founded, Earth Review editor Albert Smith ("Zetetes") lived in Leicester, then a city of about 175,000 lying 99 railway miles north-northwest of London. Leicester has ancient roots; it stands on the site of the Roman town of Ratae, and some of its medieval buildings incorporate bricks salvaged from Roman ruins. By the 13th century, the city was a centre for brewing and the manufacture of woolen goods; these industries still thrived among the newer ones spawned by the Industrial Revolution. Smith's profession (if other than "gentleman") is unknown, but we can infer that he was a man of more than modest means, for he called his Leicester headquarters Plutus House, after the Greek god of riches.

Smith first appears in flat-earth annals as author of a two-penny tract, Is the Earth a Globe and Has It Axial and Orbital Motion?, advertised in the January 15, 1887 issue of Hampden's Earth and Its Evidences, Scripturally, Rationally, and Practically Described. This tract reported on an 1884 debate and lecture on the shape of the earth held in Blackburn, Lancashire, where Smith then lived. Blackburn is about 20 miles northwest of Manchester, and Rowbotham's early concentration on that area had left it a relative hotbed of flat-earthism. Public debate is not for neophytes, and Smith apparently was interested in flat-earthism even earlier, for he later claimed "Rowbottam" was his friend, suggesting that he had met the great "Parallax" but never learned to spell his name. When the first issue of Earth Review appeared, Smith (as "Zetetes") had written several more flat-earth tracts and pamphlets, including The So-Called "Mistakes of Moses", "Cranks", The Sundial, and Discussion on "Modern Astronomy".

As Elder Smith of Leicester, he had been a regular contributor to The Faith, an adventist paper edited by Cyrus Brooks. Recently, however, he had been excommunicated from the Seventh-day Adventists for "upholding the Bible-Earth." [ref. 4.4] He nevertheless continued to hold The Faith in high regard, and "The Faith" Press later published his book Socialism versus Christianity.

UZS Committee member Amos Perry lived in Ashton-under-Lyne, a market town 6½ miles east of Manchester on the Tame River. A woolen center of old, Ashton-under-Lyne turned to the cotton trade soon after the invention of the spinning frame. Nearby coal mines provided steam to power the cotton mills and coke for the iron foundries. Manchester was Rowbotham's birth-place and long-time headquarters, and he had blanketed this area with his lectures. Whether Perry was converted by "Parallax" himself or by another convert, he was now an active flat-earth lecturer and an agent for Earth Review.

Perry's profession (other than "zetetic lecturer") is unknown. He had a scholarly bent as evidenced by "A Pioneer Zetetic," a piece about Cosmas Indicopleustes he contributed to an early issue of Earth Review. Cosmas, the reader might recall, was a 6th century monk who wrote the first book explicitly intended to defend the Christian plane against the heathen spherical heresy. Cosmas taught that the earth is rectangular, about 10,000 miles north to south and 30,000 miles east to west. The "forgotten pioneer" is a stock genre among amateur historians, [note 4.1] and Perry did it well. He stressed Cosmas's positive contributions while noting that modern zetetics would not agree with some of his ideas. (There are indications that Ebenezer Breach, whom we will meet shortly, advocated the Cosmas model.)

Isaac and John Smith lived in Halifax, a city of about 100,000 straddling the hills where the river Hebble flows into the Calder, 20 miles northeast of Manchester and about 200 miles north-northwest of London. A cloth trading town since the 15th century, Halifax was still a centre for woollen and worsted manufacture (especially carpeting), and it also had extensive iron and steel industries.

Isaac Smith was a wool stapler, a trade that required no explanation in 19th century Halifax. (When a sheep is sheared, the fleece is clipped off in a continuous sheet, as if the animal were skinned. Wool quality varies with position, the best coming from the shoulders and the poorest from the hindquarters. The wool stapler bought raw fleeces by the bale, hand-separated the wool by grade, and resold it to combers or spinners.) Brother John Smith was with the Kensington Iron Works in Siddal, a Halifax suburb. His position there is unknown, but it must have been a responsible one, as his life style was middle class.

The Smith brothers were relatively recent converts to zetetic astronomy. [ref. 4.5] Isaac was nevertheless the Halifax agent for Earth Review and author of a pamphlet, The Bible and Modern Science, which the UZS sold for 2½d. John contributed an article on "Bible Astronomy" to Earth Review in which he upbraided the Jehovah's Witness paper Zion's Watch Tower for criticizing zetetic astronomy.

Both Smith brothers were tireless flat-earth lecturers. In a letter to William Carpenter written in the summer of 1892, John Smith wrote:

I and my Brother have, D.V., to give some four or five lectures this Autumn, and we shall distribute some "Hundred Proofs" [note 4.2] at each, either for cash value or as free distributions. … We are trying to establish a true foundation for a study of the phenomena of nature based upon fact, upon the testimony of God's Word which must agree with His works, and by a proper use of our faculties to demonstrate these truths to the common sense of our fellow men. [ref. 4.6]

An 1896 issue of Earth Review reports that "recently" John Smith lectured in London, Dewsbury, and Bradford and Isaac Smith in Bradford. [ref. 4.7] It is probably fair to guess that between them the brothers averaged one or two zetetic lectures a month for several years. Such is the stuff of which movements are made.

James Naylor had been a regular contributor to The Zetetic 20 years earlier, and his 1872 pamphlet John Hampden Quite Right! The Geographical Professors All Wrong! A Critical Review of the "Bedford Level Experiments" was the first work about the Bedford Canal Experiment by a nonparticipant. Naylor then resided in Leeds, just west of Halifax. In 1877, he subscribed for 12 copies of Carpenter's Delusion of the Day, but he then dropped from sight, and some of his fellow zetetics thought he was dead. In about 1892, John Smith was seeking to have John Hampden Quite Right! reprinted when he discovered that the author was alive and kicking in Birmingham.

It was as if he had never been gone. When UZS was organized, Naylor was elected to the Committee, and he quickly proved himself a wise choice. He became an active lecturer in

Birmingham and its environs and a regular contributor to Earth Review. Naylor had not lost his interest in the Hampden–Wallace wager, and we will revisit the Old Bedford Canal with him later in this chapter.

UZS Committee member A. E. Skellam lived in Wandsworth, a southwestern metropolitan borough of London. The largest of London's metropolitan boroughs (14¼ square miles), Wandsworth extends south from the river Thames and Battersea to Upper and Lower Tooting. Its population was something over 200,000, but parts of Wandsworth were sparsely populated, and Putney Heath was still remembered as a highwayman's habitat and duelling ground.

Skellam wrote two short tracts, One of the Devil's Masterpieces and The Shape of the World, and he may also have written a tract called Search Truth. His works have perished except for a few quotations preserved in the works of other writers and, of course, his letters to Earth Review. Skellam was an active zetetic lecturer in south London, and he served on the UZS Committee from its founding until at least 1897.

Lady Elizabeth Anne Mould Blount of Bath , whom we shall meet again in Chapter 7, was the most prominent member of the UZS. Her husband, Baronet Walter de Sodington Blount, was wealthy but Roman Catholic. Lady Blount was a Protestant woman of independent mind and (apparently) independent means, and she had long since left Sir Walter and his estate in Worcestershire. She made regular contributions to Earth Review, but more important than these were her contributions of money and time. The UZS never managed to become self-supporting, and Lady Blount was one of the activists who bankrolled the organization from their own funds. She also proselytised tirelessly for Zetetic Astronomy, and when she talked, people listened, if they knew what was good for them. An active lecturer, she was wont to debate the shape of the earth with any "Globite" who would face her. She was a tireless writer of letters-to-the-editor, and her crisp style and her title were often sufficient to get them published. Likewise, any prominent churchman foolish enough to use the word "globe" in public was likely to receive a tartly worded letter from her suggesting that his denial of the flatness of the earth amounted to a denial of the Bible.

The UZS Committee was assisted in its aims by activists old and new. James Naylor was not the only zetetic activist who apparently dropped out during the Hampden era. William Bathgate, M.B.C.A. [note 4.3] also magically reappeared. Other long-time flat-earthers active in the UZS included J. C. Akester, William Carpenter, and the mysterious "G.M.," who had collaborated with Hampden (to the extent that Hampden collaborated with anyone).

Within a year, the UZS had members throughout the English-speaking world, and the Earth Review had agents in England, Ireland, the U.S., Canada, South Africa, India, Australia, and New Zealand. This did not just happen. An extensive, worldwide zetetic correspondence network was already in place when the UZS was founded. The UZS seemed especially able to attract religious conservatives from the professional classes, and many of the new flat-earthers were engineers, medical doctors, and (especially) clergymen. The flat-earthers finally had their act together.

The best window into the soul of the Universal Zetetic Society is the Earth—Not a Globe!—Review. For the first time since the original Zetetic some twenty years earlier, the flat-earthers had a journal that was truly a meeting place for their minds, and its pages record the thoughts, hopes, and actions of the UZS and its members. The Earth Review published articles by numerous zetetics, old and new. It reprinted material from earlier writers and occasionally from religious or even secular journals. It reported on lectures and debates, responded to queries by members, printed their letters-to-the-editor, and carried on running editorial battles with critics. In short, Earth Review was just about everything such a journal can hope to be—except a financial success!

The premier issue, dated January 1893, opens with these words from the editor, "Zetetes:"

It may be thought that there are a sufficient number of Periodicals in the market without adding one more to the extensive list. There are plenty, no doubt, if they were all of the right kind. But are they? How many of them profess to stand by the Word of God as true and faithful in all its parts. And of those who profess to uphold the sacred Scriptures as inspired of God, how many believe and advocate the literal truth of the account of Creation as recorded therein? or the various descriptions given by them of the works of God as found in what is called Nature? Not one! At least, we know not of any.

"Zetetes" (Albert Smith) lamented that British universities were indoctrinating students rather than educating them. He found the modern astronomy taught at the universities a threat to the very concept of a personal God:

[O]n the astronomical hypothesis, the world is like an un-cared-for orphan, or a desolate wanderer: God is removed too far from us to be of any practical use; and the idea of heaven is so vague, that such a place, if it exist at all, may be anywhere or nowhere; "all round the globe;" or spirited away from us altogether, "beyond the bounds of time and space." Thus the Christian's hope is undermined, and his faith eaten away at the very core by this insidious and so-called "scientific" worm. [ref. 4.8]

Nineteenth century flat-earthers would no more settle for a "useless" God than would modern creationists. Indeed, "Zetetes" considered Darwinian evolution, geology, and astronomy all part of the same spherical plot, and he ridiculed them together in a poem, "The Song of the Evolutionist." [note 4.4] Though avowedly nonsectarian, the UZS was hardly sympathetic to conventional science or liberal religious views.

Honourable Secretary Williams likewise contributed to the first issue. His article "Globe Tinkering, or Gas Meteorites" ridiculed the idea that meteorites could be stones from space. He also threw down the gauntlet before Science Siftings, a small, non-technical magazine serving the market niche now filled by Popular Science. Science Siftings had been making antizetetic noises while systematically excluding flat-earth arguments. Williams wrote:

I—challenge the Astronomical Editor to prove the earth to be a spinning and whirling globe, by an appeal to demonstrated facts found in Nature. I will prove it is not, if you have the manliness and courage to open your columns for the elucidation of the truth of the subject.

Williams offered £1000 as a reward for the requested evidence. (The editor of Science Siftings, no doubt familiar with the Hampden–Wallace wager and its aftermath, declined.)

One purpose of Earth Review was to provide ammunition for the troops battling the globe in the field. In a section headed "Honest and Noble Confessions," [note 4.5] Smith provided some arguments useful for zetetic advocates. Among these was an old quotation from Robert Woodhouse (1773–1827), who once held the Lowndean Chair of Astronomy and Geometry at the University of Cambridge:

When we consider that the advocates of the Earth's stationary and central position can account for and explain the celestial phenomena as accurately as we can, in addition to which they have the evidence of the senses, and SCRIPTURE and FACTS in their favour, which we have not, it is not without some show of reason that they maintain the superiority of their system. … However perfect our theory, and however simply(?) and satisfactorily the Newtonian hypothesis may seem to us to account for all the celestial phenomena, yet we are here compelled to admit the astounding truth that if our premises be disputed and our facts challenged, the whole range of astronomy does not contain the proofs of its own accuracy (emphasis in Earth Review). [ref. 4.9]

No source was given, but the statement is basically reasonable. (Without premises, theories, hypotheses, and facts there is not much left in science.) To the zetetics, this statement by Woodhouse was a devastating admission, and it was recycled endlessly in flat-earth literature.

The first issue of Earth Review printed letters from numerous correspondents (including two in New Zealand) and reported on various activities by UZS members. One J. Lack had read a paper on Zetetic Astronomy at Breakley Road Chapel in London. Member J. Atkinson had given a flat-earth lecture in Belfast, Ireland. Taken as a whole, the January 1893 Earth Review was a harbinger of things to come.

Zetetic interest in the British Isles was not confined to England; Glasgow, Scotland was home to a tireless zetetic. Glasgow had by this time experienced all that was good and bad about the Industrial Revolution. Its population exploded during the 19th century, growing from 77,385 in 1801 to 761,709 in 1901. With extensive iron and steel works, it was a world center for locomotive manufacture and ship-building (at the turn of the century, half of the new tonnage launched in the United Kingdom slid down the ways into the River Clyde). Glasgow University, founded in 1450, had a powerful academic tradition. In 1870, the university moved to new and expanded quarters, and by the end of the 19th century enrollment was about 2,000. The university was governed by a council, one of whose members was flat-earther Alexander McInnes. [ref. 4.10]

McInnes first appeared in the pages of Earth Review in May 1894, with a letter criticizing an antizetetic pamphlet, and he continued to make sporadic appearances thereafter. (The editor finally had to remind this stereotypical Scotsman that if he supported their goals, he really should support them financially by paying dues!) McInnes was apparently an adventist of sorts, and a strong opponent of spiritualism. In 1892, our old friend, flat-earther and spiritualist William Carpenter, described McInnes as follows:

[W]e have for a few years been in correspondence with a truly good man—Mr. A. McInnes, of Glasgow, the editor of "The Coming Man"—but it would be a difficult matter to show him that on certain points, his belief is too strong. He has revelations, and works miracles, he informs us, of which we may learn more by and by; but so full of the spirit of Jesus Christ is this man that he has sent us his papers by the hundreds and prays that we may give ourselves wholly to the Saviour, as he does, and renounce—or denounce, for it is hard to say which—all we know about "spiritual gifts," which he, also, says are of the devil. It is the old story the world over: my "doxy" only is orthodoxy. Our sincere regard for McInnes is, however, unsullied. [ref. 4.11]

The Coming Man sounds like a quasi-adventist periodical, [note 4.6] and McInnes sounds like a pentecostal. In any case, McInnes was an uncompromising flat-earther and creationist. His article on "Imaginary Astronomy" from the January 1895 issue of Earth Review illustrates his style. McInnes opened by comparing modern astronomy to "Arabian Nights" and Munchausen's "Voyage to the Moon," claiming it can only deceive simpletons. He then commented on Sir John Herschel's astronomy textbook:

Next, we are to imagine ourselves little flies, or midgets, crawling on the globe, off which we cannot fall, though it whirls faster than lightning. But the children's toy needs an axis to whirl round, so that day and night may be accounted for, and so we are accordingly told that there is an imaginary one, that is, there is an axis, but it is inside our brains. Then the imaginary axis has two ends, called "North and South Poles," also imaginary. Now the word axis means axle, or axletree, and therefore, the imaginary axis must itself be a pole. Thus, Herschel's axis with two ends are three poles, and yet no poles at all, being only imaginary. Whoever heard of a wheel turning on an imaginary axis, even though the axis were imagined by the coachman to be three poles? Again, the globe must be imagined to turn round with great exactness in 24 hours, and so we must imagine it to stand on an imaginary plane, viz: no plane at all!

The shouting about imagine and imagination and imaginary is characteristic of antiscientific obscurantism. McInnes made numerous other contributions to Earth Review, including articles entitled "How Old Is the Earth?" [ref. 4.12] and "The Wonderful Stone," [ref. 4.13] a sarcastic commentary on Lord Kelvin's suggestion that a meteorite brought the seeds of life to earth. [note 4.7] He also wrote at least two zetetic pamphlets, Pagan Astronomy and The Opposition of Science to Religion, but these have not survived.

Earth Review occasionally published humour, although zetetic humour tended to be a bit heavy-handed. An occasional contributor, one H. H. Scroggins, gave an excellent illustration with "A Coming Genius on the Globe." The opening lines give the flavour of the piece:

The globe on wich the sientifik foolosifers sa we liv, iz lik a noringe thay sa, ownly not the same culler, an thare iz worter an mud in sum plazes owtsid ware thare ort to be rine; an erth, stonz, an all sortz ov uthur things inside ware thare ort to be juse an pips; the globe iz ski-rockitin awa throo spase thay sa, at abowt 19 miles evere sekond … [ref. 4.14]

A little of this goes a long way, but Scroggins managed to carry on for more than two pages. One can only wonder whether anyone ever actually read it.

Equally satirical but lighter in touch was an unnamed zetetic poet's speculation about how Sir Isaac happened to come up with an odd idea like universal gravitation:

THE FALL OF THE APPLE, OR THE TIPSY PHILOSOPHER

Old Isaac sat under his apple tree,
Quaffing his good old wine.
He eyed his decanter right merrily;
And lauded the fruit of the vine.

"Ho! bring me another full bottle," he cried,
"And carry the 'empties' away;
"For wine aids reflection when fitly applied,
"And I would be pensive to-day.

He drank and he studied, he studied and drank,
Until he could study no more!
Then into a slumber he quietly sank,
And varied his thoughts with a snore;

But a breeze shook the tree under which he reclined,
And, alas! broke the good man's repose,
For an apple dislodged by the troublesome wind—
Struck him full on the bridge of the nose,

Then up started Isaac, his face all aglow,
At the insult he thought he'd received,
And quickly looked round for his impudent foe,
But in vain, as may well be believed.

He searched in the garden, he searched in the house,
He searched in the neighbouring lanes;
And he swore if he found him he'd certainly douse
The rogue in the pond for his pains.

But useless his search, he returned and sat down;

Another full bottle was brought;
But still on his face sat a terrible frown
As the key to the myst'ry he sought.

The wind blew more fierce, and the ripe apples fell
In multitudes thickly around;
Till another one lodged on his organ of smell,
Rebounded and rolled to the ground.

"Eureka," he cried, I've discovered the cause,
"And value the pain not a straw,
"Since 'tis so, 'twill teach me in future to pause,
"Ere hasty conclusions I draw."

He ponder'd long time, and he drank deep and oft,
And looked most remarkably wise;
As he peered on the ground, then gazed up aloft,
With wisdom and wine in his eyes.

"What causes the apples to fall to the ground,
"And why do they first strike my nose,
"And why does the garden appear to go round,
"Can any the reasons disclose?"

Triumphant he paused, but as no one was by
To answer his several questions,
Why no one, of course, could affirm or deny
The truth of his laboured suggestions.

"I've hit it," said he, as he brought down his hand,
On his thigh with astonishing force;
"The mystery's solved, I the whole understand,
"'Tis plain as the daylight, of course.

"The earth's moving round—I can see it myself—
"(It's motion is making me queer.)
"Ho! fetch me more wine from the lowermost shelf;
"Quick! sirrah, and bring it me here.

"Yes, the earth's going round, I am certain of that
"(I wish for a while 'twould be still)
"Therefore, as it goes round, it cannot be flat;
"Therefore must be round as a pill.

"And what causes the apples to fall on my nose
"And from thence to the surface of earth,
"Where, their motion suspended, they lay in repose,
"To what do these forces give birth?"

He thought on it deeply, he pondered it long,
Ideas in his brain tried to enter,
One entered at last. "Yes I cannot be wrong,
"Attraction draws all to the (s)center.

"I'll write me a book, my scheme I'll evolve,

"—A book to astonish the nation—
"And with two learned words every question I'll solve
"Attraction, and—ah!—Gravitation.

Round went the orchard as old Isaac mused;
Till giddy he fell to the ground,
And there as he lay, with his senses confused
Our sage even felt it go round.

His faithful man-servant at last sought him out,
And carried him quickly to bed.
"Yes, 'tis certainly rolling, of that there's no doubt;"
Was all the philosopher said. [ref. 4.15]

Earth Review contributors included several old friends from previous chapters. William Bathgate, author of the pamphlet Answers to Objections Advanced Against the Planar System, contributed an article entitled "'Refraction' Extraordinary." Bathgate described how, in searching for a northeast passage to China, the Dutch explorer Willem Barents and his crew got stuck in the ice and spent the winter of 1596–97 on the island of Novaya Zemlya, north of Russia. On January 24, 1597, three sailors reported seeing the upper edge of the sun above the horizon. According to Bathgate's calculations, the sun's upper edge should have been 4° 26′ below the horizon—if conventional theory is correct. Barents wouldn't believe it, either, claiming the sun shouldn't be visible for another two weeks. On January 27, however, "we all saw the sun in his full roundness above the horizon."

However that may be, Barents and Bathgate missed a bigger mystery. As Bathgate reports, Barents and his crew had last seen the sun on November 3, 1596. In those days, the calendar was so far out of whack that the winter solstice fell on December 11 (it should have been December 21). The sun's declination is roughly symmetrical with respect to the solstice. If it was remarkable to see the sun above the horizon on January 24, 44 days after the solstice, it was even more remarkable to have seen it on November 3, only 39 days before the solstice. (The sun's declination should have been about a degree further south on November 3.) Thus, we can agree with Bathgate that either extraordinary refraction occurs in the Arctic (refraction normally does not exceed 34′), or there is something wrong with the conventional theory.

J. C. Akester first appeared in Hampden's Truth Seeker's Oracle and Scriptural Science Review in 1876. Now he was the Earth Review's agent in Hull, a port city 20 miles up the Humber River from the North Sea and 181 railway miles due north of London. Always a natural foods enthusiast, Akester had been (and probably still was) an agent for Dr. Birley's Phosphorised Medicine. He was now promoting homeopathic medicine and still writing and lecturing about the flat earth, too. In 1894, he published a tract entitled The Bible vs. Science, but this has not survived.

William Carpenter had forgotten neither zeteticism nor the Old Bedford Canal, and he contributed an occasional note from America. (We will visit him there next chapter.)

The British penchant for cute pseudonyms is nowhere more apparent than in Earth Review. Besides editors "Zetetes," "Leo Castle," and "Excalibur" (the latter two pseudonyms used by John Williams after he took over as editor of Earth Review), three regular contributors styled themselves "Balaam's Ass," [note 4.8] "A Hottentot," and "Iconoclast."

"Balaam's Ass" no doubt wanted to project the persona of a humble one who unexpectedly exhibits wisdom. Unfortunately, the man behind the mask exhibited little humility and less wisdom, as shown in a three-part series entitled "Faith and Science." In the latter, he expressed his purpose as follows:

[W]e intend to show the utter falsity and unscientific character of the theories of modern astronomy, geology, and evolution; and that they are one and all, not only anti-scriptural, but irrational and un-philosophical. We challenge the ablest scientists of the day to defend their suppositions, and their theories built thereon, or to find a single flaw in the Divine Cosmogony of Holy Writ. [ref. 4.16]

The context of the quote was an attack on an article appearing in the adventist periodical The Faith, which "Balaam's Ass" suspected of being soft on evolution. The miscreant (probably editor Cyrus E. Brooks) saw "a gradual development through natural selection, generic life being unfolded by successive acts of creation," and he also allowed for pre-Adamic man. "Balaam's Ass" buried him in Scriptures and ridicule and planted the following verses on his grave:

There was an ape in the days that were earlier:
Centuries passed, and his hair became curlier;
Centuries more gave a thumb to his wrist,
Then, he was a man, an Evolutionist. [ref. 4.17]

It's not known why "A Hottentot" chose a pseudonym which, besides its obvious meaning, the 19th century British used pejoratively to mean uncivilized or degraded. Perhaps it was the whim of someone who had lived in the Cape region of South Africa. In any case, "A Hottentot" was a frequent contributor of shrill and/or sarcastic letters and articles to Earth Review.

"A Hottentot" was convinced that there was a conspiracy to suppress information favorable to the flat earth. For example, The Future, an astrological magazine, ran some articles by one "Enquirer" criticizing zeteticism, but the editor refused to print replies by "A Hottentot." This manifest injustice was exercised at great length in Earth Review, and "A Hottentot" also castigated the editor of The Future for having the nerve to cite Richard J. Morrison's New Principia as superior to zetetic works. [note 4.9]

"Iconoclast" had been a good friend of the late John Hampden, and perhaps he contributed something to the latter's Earth and Its Evidences under his own (now unknown) name. In a contribution to Earth Review, "Iconoclast" described how he and Hampden once went to South Kensington Museum to see the Foucault pendulum, whose slowly rotating path is supposed to demonstrate the rotation of the earth. Hampden was unimpressed, and told the guide. The guide suggested that he take up his objection with Professor So-and-So, but Hampden and "Iconoclast" knew better. [ref. 4.18]

Besides printing original material, Earth Review reprinted zetetic material from the past. Examples include portions of Walter Rowton's Science's Quarrel with the Bible: Two Lectures pamphlet from the 1870s and about half of Edward Middleton's bombastic Trigonometreadidit Letters. (Middleton was still flourishing and occasionally publishing, but by this time his eccentricity had given way to madness, and he apparently had little or no contact with UZS.) Numerous zetetic works that have otherwise perished are thus preserved in whole or in part in Earth Review.

Not all of the reprints were strictly flat-earth; sometimes geocentricity or Newton-bashing was close enough. Thus, Earth Review reprinted a lecture "Our Earth Motionless," originally delivered in Berlin by a follower of Ptolemy, one Dr. Schoepfer. (It had previously been reprinted in Scientific American, in a translation submitted by Helena Petrovna Blavatsky, founder of Theosophy.) Other examples are extracts from a geocentric pamphlet by John Dove and anti-Newtonian material by Julius Silversmith and Newton Crossland.

Besides getting the word out to potential converts, UZS used Earth Review to answer critics, sometimes to attack, sometimes to control damage, and sometimes out of sheer frustration. The latter was a common emotion among zetetics. Commonly, when zetetics found their views

implicitly contradicted or explicitly attacked in the public press, they wrote responses, only to be denied publication. Their only recourse was to print the response in Earth Review, and zetetic letters refused publication in The Future, The Faith, and so forth were regular features of Earth Review.

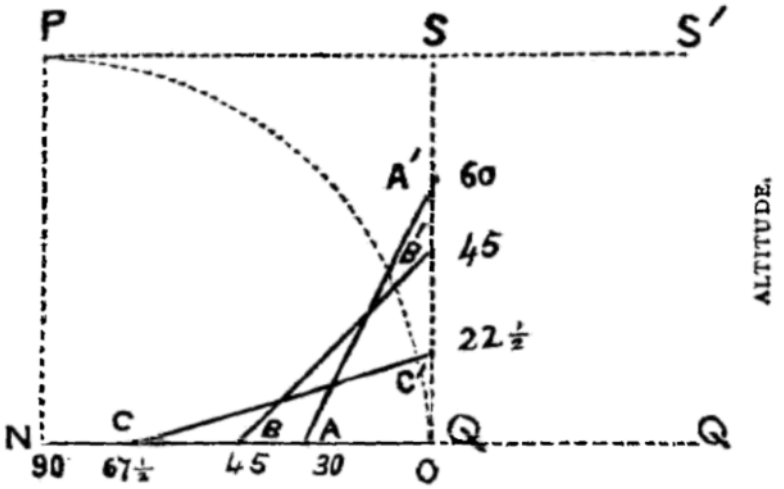
While most skeptics ignored the flat-earthers, a few were amused, intrigued, or outraged enough to engage in dialogue with them. Almost every issue of Earth Review either printed or noted receipt of one or more letters from spherical critics. One example should suffice.

Caldwell Harpur was an enthusiastic antizetetic who frequently wrote to Earth Review. A political liberal and a poet, Harpur worked for the New Oriental Bank in Threadneedle Street, London. Perhaps he was a missionary of sorts, for he corresponded with numerous leading flat-earthers. Little else is known of him, except that he was an advocate of the metric system of weights and measures, and soon after his controversy with flat-earthers, he published a pamphlet entitled Weigh by Grams, Discarding Drachms. [note 4.10]

Harpur's bout with Earth Review began innocently enough with a letter in the April 1893 issue describing his correspondence with W. M. Runciman, a zetetic from New Plymouth, New Zealand. Harpur noted that the apparent motion of the Southern Cross, as described to him by Runciman, was exactly that described by Proctor. The editor shrugged this off as hearsay and invited Harpur to try to overthrow "Dr. Birley's proofs." Harpur apparently responded with a pamphlet, Deductions from the Theory of a Flat Earth, which has perished.

The zetetics were not pleased by Harpur's effort, and Alexander McInnes called it a mathematical fraud. [ref. 4.19] Harpur apparently used several different zetetic assumptions to derive hopelessly contradictory predictions from flat-earth theory. The September 1894 brought Hampden's old correspondent "G.M." into the lists for the first time. Apparently Harpur calculated the distance from the equator to the north pole by two different zetetic methods, one yielding a huge distance and the other an infinite distance. His reasoning for the latter can be derived from G.M.'s reply: At the vernal equinox, a viewer at the North Pole would see the sun split by the horizon, or its apparent elevation would be 0°. [note 4.11] On zetetic principles, the distance from the pole to the equator is the sun's actual altitude times cotangent 0°. But cotangent 0° is infinite, so the distance from the pole to the equator must be infinite.

In response, G.M. felt compelled to assert that lines of sight to the sun from various latitudes do not converge on the same point. G.M.'s diagram is shown below.



G.M.'s diagram to show the sun's apparent altitude at different latitudes

G.M. explained the diagram as follows: If NQ be the radius of a globular earth, P. the North Pole, then the dotted arc PQ would be the 90° of North latitude; at equinox the sun vertical

to the equator would be in the direction NQQ′, simultaneously it would be in the horizon of N, i.e., in the direction PSS′; therefore, the sun's apparent position varies to the extent of one side of a square described upon the radius; or SQ is the extent of that variation, upon both sphere and plane, when the difference in the observing stations equals 90° latitude. [ref. 4.20]

G.M.'s geometry is correct so far as it goes. What he means by "one side of a square described upon the radius" is that the lengths of lines AA′, BB′, and CC′ all equal NQ (and also SQ). The lines AA′, BB′, and CC′ represent the line of sight to the sun from an observer at latitudes 30°, 45°, and 67.5°, respectively. Unfortunately, G.M. ignored the fact that simple geometry then demands that lines QA′, QB′, and QC′ represent the actual altitudes of the sun! That is, while everyone agrees that the apparent elevation of the sun depends upon the observer's latitude, G.M.'s diagram implies that the actual altitude of the sun also changes with the position of the observer. This is a bit difficult to accept.

From then on, the discussion became mostly one-sided. In the January 1895 issue, Harpur was allowed two paragraphs to point out to G.M. that the sun cannot be in more than one place at a time. The editor allowed G.M. four pages to respond to Harpur. In April 1895, Harpur ventured another paragraph, drawing eight paragraphs from G.M. And so it went until the April 1896 issue, when the editor declared the controversy closed and Harpur the loser. In all, Harpur contributed to and/or was castigated in a dozen issues of Earth Review.

It goes without saying that zetetics had not forgotten the Bedford Canal fiasco, and it was frequently rehashed in the pages of Earth Review. In 1894, James Naylor and other zetetics revisited the canal to make new observations.

James Naylor was a long-time zetetic, an old friend of William Carpenter, and author of the first pamphlet on the Bedford Canal Experiment written by a nonparticipant (John Hampden Quite Right! The Geographical Professors All Wrong! A Critical Review of the "Bedford Level Experiments"). A member of the UZS Committee, Naylor differed from many of his fellow zetetics in his moderate treatment of conventional science and his cool, analytical approach to zetetic difficulties.

Beginning with the April 1895 issue of Earth Review, Naylor published a four-part series on "Zetetic Refraction" that remains the definitive statement on the subject. Essentially, he argued that refraction depends upon the "density" of the two media involved. He argued that the theory of the atmosphere getting less dense with elevation is false; greater or lesser density can be found in any direction. In general, the effect on a ray of light coming from above is to depress the apparent source, not to elevate it as the conventional view of refraction asserts. This has important consequences:

When once it is seen that a ray of light—whether coming obliquely from the upper regions of the atmosphere to the lower or from lower to upper—always bends toward the horizontal, many plausible Newtonian explanations evidently become impossible; at the same time also some important Zetetic difficulties cease to exist. [ref. 4.21]

Zetetic refraction depresses objects and makes light always bend toward the horizontal. Naylor argued that this explains eclipses where both sun and moon are seen above the horizon. He admitted that Rowbotham failed to cope with the rising and setting of celestial objects, saying "[H]ere zetetic refraction comes to render yeoman service …" He also acknowledged that the angles of celestial objects fit a globe better than they fit a plane, saying "[H]ere it may be freely conceded, that these angles far more nearly correspond with the common theory than with Zeteticism, though not so completely as some Newtonians would have us believe." But zetetic refraction shows that observed angles can not be interpreted dependably.

In Naylor's analysis, refraction distorts real angles: "It was the neglect of this consideration that made C. Harpur's argument in a recent number of the Review to appear so formidable on paper and so absurd away from it." Refraction prevents zetetics from computing actual distances of celestial bodies above the plane, and it also wipes out conventional theory. He argued that we simply cannot know the true angles of bodies above the horizon.

It was from this background that Naylor once again attacked the Bedford bugbear in an article entitled "Old Bedford Canal and Some Things that Can Be Seen There." [ref. 4.22] He opened the article by saying, "We think that even the most ardent believer in the plane earth will admit that the results of the Wallace–Hampden experiments, superficially viewed, were unsatisfactory." Indeed, because the distant signal was seen below the nearer one, "evidence for the latter [globular theory] appeared clearly to be established." He continues:

It was therefore with readiness that we accepted a kind invitation in August, 1894, to take part in some experiments on the Old Bedford Canal, of Wallace–Hampden fame. The experimental party was well provided with numerous instruments, including a surveyor's theodolite, Dumpy level, telescopes, &c. The results clearly established to all present that the surface of the water in the Old Bedford Canal at any rate does not decline in any part of its course from a right or horizontal line starting from the point of observation, and therefore that standing water is not convex but horizontal. [ref. 4.23]

The weather was poor for the whole four days the zetetic party spent there, but they managed to make some observations. Their most interesting observations were made with the theodolite from Old Bedford Bridge:

We levelled the theodolite in the direction of Welney bridge, and were at once struck with the fact that the bridge appeared considerably below the horizontal cross-hair in the field of view, showing the same peculiarity, in fact, as the instrument used by Professor Wallace. [ref. 4.24]

Various trials, however, gave varying results. The zetetics finally discovered that if the theodolite was levelled both along the line of sight and transversely, it was generally consistent, showing Welney Bridge a little lower than the cross-hair, as it should be, because it was the lower bridge. Eventually, the zetetics noticed a dark band above the Welney Bridge separated from it by a streak of light. This proved to be the top girder of a railway bridge of the Great Eastern Railway, another 6 miles [note 4.12] south of Welney Bridge!

Facts later provided by the Great Eastern Railway confirmed zetetic suspicions; the upper girder was 4′ deep and its top was 19′ above the water. Thus, the streak of light was no more than 15′ above the water. The curvature of the earth over 12 miles is supposed to be about 96′. Even considering a viewpoint (Old Bedford Bridge) about 17′ above the water, the railway bridge should have been completely out of sight. Instead, its top showed above Welney Bridge. Either there is something wrong with the conventional view or (nonzetetic) refraction was working particularly well that day.

Unfortunately, Naylor did not record the names of the rest of the zetetic party. Presumably it included a zetetic surveyor or civil engineer to operate the instruments.

Theory and practice rarely march arm in arm down the road to progress. A tension traditionally exists between theoreticians (such as scientists) and practitioners (such as engineers). Some scientists see engineers as mere technicians, tinkers rather than thinkers, clever dabblers who manipulate forces they only half understand like children playing with fire. (To them, Edison's famous dictum that genius is 1% inspiration and 99% perspiration proves Edison was an engineer.) Similarly, some engineers see scientists as ivory tower air-heads who can manipulate abstractions but can't find their way to the bathroom without engineers to point the way. (Indeed, they wouldn't have bathrooms if engineers hadn't designed the fixtures.) When this tension is

augmented by ideology or feelings of personal greatness, it can drive a practitioner into the waiting arms of unorthodoxy. Thus, scientific unorthodoxies often attract engineers and medical doctors, and the flat-earth movement is no exception.

Ever since Rowbotham, the foundation "proof" of flat-earthism has been that the surface of still water is level. Zetetics generally refused to recognize that the word could mean a curved surface of equal gravitational potential, and they insisted that every occurrence of "level" referred to a flat surface. Hampden had recognized that if anyone had practical experience with the earth's alleged curvature, it would be those who laid out railroads and canals. In the pages of The Earth; Scripturally, Rationally, and Practically Described, he had asked editorially, "Where are the engineers?" In the pages of Earth Review, the zetetic civil engineers responded, rising to reject the curvature of the earth. One G. W. Winckler, Assoc. M.I.C.E., [note 4.13] wrote as follows:

As an engineer of many years experience, I say that this absurd allowance is only permitted in school books. No Engineer would dream of allowing anything of the kind. I have projected many miles of railways, and many more of canals, and the allowance has not even been thought of, much less allowed for. The allowance for curvature means this—that it is 8 inches for the first mile of a canal, and increasing at the ratio by the square of the distance in miles; thus a small navigable canal for boats, say 30 miles long, will have, by the above rule, an allowance for curvature of 600 feet! Think of that, and then please credit engineers as not being quite such fools. Nothing of the sort is allowed. I must, however, state that college astronomers have made the student engineer to think that in his method of levelling what is known as the "backsight" cancels any curvature by his "foresight" and so on. It is only a theory … [ref. 4.25]

Winckler's statement seemed, to the zetetics at least, to confirm a note contributed to the second issue of Earth Review by Isaac Smith:

Standing order 14 House of Commons, denies convexity. There is no allowance to be made for it. None in making the Suez Canal, 80 miles long. None in making the Canal in China, 700 miles long. None in making the Manchester Ship Canal; working from a level datum line no allowance is required at all. [ref. 4.26]

Smith didn't give a source for this statement, but it was endlessly repeated in zetetic publications to prove that engineering projects funded by the House of Commons were proceeded on zetetic principles.

Winckler's and Smith's ideas about leveling were supported by a zetetic surveyor, T. Westwood, in a letter regarding canals and their level water. In fact, the datum line for canals was established by leveling, a surveying technique also used for determining heights above sea level for points far inland. The technique depends upon establishing a continuous sequence of points, the altitude of each point being carefully compared to the previous point. The comparisons have traditionally been made with a dumpy level using the foresight–backsight method to which Winckler refers.

A dumpy level is a small, powerful telescope equipped with an extremely sensitive spirit level and an internal cross-hair. [note 4.14] In the foresight–backsight method, the instrument is set up on a tripod exactly halfway between two points. The surveyor focuses the telescope on a graduated rod held at the first point, adjusts the instrument to precise level, and notes where the cross-hair cuts the graduated rod. The instrument is then rotated on the tripod and the procedure repeated for the second point. The difference between the readings is the difference in altitude, and the method automatically eliminates the accumulation of error due to an instrument that consistently reads slightly high or low. Winckler and other zetetics refused to recognize that the curvature of the earth (if any) vanishes with the instrument error; thus, the foresight–backsight method works equally well on flat and spherical earths.

Winckler was typical of the breed of engineers contemptuous of scientists. His Earth Review article "The Sun's Distance," in which he explained how an engineer would determine the distance to the sun by measuring a baseline and then triangulating, tacitly assumes that no astronomer ever heard of such a thing. [ref. 4.27] We will meet numerous other zetetic engineers in later chapters.

The medical profession continued its representation to zeteticism, although with less activity than before. The most distinguished medical zetetic was Dr. Edward Haughton, Senior Moderator in Natural Science, Trinity College, Dublin. In years past, Dr. Haughton had written numerous medical short works, mostly dealing with the salubrious effects of hot baths or the theory of medicine. These included Facts and Fallacies of the Turkish Bath Question; or, What Kind of Bath Shall We Have? (1860), The Uses and Abuses of the Turkish Bath (1861), On the Remains of Ancient Roman Baths in England (1861), Practical Biopathy, or the Laws of Life and the Art of Healing (1881), and The Laws of Vital Force in Health and Disease (1869).

Like Lady Blount and several other zetetics, Dr. Haughton was an ardent antivivisectionist. At an Anti-Vivisection Conference in Nottingham in November 1894, he rose and made the following protest:

THE HOLY INQUISITION HAS NEVER CEASED TO EXIST. Its staff is fully trained, and only waits its opportunity; and there are many persons now living who would gladly re-enact all its horrors when the public mind shall have been sufficiently corrupted and familiarised with cruelty by its precursor and jackal—Vivisection. [ref. 4.28]

The antivivisectionists, forerunners of today's "animal rights" activists, were often radical in their rejection of medical experiments with live animals. Dr. Haughton's view that medical researchers were sadists practicing for the day when they could torture humans was a typical fantasy. Other antivivisectionists linked medical experimentation with sorcery, devil worship, or vaccination (another common 19th century bogeyman).

Dr. Edward W. Forster lived in Darlington, a market town of about 40,000 lying 232 miles north by west of London on the Great Eastern Railway and about 30 miles south of Newcastle as the rook flies. Before the 19th century, Darlington was a center for linen, worsted, and flax manufactures, but now its industries were mining and manufacturing. Darlington was famous because the first world's first public, locomotive-powered railway service was the Darlington to Stockton line, opened on September 27, 1825.

Dr. Forster had studied "Parallax," Isaac Smith, and other zetetic writers. They convinced him that zeteticism was a reasonable option to conventional astronomy, for he wrote, "I am assured that the Astronomy of the Bible will eventually be proved correct." [ref. 4.29] He enjoyed arguing with zetetic critics, and he could usually silence them. Dr. Forster was also concerned with correcting zetetic errors, as shown in an October 11, 1893 letter to Earth Review:

Isaac Smith's latest work is good; but he is decidedly in error when denying that the moon is related to the tides. … [M]y observations on the seacoast (east) for 40 years show a most regular relation between the tides and the phases of the moon. [ref. 4.30]

One "H. V. (M.D.)" of Santa Cruz, California was a regular correspondent of Earth Review. Notably absent from its pages was surgeon Charles Watkyns de Lacy Evans, former Secretary of the old Zetetic Society and future Vice President of the UZS (as reorganized under Lady Blount). He was apparently in the Gold Coast, a British colony now incorporated into Ghana, and either out of contact with his fellow zetetics or too busy to participate in UZS activities.

Engineers and doctors gave zeteticism an aura of respectability, but that did not necessarily make converts. For the latter purpose, the UZS sponsored a corps of about a dozen freelance lecturers

who crisscrossed England and Ireland exhorting the faithful. Zetetic speakers preached guest sermons in churches, gave public lectures, and (when a willing opponent could be found) engaged in public debate. Anyone who has ever seen a creationist debate a scientist will not be surprised to learn that the flat-earthers often (perhaps usually) won their debates. These public events also gave zetetics a chance to distribute tracts and sample copies of Earth Review to sympathetic audiences.

While zetetic lecturers were numerous, their coverage of England was spotty. Rowbotham's old stamping grounds were densely populated by flat-earth lecturers. Amos Perry of Ashton-under-Lyne lectured regularly in the Manchester area. A few miles to the east, in Halifax, E. J. Shackleton and the brothers Isaac and John Smith lectured regularly. Harry De Joannis covered the northeast. James Naylor covered Birmingham and its environs. Lady Blount operated out of Bath, and Ebenezer Breach covered the territory in the south, on the channel. A. E. Skellam lived and lectured in London, and several of the others ventured into the big city to proselytize. Albert Smith lived in Leicester, but he lectured far and wide—Lincoln, London, Portsmouth, Ashton-under-Lyne—whenever and wherever he was wanted by local zetetics. A single issue of Earth Review reported lectures delivered by John Smith in London, Dewsbury, and Bradford, by Isaac Smith in Bradford, by Ebenezer Breach at Portsmouth, and by Skellam in London.

In the very first issue of Earth Review, J. Atkinson reported on a lecture he delivered in Belfast, Ireland in December 1892:

My lecture … has been delivered. I had an audience numbering between 70 and 80, and from enquiries made and interest displayed, together with demonstrations of approval, I have reason to believe that my efforts have been somewhat of a success. But even should this not have been the case, I consider it a privilege to be permitted to proclaim the truth which is at such a discount nowadays. [ref. 4.31]

Zetetic Harry De Joannis lived in South Shields, a port city of about 100,000 located where the river Tyne empties into the North Sea about 50 miles down the coast from the Scottish border. A center for glass and chemical industries and, of course, ship building and repair, South Shields was economically overshadowed by Newcastle ten miles up the river. What success De Joannis had as a flat-earth lecturer can be gauged from a letter he wrote to Earth Review:

Dear Sir,—"Speak unto the children of 'Parallax' that they go forward."

I held three meetings in the Market Place on Sunday. 11.45 a.m., The Bible and Physiology. 3.20 p.m., The Bible and Geology. 7.30, The Bible and Astronomy. The Truth must be spread. May the Lord in His rich grace and mercy save the Puzzled Clerics. We had good audiences. There were leading atheists, school teachers, and also the Navigation School Examiner, but there was not one dissentient voice, I upheld the Word of God as the medium of all truth. I challenged them for two weeks to come and bring anyone to rebut my charges against Theoretical Astronomy and Geology. I have got scores of converts to the Plane Earth facts. Send me some more pamphlets, we intend to bury the Globe in South Shields this winter. Yours, &c.

Harry De Joannis [ref. 4.32]

De Joannis and colleagues failed to bury the globe, but their optimism was felt by other zetetics. There were, however, clouds on the zetetic horizon. Not all flat-earth lecturers were as successful as De Joannis. In some areas, flat-earth lectures were considered a local sport.

Portsmouth lies on the English Channel, south and a bit west of London. Strictly speaking, it is an island city, but Portsea Island is every bit as isolated as Manhattan. A fine harbor and strategic location encouraged the Royal Navy to make Portsmouth a major naval station and arsenal. By

the turn of the century its population approached 200,000, including an unconventional astronomer, Ebenezer Breach.

A poet "twice patronized by Her Majesty" and having "letters to show," Ebenezer Breach was Portsmouth agent for Earth Review as well as a regular contributor. His poetical works included a historical poem on the defeat of the Spanish Armada, [ref. 4.33] but this has not survived. Fortunately, J. Dyer, whom we met in earlier chapters, was still harassing the zetetics at the end of the 19th century, and Breach struck back with the following verses dedicated to Dyer's A.B.C. Railway Guide:

It gives you the time by steamer or boat
To Jersey or Guernsey, or Ryde.
If this Guide is examined for train or afloat,
You've nothing beside to decide.

You can ride all around on a firm fixed earth,
Iron rails that are laid by the level,
And never roll off, or be jerked in strange mirth
On a globe that's Galilea's fable! [ref. 4.34]

These verses are the only extant examples of Breach's poetry, and one suspects they were not among those that won Breach royal patronage. He also wrote at least three flat-earth pamphlets, Dauntless Astronomy: 100 Scripture Proofs of a Fixed Earth and Travelling Sun, Fifty Scientific Facts, and Twenty Reasons Against Newtonianism, and Twenty Geographical Proofs that the Earth Is an Extended Plane. Regrettably, none of these pamphlets has survived, either.

Breach had once been a staunch defender of conventional astronomy. Then, as he explained in an 1892 letter to William Carpenter, something happened:

Analogy convinced me of something radically wrong. This was near 20 years ago. Then I had had 20 years of study of the other side, lectured with magic lantern, etc., principally to schools, but was obliged to throw the system entirely overboard, and so lightened ship of confusing wares. It was also forced upon my mind as another conviction that the all-wise Creator would not give the wrong impression of His own works; it could answer no purpose. Therefore, let God be true and every man a liar. I found he had staked the salvation of man upon the challenge, "If heaven above can be measured, and the foundations of the earth searched out beneath, then will I cast off all the seed of Israel." The more I have gone into the subject on the other side the more convincing have been the arguments of truth. [ref. 4.35]

In the 1890's, Breach delivered occasional zetetic lectures in Portsmouth, which the public received with interest if not kindness. In fact, one of Breach's flat-earth lectures had ended in a near riot. It appears that the UZS and/or the Portsmouth zetetics decided to bring in a hired gun to quell the spherical opposition. In March of 1894, Earth Review editor Albert Smith journeyed to Portsmouth to lecture there and, if possible, debate a spherical opponent. Lady Blount was a sponsor of this lecture, and perhaps titles attract titles, for other sponsors included Count Antonie Amerina, Justice of the Peace T. Shaw Phillips, and Colonel St. Vincent. [ref. 4.36] Smith subsequently reported on the lecture in Earth Review, beginning as follows:

On Monday evening March 19th, the editor gave a lecture at Portsmouth entitled, "Is the Earth a Whirling Globe"? Large handbills and larger posters had well advertised the lecture all over the town, and the hall which is reckoned to hold six hundred people, was nearly full. Great interest was manifested in the lecture by high and low; and on the part of some of the lower orders great excitement and a spirit of opposition. This, to some extent, was said to be due to previous lectures given in the town by a zealous but not over prudent advocate of the Plane truth; but nothing could justify the boorish behaviour of a few in the cheap seats who had come, as

one confessed, for "amusement" and not for instruction. The lecture was listened to with marked attention, but when the questions began, had it not been for a restraining Power, general respect for the Chairman, the firmness and self-possession of the Lecturer, and the presence of the officers of the law, the boorish element present would have got the upper hand, as on a former occasion. [ref. 4.37]

After Smith spoke for about an hour, the chairman asked for a volunteer to debate him, with each speaker to hold forth for ten minutes and then answer questions by his opponent. No one volunteered immediately, so Smith took some questions. The audience eventually prevailed upon a Mr. Sweeney to enter the lists, and Smith summarized his presentation as follows:

This champion of the globular theory spoke for about ten minutes in a loud, excited and desultory manner, avowing his belief in the nebular hypothesis as accounting for the origin of the "globe," and in the evolutionary theories of Darwin as applied to the origin of man and species. This proves our contention that "Scientific" Infidelity is ranged on one side of this question, and Zeteticism and Biblical Christianity on the other. Only let these forces grapple under fair and orderly conditions, and Truth must prevail. [ref. 4.38]

Speaking for Truth, Smith replied for ten minutes, arguing that Mr. Sweeney had offered absolutely no proof for globularity. Indeed, he had not even attempted any, all his statements being mere assertions. Smith then gave some zetetic arguments Sweeney had surely never heard and demanded a response. Poor Sweeney had had enough, however, and he presumably left Speedwell Hall a sadder but wiser man.

Smith was clearly upset by the lack of respect received from the audience, and he concluded his description of the lecture as follows:

We court the most learned opposition of reasonable men, but when a stupid and ignorant spirit of opposition manifests itself, we should advise our Portsmouth friends to go to work privately and quietly. Why not start a class for mutual instruction and discussion, and then form a branch of the U.Z.S.? [ref. 4.39]

Perhaps this was good advice, but the Portsmouth zetetics did no such thing. Two years later, Ebenezer Breach again mounted the lecture platform in Portsmouth. The Hampshire Telegraph of March 28, 1896 reported on the lecture as follows:

FLAT EARTH LECTURE - NOISY SCENE AT LANDPORT

Mr. Ebenezer Breach will be remembered, no doubt, as having delivered some flat earth lectures in Portsmouth some time ago. The riot which followed the last one rather put a damper upon Mr. Breach, but that gentleman, feeling that the truth must prevail, on Thursday evening mounted the platform again and delivered his fourth lecture at the Albert Hall to a demonstrative audience. Mr. Breach, who appeared on the bills as "E.B., writer, poet, and author, with Royal patronage, God Save the Queen," dealt with several subjects, among them being the earth, sun, moon, eclipses, Dr. Nansen at the North Pole, and the measurement of the sun. When the audience arrived at the hall they found it already decorated with the apparatus for the lecture.

THE DIAGRAMS AND MODELS.

Mr. Breach's handiwork was prominent. On one side was spread a piece of calico, on which was painted in large letters the words, "Know thyself. I am wonderfully and fearfully made." Two maps of the world that looked like bicycle wheels after a collision were there. It afterwards transpired that a shepherd had drawn them. At the back were three portraits of noted astronomers. Over these was a long strip of canvas covered with scraps, which represented the heavens, with halfpenny and penny stars, blood-orange planets, and two circular-saw-like pictures for the sun.

But the most wonderful of all were the models. The chief of these was the North Pole, which Mr. Breach had rescued at the last lecture—"the only one saved from the wreck." It had a new knob on the top, and the Arctic ice (soda) was replaced by wadding, which represented the eternal snows. Round this was a sea of brown paper. A model of the "ecliptic upharsin," made of wooden hoops, was, also displayed, while the Union Jack waved over all.

THE START: TREMENDOUS APPLAUSE.

At half-past seven there was loud applause, and Mr. Breach put his head out of the back-door to see what sort of "house" there was. While the applause grew louder, a man, who said he was "Bolt, [note 4.15] of Southsea," went round and sold "flat earth" tracts and argued. At last Mr. Breach emerged with Mr. Turle, the Chairman. He was greeted with tremendous applause. By this time the audience, which included several Town Councillors and a policeman, was pretty numerous. Mr. Breach started by reading Scripture and an astronomer's prayer. This over, he went on to speak of the untrue and the true in astronomy. At first the applause was so persistent and deafening that he could not be heard, and the next thing that happened was the advent of a frightful smell.

A DASTARDLY OUTRAGE.

Suddenly, while half the audience were convulsed with laughter, a most offensive odour arose from some chemical substance scattered about the floor in the centre of the hall. This caused a remarkably quick migration, and, as it spread, the audience scattered, until the disorder was very great indeed. Meanwhile, Mr. Breach had been speaking. He said that some people said the earth was a wandering star and a burning planet. It was not. It wasn't a heavenly body. (Loud applause.) He directed their attention to one of the planets, which immediately fell off the screen, at which the audience roared. The fearful smell continued, and some of the people went out. Mr. Breach appealed for order, saying that they had no idea of the pains required to get up the lecture. (Hear, hear.)

A CALL FOR THE CONSTABLE

Then he said the earth didn't go on the sun's orbit, and some one cried "Rats!" and blew a develene, [note 4.16] at which Mr. Breach called on the constable to "Come here!" (Loud applause.) No orbit, said Mr. Breach, could be necessary for a fixed earth, and there was a tremendous burst of applause. This was repeated when he said there was no necessity for gravitation, and anything unnecessary did not exist. As to the ecliptic, the earth never was there and never would be. It had no right to be there. (Cheers.) A solid earth rested on a solid foundation. (Laughter and applause.) The likenesses were those of Galileo, Copernicus, and Tycho Brahe. (Cries of "Shame.") Modern astronomy was so simple that it could really be understood. (Tremendous applause and laughter.)

TOUCHING THE SPOT.

Mr. Breach next gave a sermonette, and then told a funny story. The disorder got worse, and the policeman looked uncomfortable. Mr. Breach explained his diagrams. He said that one of the gilt-half-penny stars was the North Star, and pointed it out, whereupon a wag remarked, "Homocea touches the spot." [note 4.17] Dr. Nansen was then dealt with, and a black-board was shown with his route marked thereon. [note 4.18]

THE GREAT LOB-TAW [note 4.19] FEAT.

But the treat of the evening was the repetition of the "lob-taw" feat. This Mr. Breach performed amid loud cheering. Placing the lob-taw on the wire universe which ran round the North Pole,

he guided it round with his hand. The audience demanded an encore, and Mr. Breach performed again, saying that "one sun did the whole work for the lot."

FIGURES AND ANOTHER ENCORE.

Then he went into figures. In the beginning the stars were served out to all nations. (Great laughter.) The earth was 30,000 miles long and 10,000 miles broad, and the heavens the same. (Laughter.) He proposed to measure the sun on the ecliptic—which had never been done before. It was 5,000 miles across. (Cheering and deafening laughter.) Mr. Breach next repeated the lob-taw experiment with a gilt ball and a cricket ball on the wooden hoop arrangement. This also brought down the house. Once the best ball fell off the universe, but one of the audience recovered it.

THE SMELL AGAIN.

Then the fiendish smell came on again. Someone suggested that bad eggs had been smashed. Mr. H. Palin looked under a chair and found a capsule, which he handed to Mr. Breach. Mr. Breach gave his views with regard to eclipses, and said that 200 years ago "Nature shuddered at one and birds dropped dead." (**A VOICE:** "Author?") (Laughter and applause.) At the last eclipse he saw streaks of sunlight on the moon. (Cheers.) All the heavenly bodies eclipsed each other more or less.

MORE LECTURE AND SINGING.

Then Mr. Breach described the creation again, and said that the ocean was a standing monument to the flood. (Shouts and applause.) He prophesied that the earth would not last more than about ten years more—(cheers)—and that the audience would come to judgment for their actions that evening. (More cheers.) The audience sang "Up in a Balloon," cheered again, and sang "For He's a Jolly Good Fellow." Mr. Breach protested against the uproar, and said that retribution would fall on the offenders. He would sooner be in his shoes than theirs. (Applause.)

A VOTE OF THANKS: THE END.

This concluded the lecture, and Mr. Breach sat down, at which there was great cheering and cries of "Encore." Tremendous cheers greeted Mr. Palin when he got on the platform and asked some questions. The reply was drowned in "For He's a Jolly Good Fellow" and "Kentish Fire."—Mr. Breach wanted the audience to sing "God Save the Queen" and go, but Mr. Palin proposed a vote of thanks to him for his lucid—(cheers)—and elaborate exposition. (Cheers.) He hoped there would be another flat earth lecture.—Mr. J. Bishop seconded.—Mr. Breach replied, and said it would take another two years before he gave another lecture. ("Shame.") Most of the audience then went out. Some stayed behind, however, and Mr. Breach threatened to give them in charge of the police if they touched his models. The policeman pulled up the North Pole and Mr. Breach grabbing it, hurriedly made his exit by the back way, leaving the policeman to protect the diagrams.

Breach's prediction of the End of the World within ten years was in line with the expectations of other zetetics. It's not known whether or not Breach gave any further zetetic lectures.

Besides lectures and debates, pamphlets and tracts were the primary means of spreading the plane truth (Earth Review spoke mainly to the converted). During the five years it remained in print, Earth Review advertised a variety of publications. The UZS (or perhaps John Williams personally) sold a long list of Hampden's works—A Compendium of Practical Instruction on the Laws of Nature; The Popularity of Error and the Unpopularity of Truth; The Earth in Its Creation, a Series of Letters to the Christian Journal; The Pillory; An Inquiry as to Whether the Earth Is a Globe; and A Manual of Biblical Cosmography. Prices varied according to size and

production quality: 1s. 7d. for the Compendium (a collection of pamphlets totaling about 170 pages), 7d. for the 51-page Earth in Its Creation, down to 2½d. for the Inquiry, which was probably an 8-page tract. Albert Smith published and sold through the pages of Earth Review a long list of pamphlets and tracts under the nom de plume "Zetetes"—Bible Astronomy, Bible Cosmology, "Cranks", Is the Earth a Globe and Has It Axial and Orbital Motion?, Kepler's Laws of Motion, The Midnight Sun, The Plane Truth Unmovable, Religion and Science, The So-Called "Mistakes of Moses", The Sun Standing Still, and several others. The UZS also sold pamphlets by Ebenezer Breach, "Iconoclast," William Bathgate, James Naylor, "Vox," William Carpenter, and others.

Shorter, cheaper tracts were offered for sale by the dozen or even by the hundred, and these were intended to be handed out free at lectures and debates. Zetetics with a philanthropic bent were urged to donate money to pay for free literature to be sent to lecturers in the provinces. While zetetics seem to have been tight-fisted on the whole, Earth Review occasionally acknowledged receipt of a donation for this purpose and printed a note of thanks from the recipient of the literature.

The UZS literature rack had two gaping deficiencies. The first was the lack of a comprehensive book describing zetetic astronomy. The second was the lack of a decent flat-earth map. The UZS made plans to remedy both inadequacies.

One of the first issues of Earth Review announced the formation of "The Parallax Company" (shares at a reasonable rate), established expressly to purchase the plates of Rowbotham's monumental second edition of Earth Not a Globe and republish it. No flat-earth book before or since approached it in completeness or readability. Originally published in 1873, it had already been reprinted once from the original plates, [ref. 4.40] but both printings (sizes unknown) were long exhausted. Whether for lack of money or lack of interest, this plan failed, and Earth Not a Globe was never reissued.

It should have been easier to republish J. Steer Christopher's map of the world. Joseph Steer Christopher was born at Dartmouth in 1805, and in 1850, he published a book on South Africa entitled Natal, Cape of Good Hope [ref. 4.41] . Christopher was a skilful cartographer, and his book contains several maps drawn by own his hand. In later years, he also drew a flat-earth map which is still the zetetic standard. As zetetic Thomas Whittle of Croydon put it, "The map of the world designed by Mr. J. Steer Christopher, of Morden College, Blackheath, near Greenwich, seems to me scientifically correct, and well worthy to be studied by Navigators, Captains, and others." [ref. 4.42]

Christopher's map, showing the north pole at the center and the distance from the center to the equator as 90 degrees, is technically an azimuthal equidistant polar projection. Published as early as 1880, it was the basis of several flat-earth maps that followed, including the Gleason Map later produced in America and flat-earth maps published in several zetetic books. (Indeed, a version of it is still being sold by the Flat Earth Society.)

UZS estimated that a lithographic block of the size required to reproduce the map would cost £15. A fund was established to pay for it, and several zetetics pledged money. Unfortunately, before enough money was pledged, Christopher himself checked out. Earth Review carried his obituary:

We regret to announce the death of our esteemed friend J. Steer Christopher, who, on account of his Map of the World as a Plane, was made a "Fellow of the Society of Science, Art and Literature." Born at Dartmouth, April 15th, 1805, fell asleep in Jesus at Morden College, Blackheath, December 31st, 1894, and was interred at Charlton Cemetery, January 3rd, 1895. A stone to his memory will shortly be erected … [ref. 4.43]

To a modern American, the words conjure up the image of an aged professor nodding off amidst dusty notes and half-finished treatises. In fact, Morden's College was founded late in the 17th century by Sir John Morden as a home for merchants retired from the Turkish trade. By the turn of the present century it was an ordinary almshouse.

The UZS had numerous other projects and goals, some achieved and some not. A primary concern among zetetics was the school system, which was (at least nominally) controlled by the Church of England.

From the beginning, the zetetics had been concerned with the teaching of astronomy in the schools. Rowbotham denounced it. Carpenter dedicated The Delusion of the Day to the schoolmasters of England and Proctor's "Planet Earth" to the London School Board. Hampden issued circular letters to students urging them to reject the globe and read their Bibles, and he raged against spherical schoolmasters in his characteristic style. Perhaps "Iconoclast" best expressed zetetic feelings on the matter with a globe-bashing ditty published in Earth Review:

A SONG

We do not foist a paste-board Globe on every British school,
Nor vote for children's brains to rack with Theory's tangled rule
Nor teach foul Falsehood's right to reign though donned in wig and robe,
Nor quench astonishment in youth when told the earth's a Globe!

Raise high the Truth; knock down the lie! and blow a mighty blast;
By showing how for so-called Science the Lie rose in the past;
Proclaim the thousands driven mad, and others nigh entranced,
Through grinding-in the Globe-man's Lie, and Protoplasm's dance.

Record how "Parallax" once fought, and Hampden's Clarion tongue;
Tell how "Zetetes," Carpenter, have borne the standard on:
Of other heroes, young and old, in every land and clime;
And let the Truth which must be told resound along the line.

On, onward! Flatten all the globes in every British school,
Nor keep the Right upon the rack while Falsehoods proudly rule;
Let honest Truth, not lies, prevail through England's fair domain
Then Right shall rule and Truth shine o'er the World's extended Plane. [ref. 4.44]

This was not just idle posturing. In the autumn of 1896, astronomer Sir Robert Ball went to Portsmouth to lecture on "Recent Researches on the Sun." Ebenezer Breach, presumably recovered from his disastrous lecture that spring, prepared to welcome Ball. Apparently, Breach's labors against astronomy had not been in vain:

Is Sir Robert aware that it is decided in Portsmouth that the teachers shall not teach such falsehoods in this enlightened age to their scholars in the Board schools, and push 95,000,000 cartload of falsehoods down the children's throats to please "red tape" in the Government? Whitehall is beginning to see the evils of such a system.— Therefore the 3,000,000 children of England shall not be taught falsehoods to please Sir R. Ball, General Drayson, or all the star army put together. Portsmouth teems with intelligent young people, and such intelligence shall not be misled and trampled upon by the absurdities of the universities that should at once receive a national and universal cleansing. [ref. 4.45]

Outside of Zion, Illinois (discussed in a later chapter), this is the only known modern instance where flat-earthers successfully had conventional astronomy banned from schools.

Despite the nondenominational character of UZS, and the claim of Earth Review to be steadfastly nonsectarian, it is clear that, at least when UZS was at its peak, there was a characteristic zetetic theology. Perhaps it was best articulated by former Seventh-day Adventist Elder Albert Smith. On Sunday morning, May 14, 1893 Smith preached a sermon on "Spoiled Christians" at Monk's Hill Chapel in Lincoln, about fifty miles northeast of his home in Leicester.

In his sermon, Smith spoke fervently about neglected subjects in the Bible, such as Creation, and he quoted 1 Timothy 6:20 regarding "Science, falsely so-called." Smith denounced "false views of Creation and false theories of the Universe, [with which] our great spiritual enemy is subverting the faith once delivered to the saints." He linked salvation to the shape of the earth, saying those deluded by science into losing faith in the Bible would be damned for their apostasy. Indeed, Smith found the spherical cosmogony underlying almost every heresy and unbelief:

[I]f the first chapters of Genesis are wrong, and the earth is a whirling Globe, evolved out of a hot cinder thrown from the sun; and if, as a part of this evolutionary scheme, we have sprung from "Bathybius"—a jelly-fish kind of slimy mud—ascideans, mammals, and monkeys, then the gospel of Jesus Christ is a useless superfluity. If all around us on this so-called "planet" is unlimited "space," and if there be no heaven near and above us, then the resurrection and the ascension of Christ are myths, or allegories, to be explained away, as they are being explained away, by clever "Christian" sophists in harmony with the new astronomical philosophy.

Thus did editor Smith express the angst of a flat-earth spirit lost in a dissonant and immeasurable universe. The cozy and compact zetetic cosmogony was consistent with the Old Testament God who walked in Eden (Genesis 3:8), spoke face-to-face with Moses (Exodus 33:11), and was the friend of Abraham (2 Chronicles 20:7). Zetetics insisted on a highly personal God.

Some other elements of zetetic theology were:

1. Pre-millennialism. Protestants who believe in the millennium (the thousand year earthly Kingdom of God) are divided as to when and how it will occur. During the 19th century, the post-millennial viewpoint dominated in the United States. Calvinist Christians would establish the Kingdom of God here on earth. After a thousand years, Jesus would return and haul them off to Heaven. (Post-millennial Christians therefore do not wait on hilltops for the End of the World.) A minority of 19th century Christians held that Jesus would return first, mop up the universe with their enemies, and then establish the Kingdom of God. This pre-millennial view, dominant among modern fundamentalists, was and is the Adventist view.

2. Imminent End of the World. Pre-millennial Protestants typically expect the Second Advent (the return of Jesus) momentarily. Rowbotham, Hampden, Albert Smith, and several other zetetics we have met in this chapter shared this expectation.

3. Soul sleeping and conditional immortality. Traditional Protestants, including most modern fundamentalists, hold that the saved are translated at death to the endless orgasm of heaven, and the unsaved are eternally damned to fiendish torments. Seventh-day Adventists (and some other sects) deny this, claiming the soul dies with the body. Eventually, all will be resurrected for the Last Judgment. Those found wanting will return to oblivion, while the Saints become immortal. This doctrine, called "soul sleeping," was common among UZS leaders.

4. Seventh Day (Saturday) Sabbath. On this point, most fundamentalists part theological company with the Adventists. Zetetics, however, were strongly biased toward the seventh day Sabbath.

5. Dispensationalism. Dispensationalism holds that God periodically changes the rules; that is, Christians don't build temples and sacrifice animals as prescribed in the Old Testament because those rules applied to a different Dispensation. Flat-earther Ethelbert William Bullinger was a leading Dispensationalist theoretician, though his views are perhaps more influential among modern fundamentalists than they were among his fellow zetetics.

6. Biblical literalism. This, the soul of Adventism and modern fundamentalism, was likewise the soul of zeteticism.

One should not, of course, conclude that 19th century adventism was dominated by flat-earthers. Quite the contrary. Cyrus E. Brooks, editor of the British adventist periodical The Faith, rejected zetetic astronomy and eventually refused to print zetetic letters. His periodical remained a favorite of "Zetetes" and other zetetics, however, and he retained the respect and friendship of many of them.

Nineteenth century adventism and zetetic theology anticipated modern fundamentalism in their crude Bibliolatry. Like modern fundamentalists, the zetetics were broadly anti-intellectual, and they attacked not just astronomy, geology, and biology, but also fields of scholarship including textual criticism of the Bible. It was a Seventh-day Adventist, George McCready Price, who founded modern creationism. While most fundamentalists reject the Seventh Day Sabbath and soul sleeping, they insist upon its creationism.

With its strong religious basis and bias, it is hardly surprising that, outside of its own efforts, the UZS got most of its publicity and sympathy from religious publications. For example, the editor of The Torch, a small, conservative Christian journal, was converted to flat-earthism, and he published an enthusiastic endorsement of Earth Review in the May 1895 issue:

THE EARTH—Not a Globe—REVIEW is deserving of especial notice by Scientists and Astronomers. Its contents are both convincing in evidence and logical in conclusion. The philosophical reader of such a work is brought face to face with proof and deep investigation of all that scientists and theologians have advanced, and with a plausible argument shewing that the earth is not a globe. [ref. 4.46]

Unfortunately, The Torch, like Alexander McInnes's Coming Man, was somewhat less widely read than the Times. (More influential was Ethelbert William Bullinger's journal Things to Come, but Bullinger prudently kept his flat-earth view in the closet.)

The UZS in the late 19th century was the kind of movement zetetics had always wanted. Under its auspices, zetetics worked together toward their common goal of overthrowing conventional astronomy. Their activities gained them recognition (though little respect) from the public press, and they convinced some prominent and influential people to join them.

Scattered endorsements, occasional newspaper notices, and public recognition were not enough. The UZS seemed to have a little bit of everything and not enough of anything. For all the lectures, the agitation, the distribution of leaflets and free copies of Earth Review, the letter writing, the ear bending, and the arm twisting, the UZS had only limited success. Most people wouldn't dance to the "Earth Not a Globe Waltz" and, despite its international distribution, the Earth Review probably never boasted a thousand paying subscribers. After a long struggle under three editors, it folded with the April 1897 issue. Its heterogeneous collection of articles, poetry, letters-to-the-editor, and advertisements are still the best single source on the zetetic movement.

The British zetetic movement was down but not out. Lady Blount would lead it to greater things. But first we should look at what was happening in America and elsewhere across the plane.

Chapter 5
Carpenter and the American Flat-Earth Movement

IN 1879, A 49-YEAR-OLD BRITISH PRINTER, author, spiritualist, vegetarian, and shorthand teacher loaded his wife and six children onto a ship bound for America. William Carpenter had recently run a book shop in Lewisham, a London suburb. The shop specialized in "works on Total Abstinence, Vegetarianism, Mesmerism, Spiritualism, Dietetics, Hydropathy, Phonography, etc." Carpenter also sold Rowbotham's patent medicine, "Birley's Syrup of Free Phosphorus," for ten shillings per Imperial pint (a three-month supply at a teaspoonful morning and night). [ref. 5.1]

After emigrating to America, Carpenter lived briefly on a farm in Dorchester county, Maryland, and then moved to Baltimore early in 1880. [ref. 5.2] Settling there, he first found work as a printer and then opened a shorthand school in his home. Carpenter was, among other things, a teacher of Pitman's shorthand, and an aggressive promoter of the system:

A member of the Phonetic Society, 1848, we have, ever since that time, worked for Mr. Pitman's 'idea' with an enthusiasm equal to our appreciation of it as worked out in the arts of phonography and phonotypy—printing in this latter system with types from his foundry, writing articles in prose and verse for his 'Journal' besides column after column in his favor as against his detractors with other so-called 'systems' run for the mighty dollar alone, lectured, made valuable suggestions which have been carried into effect in his instruction books, and taught hundreds of people to write his phonography by means of a series of over 500 pages of original exercises (now in our possession) embracing more than 87,000 words. [ref. 5.3]

Carpenter lamented Pitman's lack of enthusiasm for zetetic astronomy, but there was nothing he could do about it. "Professor" Carpenter was already famous among American zetetics for his writings and for his involvement in the Bedford Canal controversy, having served as referee for John Hampden at the infamous Bedford Canal Experiment. He quickly became de facto leader of the U.S. flat-earthers.

In 1880, America was running in all directions at once. The era is known as the Gilded Age, from the title of an 1874 novel by Mark Twain and Charles Dudley Warner. Gilding is a process of embellishing cheap material with a minuscule amount of gold, and a cynic might argue that was appropriate. Rutherford B. Hayes was president, having defeated Samuel Tilden in 1876, perhaps because his political operatives were more corrupt than Tilden's, although this cannot be proven. The U.S. Congress was, according to Mark Twain, the best that money could buy. The year before the Carpenter clan arrived at Ellis Island, William Marcy (Boss) Tweed died in New York City's Ludlow Street prison, where he was incarcerated for having engineered the theft of $45,000,000 [note 5.1] (some say $200,000,000) from the city during the years 1858 through 1871.

It was an odd time. The Carpenters were among 2.8 million [ref. 5.4] emigrants who entered the U.S. during the decade 1871 through 1880, most of them from the British Isles or Germany. Spiritualism was still a craze in the face of rising materialism and scientific progress—electromagnetic theory, astronomical spectroscopy, and the periodic table of the elements, for example, were all making great advances. Religion was also in a strange state, with cults and utopias abounding. The greatest theological battle being fought was against Biblical Criticism and Comparative Religion. The doctrine of the Trinity was in decline in mainline churches, yet adventism in various forms was growing rapidly. Robber barons ruled the financial roost, and Jay Gould (who once posted $1,000,000 bond for his confederate, Boss Tweed) controlled 10,000 miles of American railway. In June of 1876, General George Armstrong Custer learned the value of prudence from Chief Sitting Bull. Mark Twain was the hottest item on the literary scene.

The Adventures of Tom Sawyer was published in 1875. In 1879, F. W. Woolworth opened his first five-and-ten cent store in Utica, New York.

In 1880, Baltimore was a city of perhaps 370,000, with more than 10% of the population foreign-born. It was growing very rapidly. The city was firmly in the control of a thoroughly corrupt Democratic political machine.

Flat-earthism was well-established in the U.S. long before Carpenter arrived. The New York Zetetic Society (NYZS) was organized by George Davey, Ph.D., president of the Ocean Express Steam Navigation Company, and it held its first meeting on Thursday, July 17, 1873. [ref. 5.5] The society immediately ordered 1,000 copies of the just-published second edition of Rowbotham's Zetetic Astronomy. "Parallax" was named honorary president, with Davey modestly assuming the role of vice president. The "Council" included George Henry Coulton Salter, U.S. Consul for China; Hans Powell, M.D., Surgeon General of the Grand Army of the Republic; John Nelson McJilton, D.D., Superintendent of the Baltimore Public Schools; and Lemuel P. Crane, M.D.

Elaborate bylaws provided for several classes of membership. Fellows of the NYZS were "chosen on account of their special devotion and discoveries in Zetetic Philosophy … those who have been prominently associated with the Zetetic cause prior to the establishment of this Society." Nonresident membership was available to those living more than 25 miles from New York City. There was even a class of Ex-officio members, "foreign diplomatic representatives and consuls, resident in the United States, and United States diplomatic representatives and consuls in foreign countries." (This provision apparently honored U.S. Consul Salter.)

Baltimore Public School Superintendent John Nelson McJilton was 68 years old when the NYZS was formed and he was appointed to its Council. A prominent clergyman and educator, Reverend McJilton also had a distinguished literary career behind him. In the 1830's, he had briefly edited two weeklies devoted to science, literature, and the fine arts, the Baltimore Athenaeum (a "young men's paper") and the Baltimore Literary Monument. In 1840, he published a 360-page book, Poems, and he also wrote The Maryland Primary Arithmetic for use in grade schools. He was frequently asked to address educational associations or give guest sermons in Baltimore churches, and many of his addresses and sermons were published. His personal library contained many scarce works on freemasonry.

Another educator on the NYZS Council was John Hecker of New York. Hecker was a Christian phrenologist bent on applying phrenological principles to education. He published several works on phrenology and education in the 1860's, the most important being The Scientific Basis of Education Demonstrated, by an Analysis of the Temperaments and of Phrenological Facts, in Connection with Mental Phenomena and the Office of the Holy Spirit in the Processes of the Mind: In a Series of Letters to the Department of Public Instruction in the City of New York (1866). This work went through three editions, each larger than its predecessor, and in 1868 it was translated into German. Hecker himself visited several primary schools in New York City to analyse the temperaments of students phrenologically.

Hecker was also the proprietor of a religious newspaper, the Churchman, which in 1855–7 was involved in a public quarrel with another New York paper, the Church Journal. It seems that Hecker had published an attack on a local clergyman called Dr. Eigenbrodt. The editor of the Church Journal, Rev. John H. Hopkins, came to Eigenbrodt's defense with an article stating that Hecker's allegations were not to be relied on, that the Churchman had deteriorated since he took it over, and that he wasn't fit to run a newspaper. Hecker thereupon sued Hopkins for libel in the New York Common Pleas court. The jury awarded him six cents. [ref. 5.6] In 1865, Hecker ran for mayor of New York on behalf of the Citizens Association. He came third out of four candidates, with about an eighth of the vote [ref. 5.7]

NYZS vice-president George Davey was apparently a skillful promoter. Besides recruiting prominent people to the NYZS, he knew how to generate publicity. For example, when the NYZS was organized, Philadelphian John Wise was seeking financial support for a trans-Atlantic balloon flight. Between the zetetic fascination with balloon flight and publicity potential, it was too good a chance to pass up. The New York Zetetic Society offered to support Wise in a letter to the editor of the New York Daily Graphic dated June 25, 1873:

The Zetetic Society desire to have their name put down for $100 toward the subscription for Professor Wise's aeronautical expedition, conditionally that copies of the observations and results in detail of the voyage be sent to this society, who is prepared, upon further and satisfactory explanation from Professor Wise himself, to render him further assistance under the provision of the corporate act and by-laws of the society, empowering it to make grants of money for scientific expeditions of a useful character.

George Davey
Vice President, Zetetic Society

John Wise was not an obscure crackpot. America's most famous 19th century aeronaut, he made 440 balloon ascents between 1835 and 1875. His most famous flight took place in 1859, when a favorable wind carried him from St. Louis, Missouri to Henderson, New York, in 20 hours. Henderson lies 56 miles north of Syracuse, near the eastern tip of Lake Ontario, a world-record 809 miles from St. Louis. [ref. 5.8] Wise was nothing if not intrepid. On one flight, an updraft associated with a thunderstorm caught him and carried him up to 13,000 feet, whereupon the balloon burst. The lower part of the balloon collapsed into the upper part forming an ersatz parachute, and Wise landed without serious injury! [ref. 5.9] Now, he was convinced that he could cross the Atlantic in a balloon, riding the prevailing winds.

It's not known whether Wise accepted the NYZS offer and conditions. In any case, after numerous attempts to find sufficient backing, he finally got a consortium together, and he fought with them endlessly, whoever they were. Eventually he constructed a 400,000 cubic foot balloon and lifted off from New York in late 1873. Unfortunately, his trans-Atlantic balloon splashed down 41 miles from the lift-off point and about 3,400 miles short of London. Wise's enthusiasm for over-water ballooning was undampened; two years later, he and two companions drowned attempting a flight across Lake Michigan. [ref. 5.10]

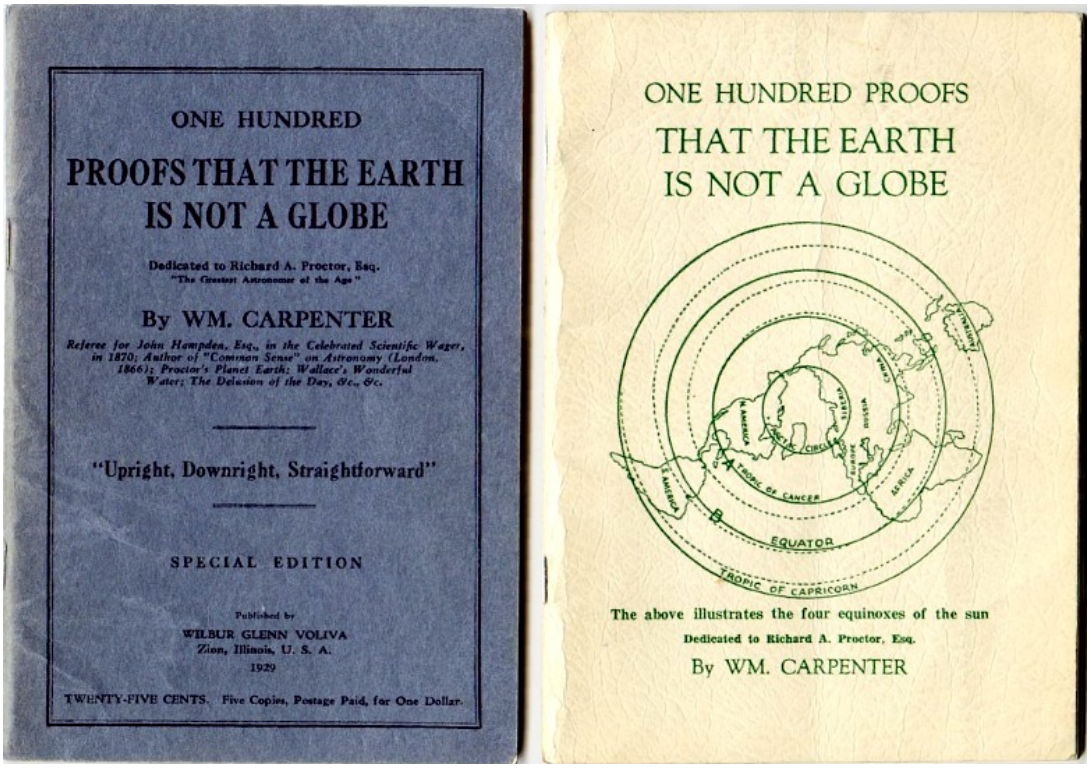
The NYZS made another splash when Davey publicly offered to contribute $10,000 to charity if anyone could prove "by direct evidence and experiment" that the motion of the earth's atmosphere is due to its rotation. The offer, made in the New York Daily Graphic on September 3, 1873, was never taken up.

For all its seeming horsepower, the NYZS quickly passed into oblivion. McJilton died in 1875. Perhaps others died or lost interest. For whatever reason, the NYZS rapidly faded from view. By the time Carpenter reached America, no organized flat-earth movement existed in the U.S., though numerous individuals were active.

In 1885, Carpenter sent copies of the first edition of One Hundred Proofs that the Earth Is Not a Globe, with cover letters, to Proctor, the Smithsonian, Gilman of Johns Hopkins, and everyone else he could think of. He also placed the following ad in several newspapers:

WANTED—A scholar of ripe attainments to review Carpenter's "One Hundred Proofs that the Earth is Not a Globe." Liberal remuneration offered. Apply to Wm. Carpenter, 71 Chew Street, Baltimore. N.B.—No one need apply who has not courage enough to append his name to the Review for publication.

Apparently, he never got a taker, though he got at least one inquiry about the offer. One Hundred Proofs was widely reviewed in the American press. [ref. 5.11]



Reprints of Carpenter's pamphlet One Hundred Proofs that the Earth is Not a Globe. Left: Zion, Illinois, 1929; right: St. Petersburg, Florida, 1955.

Ten years before Carpenter published his One Hundred Proofs, Johns Hopkins University was founded with a huge endowment from the will of Johns Hopkins, a Baltimore merchant. Daniel C. Gilman was its first president, and Carpenter appointed himself Gilman's nemesis. Carpenter repeatedly published open letters challenging Gilman to defend the rotundity of the earth. When Gilman resolutely ignored him, Carpenter took to passing out flat-earth literature at Johns Hopkins, and he was once evicted by a janitor. [ref. 5.12]

The immediate cause of the bringing out (into the street) of the faculty of the 'Johns Hopkins' represented in the person of their obedient janitor, was, the distribution, by the author, of several dozen copies of his '100 Proofs.' The rustle of the leaves of these books in the grand building must have been terrific, judging by the sequel. The author was anxious to renew the assault, with his books, the day following: but, there, on the rampart, (a constable from the police force dutifully "on the watch" near by), stood the janitor—his voice husky with emotion, yet profoundly sublime in the exercise of his temporary authority—and gave vent to the subjoined breath-taking, awe-inspiring words:—'We don't want any of that trash here; and if you don't move on from these street corners you'll be arrested; I've cautioned you times enough.' The besieging army of one beat a retreat with measured steps and slow—cogitating, the while, with regard to the magnanimity that prompted the sending out of the janitor to execute a mission of such immense philosophical importance.

Carpenter also challenged many other prominent people to debate him on the shape of the earth, including Cardinal Gibbons, astronomer Prof. Simon Newcomb, and the Rev. T. DeWitt Talmadge, then one of America's most famous clergymen. When they refused, he denounced them in open letters. [ref. 5.13]

Alfred Russel Wallace got no peace from Carpenter, even after the latter moved to America. When Wallace made an American tour, Carpenter wrote the following letter to the editor of the Baltimore Weekly, November 20, 1886:

Sir: Never in the history of the world was there a better chance for the people of a city to inquire for the truth of a matter than that which will soon be given to the truth-seekers of Baltimore. Mr. Alfred Russel Wallace, the coadjutor of Darwin, is about to deliver a course of lectures at the Peabody Institute. From his own lips, then, we may hear how it was that, on the First of April, 1870, he dared to accept, from the hands of Mr. J. H. Walsh, the sum of One Thousand Pounds sterling for "proving" the surface of standing water to be "convex," when, scores of times, it has been shown to be level.

But, sir, since the proverbial politeness of the people of Baltimore would prevent them from approaching a lecturer on a public platform with questions irrelevant to the matter in hand, I will, with your permission, put the case before Mr. Wallace, through the columns of your paper, and leave it to his own sense of the fitness of things as to whether he will grant the explanation required, or, turn his back to the people of Baltimore without doing so.

The preceding is less than a fourth of the letter, which is almost a mini-pamphlet.

Carpenter claimed he had disposed of nearly 12,000 copies of One Hundred Proofs in New York, Pennsylvania, Maryland, and elsewhere, and had spoken to "at least a hundred thousand people." [ref. 5.14] (He must have been giving a lot of lectures.) On August 16, 1889, Carpenter gave an invited lecture at St. Peter's Lutheran Church in Baltimore.

Carpenter got into a tiff with Wilford Hall, editor of Scientific Arena. Hall was a 19th century Jeremy Rifkin—a combination mystic, crank, and gadfly. Hall claimed he demolished the flat earth, but he apparently refused to print Carpenter's replies to his arguments—after he apparently promised that he would. Carpenter explains all in a little magazine, Carpenter's Folly.

Carpenter was in touch with the leading flat-earthers of his day, not just in England, but in the U.S. also. He mentions Lindgren and Rowe, and he knew the Reverend John Jasper. A former slave, John Jasper was well known in the mid-Atlantic states for his favorite sermon, "De Sun Do Move," and he and Carpenter apparently hit it off immediately.

M. C. Flanders lived in Kendall, New York, a village 3 miles south of Lake Ontario and 25 miles west-northwest of Rochester. In February of 1883, after several years of study, Flanders went to the newspaper office in nearby Holley and ordered posters advertising a series of lectures. The posters were headlined as follows:

Earth Not a Globe. An experimental inquiry into the true figure of the earth, proving it a plain, without orbital or axial motion, and the only known material world … [ref. 5.15]

By some coincidence, these are the first 29 words of the complete title of Rowbotham's second edition of Earth Not a Globe, except that "plain" is substituted for "plane." By another coincidence, Flanders proposed to deliver his course of three lectures under the pseudonym of "Parallax"! He also left behind a copy of a wretched 40-line poem by "Parallax," which the Holley Standard then published, perhaps out of malice. [ref. 5.16] It's not known if Flanders had a stock of Rowbotham's books to sell!

Flanders must have had some success with his flat-earth lectures, for he managed to stir up opposition. In March of 1887, he debated two spherical advocates for three nights at Ward's Opera House in Brockport, New York. Hampden described the result in Earth; Scripturally, Rationally, and Practically Described as follows:

Mr. L. H. Rowe, of Mandarin, Florida, a most energetic champion of the Zetetic philosophy in its relation to the earth's form—proving it to be a Plane, without axial or orbital motion—forwarded to several newspapers, soon after the event in March last, the result of a three night's Discussion on the rival systems of Astronomy which took place in Ward's Opera House, Brockport, N. Y., between Prof. C. H. Jenner, assisted by Mr. Edward Barnes, who defended the Newtonian theory, and Prof. M. C. Flanders, of Kendall, who defended Zetetic Philosophy. We are proud to chronicle the fact, by quoting from Mr. Rowe's article in the Lisbon Observer, that a committee of five gentlemen who were chosen to decide the question at issue ruled, unanimously, in favour of the Zetetic Philosophy.

The names of the gentlemen, who had the manliness to sign their names to the report which was drawn up and published in the Brockport Democrat are as follow [sic]:—Rev. M. H. Brown of Jefferson County; Rev. A. C. Place, of Oswego; A. J. Ferguson, of Kendall; F. H. Britt and W. H. Brown, of Ridgeway.

The report states clearly and emphatically that these gentlemen considered the balance of the evidence to be in favour of the fact that the earth is "a plane, spread out around the central north, which is located under the north star," and that "this plane has for its south a circumference and not a pole, and that the earth has neither axial nor orbital motion." [ref. 5.17]

So far as I can determine, the Brockport Democrat for this period is not extant. In 1894, Flanders was still lecturing against modern astronomy, illustrating his ideas with some sort of apparatus. [ref. 5.18]

In the U.S. as in England, there was an Adventist connection, and this was already manifesting itself in Boston in Carpenter's time.

The publishers of 'Advent Christian' works, Boston, conclude that, as some of their people are in favour of the 'Proofs,' and some are not, 'it would be best not to sell any of them.' If there is any danger of the people of Boston getting to loggerheads over the book, keep it away. [ref. 5.19]

The Advent Christian Publishing Society was an arm of the Adventist Christian Church, a sect headquartered in Worcester, Massachusetts. It differed from the Seventh-day Adventists on the Saturday Sabbath, the doctrine of the heavenly sanctuary, and on the state of the dead, which it holds to be unconscious. The Advent Christian Church held that souls are mortal, and immortality is only conferred after the resurrection. [ref. 5.20]

Miles Grant, an Adventist apparently associated with this group, was born at Toffingford, Litchfield County, Connecticut on December 13, 1819. Twenty-three years later, he was teaching school in Winsted, Connecticut and a "relative infidel." Then he attended some lectures on the prophecies of John and Daniel which changed his life. Grant remained in Winsted until 1850, when he felt called to become an evangelist. In 1855, he became pastor of a church in Boston and editor of World's Crisis. For years he was president of the American Advent Mission Society, headquartered in Boston.

Grant remained in Boston for three years. In 1858, he became a full time evangelist, and he preached in 20 of the United States and also in Canada, Great Britain, Ireland, and Italy. His studies convinced him that the "Day of the Lord" was definitely near. Grant believed in Conditional Mortality and the Premillennial Advent. He was an excellent debater. "As an exposer of Spiritualism he has done splendid service in America—where that system is so powerful and widespread—and has had some strange experiences in his conflicts with demon-possessed mediums, both men and women."

Grant married a kindred spirit and lived in Boston. He habitually arose at 4:30 a.m. A vegetarian since about 1851, he professed to eat (1) only healthful food, (2) only in healthful quantity, (3)

in a healthful manner (much mastication and salivation), and (4) at a healthful time. The latter meant two meals a day, one at 8:00 a.m. and the other at 2:30 p.m. His fare consisted of unleavened wheat bread, milk and apples, with a small amount of nuts and dates for dessert. [ref. 5.21]

The Advent Christian Publishing Society published Grant's discussion of conditional mortality (c. 1890) and his Papal Mysteries (c. 1890). Grant rejected the Saturday Sabbath, and he was a flat-earther and ardent antispiritualist. A prolific writer, Grant published works on spiritualism and immortality, the Sabbath question, Papal Dangers, the soul, Spiritualism Unmasked, and conditional mortality. His Discussion on the Sabbath Question with Elder M. E. Cornell was published in Battle Creek by the Seventh-day Adventist Publishing Association.

Grant's most influential work was Spiritualism Unveiled and Shown to Be the Work of Demons, published in Boston in 1866, while Grant was editing the World's Crisis. Modern spiritualism had begun in New York 17 years previously, when the Fox sisters suddenly began generating spirit rappings. Spiritualism evolved and spread rapidly, and many churchmen became alarmed. Mediums claimed to summon the souls of the dead to their séances, but according to Adventist doctrine, the dead are dead and not summonable. Was spiritualism then an outright fraud, as skeptics claimed? Grant didn't think so. He argued that, while angels do not have bodies like ours, they can look like us, and the Bible describes several cases of angels appearing among men and not being recognized as angels. He therefore concluded that the entities appearing at séances were angels—fallen angels.

Spiritualism was therefore unmasked as part of Satan's plot to take over the world. Grant thought he had identified a key part of Satan's plan:

The Political aspect of Spiritualism is an important item. It is very evident that for some years the demons have been laying plans to control the governments of this world through their mediums. For this reason, they have taken special pains to get the leading men in the world to embrace Spiritualism; and their success has been wonderful. [ref. 5.22]

Wonderful, indeed. It was known that Lincoln and his wife held séances in the White House. Numerous prominent politicians were known to be interested in (and influenced by) spiritualism. Between Satan and the politicians, Grant's work rang bells among Adventists, and his ideas and arguments live on in fundamentalist writings.

Grant first appears in the flat-earth scene as a correspondent in the Earth Review.

All known facts declare that we live on a flat earth. I am fully settled in this belief. The signs of the times are emphatic in their testimony that Jesus will soon return. [ref. 5.23]

Grant seems to have been affiliated with the Conditional Immortality Mission of Malvern, England, which was affiliated with the periodical The Faith. In Zetetic Astronomy by Blount and Smith, Grant is listed as a member of the "Committee" of the Universal Zetetic Society. He is not mentioned in Carpenter's extant works, though they were contemporaries and had to know of each other. This is not surprising. Carpenter was an ardent spiritualist; Grant was an equally ardent antispiritualist. The two men presumably would not have gotten along.

The flat-earth movement was not without Adventist critics, however. George W. Bailey, who seems to have been a member of the Advent Christian Church, wrote a strange and mean-spirited rebuttal to zeteticism. A resident of Worcester, Massachusetts, Bailey self-published a 16-page pamphlet entitled An Examination of a Work Entitled "Earth Not a Globe," Showing Its Arguments to Be Both Misleading and Fallacious in 1886.

Worcester is situated on the Blackstone River, 44 miles west of Boston. A manufacturing town of about 100,000, Worcester and its environs had produced numerous manufacturing luminaries: Elias Howe, inventor of the sewing machine; Eli Whitney, inventor of the cotton gin; and Thomas Blanchard, inventor of a lathe for turning irregular forms. Politically, Worcester was relatively liberal; an 1854 attempt to enforce the Fugitive Slave Law spawned a serious riot. Culturally, it was the home of several institutions of higher learning and a fine city library founded in 1859. Bailey himself seems to have been a machinist. [ref. 5.24]

Bailey's Examination is misguided and often wrong-headed. He had examined the 1881 printing of Rowbotham's Earth Not a Globe, and he opened his pamphlet by blasting Rowbotham's geometrical calculations of the curvature of the earth. Unfortunately, Rowbotham understood geometry better than his critic. [ref. 5.25] Score: Rowbotham 1, Bailey zip. Bailey then turned to an examination of Rowbotham's drawings. As is standard practice, Rowbotham's illustrator had exaggerated the scale to better show curvature, which Bailey denounced. "I cannot find a diagram in the book that is not a misrepresentation," [ref. 5.26] he wrote. Nonsense! Rowbotham 2, Bailey zip.

The first half of Bailey's pamphlet is mostly misunderstandings and/or quibbles. Eventually, he located some genuine errors by Rowbotham, and he cogently criticized Rowbotham's version of the law of perspective. His best sallies were attacks on zetetic predictions of the motion and visibility of the sun, some of them based on his own observation.

On the day of the vernal equinox, for instance, Bailey observed the sun setting on a bearing of 270° 45′. But plotting out the sun's position on the zetetic map of the world at 6:00 p.m. local time, it should have been on a bearing of about 298°. [ref. 5.27] This inconsistency seems impossible to reconcile with zetetic astronomy. Citing one of Rowbotham's figures, Bailey showed that it implies less than four hours of daylight at 65° south latitude on the December solstice; in fact, daylight lasts about twenty hours. [ref. 5.28] In any case, if the sun is 600 miles up, as Rowbotham suggested, then it should never be out of sight. [ref. 5.29] Bailey gives some examples comparing zetetic calculations to actual observations.

Bailey was obviously familiar with the Bible. In criticizing a Rowbotham attempt to make some data fit zetetic astronomy, he referred to Isaiah 28:20. It reads (KJV): "For the bed is shorter than that a man can stretch himself on it: and the covering narrower than that he can wrap himself in it." [ref. 5.30]

Bailey also wrote some nasty letters to Carpenter in which he called him an "ass" and "a dirty blackguard" among other things. Carpenter says that Bailey's work was "praised very warmly by the weekly organ of the Christian sect of which he is a 'brother.'"

W. M. Herd, Battle Creek, Michigan, published what Carpenter called "a neat and truly excellent little pamphlet" entitled Terra Firma sometime before 1892. It apparently has not survived, but the second issue of Earth Review carried a short letter from an "American friend" from Battle Creek, Michigan, who signed himself "Terra Firma." The text follows:

Dear Sir,—I have read with interest the first number of your Journal, and think it "fills the bill," the best of anything yet published. The preponderance [sic] of evidence is certainly in favor of the position you take, namely, that "the earth is established, that it cannot be moved," and that whatever the Creator says in His Word about His Created Universe, whether Sun, Moon, or Stars, Heaven, Earth or Sea, must be true, and is true; whether anyone believes it or no. I congratulate you on the appearance, and "get up" of the Earth Review, as upon the true value of its contents, and I trust it will meet with the success it deserves.

Yours truly,
TERRA FIRMA

The editor comments, “We welcome this letter from our American correspondent, who has written a good pamphlet on the subject for our Seventh Day Adventist friends over there.” [ref. 5.31]

Herd held the common opinion among flat-earthers regarding the origin of the globular idea: “Satan, the father of lies, has reduced the art of deception to a science, and he is at the bottom of the globular theory, which he has provided with hooks and eyes that fit in marvellously with some phenomena.” [ref. 5.32]

Herd eventually broke off correspondence with Carpenter as follows:

Sir:—-Your letter of 27th ult. [June 1892?] rec’d Friday, and contents noted. I had hoped that you would receive the light of Bible Truth in regard to Spiritualism as well as other “systems of error.” As you are so infatuated with it, I must decline to have any further correspondence with you. Therefore you must not expect my co- operation in any way, either in advertising, or exchanging, your “O.H.P.” **… Yours faithfully, to rebuke and warn, W. M. Herd**

The Adventist theologian Uriah Smith, who was a friend of Herd’s, was also dead set against spiritualism. While he professed to know about the End of the World, he wouldn’t hear about the flat earth, and Herd eventually despaired of converting him.

Writing apparently in 1892, Carpenter said in the notes to One Hundred Proofs:

A Christian minister was excommunicated from the society of the Seventh Day Adventists of London, England, only recently, for upholding the Bible-Earth. But he was one of the best workers for the truth. (There must have been a big storm in that teapot!) Every truth-lover should send over a dollar to this gentleman for a bundle of his books. Address, Mr. Albert Smith—don’t put ‘Rev.’—150 St. Saviour’s Road, Leicester, England.”

The most important Seventh-day Adventist flat-earther was civil engineer Alexander Gleason, of Buffalo, New York. In 1890, Gleason published the first edition of Is the Bible from Heaven? Is the Earth a Globe?. A soft cover book of 95 pages, it is divided into two sections as indicated by its title. In 1892, Gleason published a beautiful four-colour flat-earth map and, in 1893, a 402-page second edition of his book. The latter contains many of the standard flat-earth arguments and also the results of his experiments on the waters of the Erie Canal. Needless to say, Gleason’s experiments convinced him that the water was flat.

Meanwhile, Carpenter was getting the Baltimore zetetics organized:

The ‘Baltimore Zetetic Society, with members all over the world’ is quietly moving onwards. It was organized October 22, 1891, at the residence of the author of this pamphlet, which, it may be noted, is, and for some months has been, 1316 North Central Avenue, Baltimore, Maryland.

Andy Echols was a flat-earther from Mexia, TX, about 42 miles east of Waco. Carpenter called him “a hard worker in the zetetic ranks … happier than a king in spreading the truth. We can scarcely keep him going with papers and pamphlets—anything with the flat-earth rustle in its leaves. He thinks much as we think, and expresses himself as freely: avowing that modern astronomical theory is ‘a disgrace to the human mind.’” [ref. 5.33]

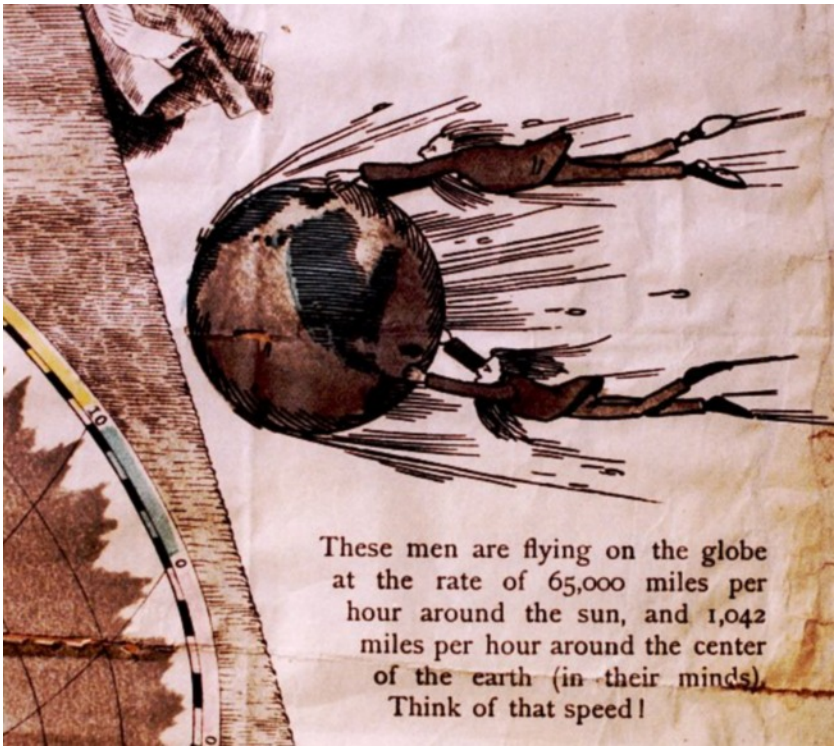
R. E. L. (possibly R. E. L. J.) Lovell was a flat earther from Vadis, West Virginia, a small village in Lewis County, 12 miles due west of Weston, about 100 miles south (and a little west) of Pittsburgh. Alexander Gleason frequently referred to Lovell in his 1893 edition, and Lovell wrote a short section for the book. He was obviously well-versed in flat-earthism, and he may have been another Seventh-day Adventist.

In Brooklyn, John Lindgren took up where the New York Zetetic Society left off. Carpenter and Lindgren were U.S. agents for Earth Review, and so was an Allegheny, Pennsylvania shorthand teacher and preacher, Reverend Ulysses G. Morrow.

Morrow is a major player. He was first active in Allegheny, Pennsylvania, about the same time that Charles Taze Russell was founding Jehovah's Witnesses there. In 1895, Morrow horrified his fellow zetetics by defecting to the Koreshans, who claimed that the earth is hollow and we live on the inside.

Charles L. Hathaway was a flat-earther active in the Boston area late in the 19th century. Hathaway apparently travelled and gave flat-earth lectures, and his opinions on the earth's shape were published in the Boston Post on February 12, 1899. According to Morse, "his argument and diagrams occupied about one side of the paper, and I claim his argument is unanswerable."

Orlando Ferguson is something of an enigma, a shadowy figure whose name pops up mysteriously and repeatedly in flat-earth annals. By 1896 he had published at least two pamphlets, The Latest Discoveries in Astronomy and The Square World. "Iconoclast" sent copies of both works to the editor of Earth Review, who chided the author for pillaging Rowbotham, Hampden, Lady Blount, and so forth without attribution. [ref. 5.34] Unfortunately, Ferguson's writings seem to have perished, but his "Map of the Square and Stationary Earth" (1893) survives and has been reprinted.



Detail from Orlando Ferguson's flat-earth map.

Carpenter was one of the U.S. agents for the Universal Zetetic Society, and the pages of the Earth—Not a Globe—Review bear numerous letters and articles from him. Indeed, the Earth Review contains letters to the editor from flat-earthers scattered throughout the U.S. From 1893–94, the initial years of Earth Review, Carpenter edited a little magazine called Shorthand. [ref. 5.35]

Carpenter suffered several strokes in 1896, the final one occurring on the last Sunday in August. He died the following Tuesday, September 1, 1896. His wife Annie died barely two months later, on November 4, 1896. [ref. 5.36]

The flat-earth movement had a wide base in North America by the turn of the century.

Chapter 6
Elsewhere Across the Plane

Paul Kruger was a passionate Anglophobe.

EIGHTY-ODD YEARS AFTER HIS DEATH, STEPHANUS JOHANNES PAULUS KRUGER is best known outside his native South Africa as the namesake of the gold Krugerrand. Paul Kruger was once known as founder of the South African Republic. He came from Huguenot stock on both sides of his family, and he was a member of the puritanical Dopper sect of Calvinists. About the only thing he ever read was the Bible, and he was especially fond of the Old Testament. Kruger considered himself divinely guided. Tolerance played little role in his scheme of things. When a deputation of Uitlanders (English-speaking settlers) called on him to request legal status for the English language in Transvaal, Kruger refused: "This is my country; these are my laws. Those who do not like to obey my laws can leave my country."

Personally, Kruger was one tough customer. In his youth, he was an avid big game hunter. On one occasion, he fired both barrels of a double rifle at a rhino. The second barrel burst, mutilating his left thumb. The rhino, also wounded, and greatly offended, gave chase, and Kruger barely managed to mount his horse and escape. The shattered thumb infected, and Kruger finally amputated it with his pocketknife.

Kruger took part in his first military campaign against the native Africans at age 13. By 21, he was a veteran fighting man, and at 27 he commanded an expedition against the rebellious Bechuana chief Sechele. Kruger never lost a drop of blood in any military campaign, though on one occasion his coat was punctured by several bullets. He considered this evidence of protection from on high.

Among other things, Kruger was an unrepentant flat-earther. In his autobiography, he tells how, on a voyage to England, he overheard the captain and some others discussing modern astronomy. Finally, he couldn't take it anymore. "If what you gentlemen are saying is true, I might as well throw my Bible overboard." [The quote might not be verbatim.]

Late in the 19th century, the retired sea captain Joshua Slocum sailed the 37 foot yacht Spray around the world single-handed, the first time it was ever done. During his around the world trip he docked at Durban, South Africa. Durban is a seaport on the eastern coast of South Africa, 6810 sea miles from London round the Cape, or 7785 via the then-new Suez Canal. Situated at about latitude 30° South, [note 6.1] its climate is moderate, with the average temperature 70 degrees and average annual rainfall just over 40 inches. Despite considerable dredging, the narrow entrance to its harbor in the Bay of Natal remained partially obstructed by a huge sandbar, but it was still the only good port between East London and Delagoa Bay. Gold and diamond discoveries inland magnified Durban's importance, and it was then the third largest city in South Africa with 60,000 population, roughly half white, a fourth black, and a fourth Asiatic (mostly Indian). A proud colonial city, Durban boasted a fine botanical garden and a post office with a 164-foot clock tower. Public transportation consisted of electric trams ("light rail" to modern urban planners) and rickshaws pulled by Zulus.

Durban also boasted a contingent of flat-earthers. In his book Sailing Alone Around the World, Slocum describes a visit from some zetetic philosophers when he docked at Durban late in 1897.

It sounds odd to hear scholars and statesmen say the world is flat; but it is a fact that three Boers favoured by the opinion of President Kruger prepared a work to support that contention. While I was at Durban they came from Pretoria to obtain data from me, and they seemed annoyed when I told them they could not prove it by my experience. With the advice to call up some ghost from the dark ages for research, I went ashore, and left these three wise men poring over the

Spray's track on a chart of the world, which, however, proved nothing to them, for it was on Mercator's projection, and behold, it was "flat." The next morning I met one of the party in a clergyman's garb, carrying a large Bible, not different from the one I had read. He tackled me, saying, "If you respect the Word of God, you must admit that the world is flat." "If the Word of God stands on a flat world—" I began. "What!" cried he, losing himself in a passion, and making as if he would run me through with an assagai. [note 6.2] "What!" he shouted in astonishment and rage, while I jumped aside to dodge the imaginary weapon. Had this good but misguided fanatic been armed with a real weapon, the crew of the Spray would have died a martyr there and then. The next day, seeing him across the street, I bowed and made curves with my hands. He responded with a level, swimming movement of his hands, meaning "the world is flat." A pamphlet by these Transvaal geographers, made up of arguments from sources high and low to prove their theory, was mailed to me before I sailed from Africa on my last stretch around the globe. [ref. 6.1]

Later, Slocum visited Pretoria and was introduced to president Kruger. The visit was not entirely smooth.

His Excellency received me cordially enough; but my friend Judge Beyers, the gentleman who presented me, by mentioning that I was on a voyage around the world, unwittingly gave offense to the venerable statesman, which we both regretted deeply. Mr. Kruger corrected the judge rather sharply, reminding him that the world is flat. "You don't mean round the world," said the president; "it is impossible! You mean in the world. Impossible!" he said, "impossible!" and not another word did he utter either to the judge or to me. The judge looked at me and I looked at the judge, who should have known his ground, so to speak, and Mr. Kruger glowered at us both. My friend the judge seemed embarrassed, but I was delighted; the incident pleased me more than anything else that could have happened. [ref. 6.2]

As it happens, another zetetic philosopher, Thomas Winship, visited Slocum and recorded his own version of the events aboard the Spray:

In December, 1897, I met Captain Slocum on board the "Spray." This navigator told me that he had sailed his little craft 33,000 miles by plane sailing. Rather a LONG voyage, it must be admitted. A PLANE or LEVEL SURFACE for 33,000 miles, and yet the world a globe? To the pre-historic "man of science" at the North Pole, and the Darwinian Ape at the South Pole (?) of the astronomer's imaginary globe, with such a delusion. [ref. 6.3]

Thomas Winship was a well-known accountant in Durban. Born at Newcastle-on-Tyne in September, 1860, he emigrated to South Africa at the age of 21. He was well-known in Durban yachting circles and was once wrecked in his yacht off Port Shepstone, a Durban tug having to go to his rescue. Winship went first to Capetown, and then settled in Durban with his family in 1897. Winship died at his Durban residence after a short illness on July 30, 1942, at the age of 82. He was survived by his daughters, Miss Louisa Winship, Mrs. Anna Edith Sparks and Mrs. Dorothy Amelia Lutkens, and sons Mr. Harry Winship and Mr. Albert Winship. His wife, Amelia Hester Winship, had died three years previously. [ref. 6.4]

In March 1893, Winship was aboard the USS Trojan, on a voyage which took him near St. Helena. In May 1895, Winship was a passenger on the USS Goth and gave a lecture in Algoa Bay. [ref. 6.5] In March 1897, Winship sailed from Capetown to England on an unnamed ship. [ref. 6.6] He wrote, "On a steamer in March, 1897, when near St. Helena my attention was called to a large vessel. … Between Teneriffe and Southampton we sighted a large four-masted steamer astern of us." [ref. 6.7]

It is a bit odd that during its great flowering in the 1890's, the British flat-earth movement produced not a single book. Winship remedied that by producing two. In the preface to the second edition of Zetetic Cosmogony, Winship wrote:

Many have been enabled to see through the delusions of modern astronomy. Letters from various parts testify that, in some cases, men and women have begun to make use of their brain-power, which had been stunted and dwarfed by the acceptation, without the slightest proof, of the unscientific, unreasonable, unnatural, and infidel teachings of men foisted upon a credulous public in the name of "Science." [ref. 6.8]

The preface is dated November 1899.

Write down all the swindles that ever were perpetrated; name all the hoaxes you ever heard of or read about; include all the impostures and bubbles ever exposed; make a list of all the snares that popular credulity could ever be exposed to, and you will fail in getting within sight or hearing of an imposture so gross, a hoax so ingenious, or a bubble of such gigantic proportions as has been perpetrated and forced upon unthinking multitudes in the name of science, and as proved incontrovertible fact, by the expounders of modern astronomy. [ref. 6.9]

Winship quoted extensively from Earth Review.

There was a substantial flat-earth contingent in New Zealand by 1892, and they were apparently having some success. Several of them were in correspondence with William Carpenter, who wrote:

From New Zealand, we learn, from three correspondents, that our principles are gaining ground despite the fact of a little difficulty existing which would seem to throw a doubt in the way of Prof. Proctor's admission that the motions of the heavenly bodies may all be explained on a flat-earth basis. Anyway, if demonstrable facts turn out to be old wives' fancies, and God's truths mere fables, then are we in a worse condition than the Apes of Darwin's creation: for whereas they had the full play of their instincts, we should have been making fools of ourselves with what we call "reason." Once show the possibility of such a state of affairs and man has nothing left! But our New Zealand friends have sense enough to keep them in the path of reason. [ref. 6.10]

Presumably, Carpenter's three correspondents were Dines, Revell, and Runciman. The Kiwis must have already been grappling with the motion of the southern stars.

J. T. B. Dines was the UZS agent in New Zealand. W. M. Runciman delivered flat-earth lectures in New Plymouth (and presumably other cities) in New Zealand. Runciman was also New Plymouth agent for Earth Review.

In 1892, J. T. B. Dines, Joseph King, and W. M. Runciman took a voyage together which proved (to them, at least) that the earth is flat. They apparently reached Australia safely, but it's not clear how that proves the earth flat. [ref. 6.11]

J. T. B. Dines, Russell-street, Arch Hill, Auckland, N.Z., was named an agent for Earth Review in the April 1893 issue (p. iii). He continued in that capacity through the last issue, dated April–June 1897. In the notes to One Hundred Proofs, p. 79, Carpenter wrote, "From New Zealand, again, we have received of Mr. T. B. Dines, Auckland, from week to week, copies of the 'Observer,' in which paper he has been ably defending the Zetetic cause against Newton's sharp-shooters." This note dates to late 1892.

George Revell of Auckland, New Zealand, has a letter on p. 12 of the January 1893 issue of Earth Review asking for literature and information on "the absurdity of atmospheric pressure." He also has another letter on p. 13, so obviously the Kiwis were already in active contact with the UZS. In the July 1893 issue, he had another letter on p. 15.

Revell has two letters to Albert Smith on p. 14th of the October 1893 Earth Review. The first refers to Smith's health, which is not good, and also says, "I hope the S.D.A. Church in England will make you some restitution, eventually, for what you have suffered for the truth of God's creation." In the second, Revell reaffirms the motions of the southern stars.

Revell has a letter in the May 1894 Earth Review, p. 161, in which he says there is no mistake about his remarks regarding stars in southern hemisphere. The lowest position of the Southern Cross is 180 degrees out from the highest position. It seems to invert.

William Runciman, a Zetetic of New Plymouth, New Zealand, is mentioned in a letter from Caldwell Harpur on p. 13 of the January 1893 Earth Review. Harpur had been corresponding with Runciman about the nonsetting Southern Cross.

Earth Review, January 1894, p. 114, has a letter from William Runciman, Justice of the Peace: "I enclose you a cutting from our daily paper of Sept. 22nd, 1893, and a few pamphlets to shew you what I have been doing—my lecture was delivered before the Mutual Improvement Class of this town—and although it was the last night of the session, it is admitted on all hands to have been the best; there was [sic] nearly 200 persons present." Runciman spoke for 2½ hours, and then published a challenge seeking someone to debate him. There were no takers. The text of the article (or part of it) is reprinted on p. 118, where the article is credited to the New Plymouth Daily Paper. (According to Keith Lockett, late editor of the New Zealand Skeptic, this paper was the Taranaki Herald.)

Earth Review March 1894, p. iii, gives an address for Runciman: Egmont Boot Factory, New Plymouth, New Zealand. Runciman appears again on p. 48 of the January 1895 issue, with a query. At some point, he became an agent for Earth Review and continued in that capacity through the last issue, dated April–June 1897.

A dispute arose between the New Zealand and the British flat-earthers when the second (April 1893) issue of Earth Review opened flat-earthism's largest can of worms. The donnybrook was triggered by a letter from antizetetic gadfly Caldwell Harpur, who had been corresponding with Runciman regarding the non-setting Southern Cross. Harpur wrote that the motions described to him by Runciman were exactly what astronomer Richard Proctor said they would be. [ref. 6.12] Editor Albert Smith shrugged off the second-hand Runciman statements as "hearsay evidence." Proctor had lost his credibility by declining to debate Rowbotham, according to Smith, and he demanded good evidence for the motion of the Southern Cross.

If zetetic astronomy is true—if the known, inhabitable earth is shaped like a phonograph record, with the north pole in the canter and Antarctica smeared about the outer edge—there is no south pole. According to zetetic astronomy, the heavenly bodies do not appear to circle the north star Polaris, they do circle it quite literally. Yet William Runciman, a faithful Zetetic from New Plymouth, New Zealand, reported by letter that, in his part of the world, the celestial bodies appear to circle the Southern Cross. The editor felt constrained to shrug it off as "hearsay evidence." In subsequent issues, however, Runciman's southern colleagues came to his defence. Revell, another New Zealander, wrote to say there was no mistake about his remarks regarding stars in southern hemisphere. In its lowest position, the Southern Cross is rotated 180 degrees from the highest position. It appears to invert.

The editor was in some difficulty over sunrise–sunset and star tracks in the southern hemisphere. But, he wrote, even if reports are true, it would be no proof, etc. He claims that he has previously shown that the data are at least inconsistent with globular theory (in a completely cock-eyed proof). Later, in regard to the southern midnight sun, the editor wants a signed statement from the whole crew of the reporting ship, including the cabin-boy!

Carpenter, by now living in America, wrote to dispute a New Zealand writer's remarks on the Southern Cross. Carpenter claimed the New Zealander's account was confused and clearly wrong.

Reverend David Neild first appears in Earth Review, March 1894, p. 134, where the editor (Smith) complains that Lux misplaced something he wrote: "Perhaps this so-called anti-infidel paper prefers after all the infidel's globe before Natural and Biblical Cosmography? Yet the editor promised (Aug. 16th, 1893), to let our reply to D. Neild's article appear." The promise might have been in a letter. In Earth Review September–December 1896, p. 59, a reply is directed to Rev. D. Neild, clearly a skeptic. Presumably, this is the same person.

DeFord, on p. 12, quotes p. 48 of David Neild's The Earth a Globe to claim there are no tides in Tahiti. This quote seems to have been lifted by Goudey, presumably from DeFord's earlier edition. He says Neild was from Wellington, N.Z. On pp. 44 and 50, he quotes or cites him again without giving page references. Neild was also cited by other American flat-earthers, who may have lifted their references from DeFord.

F. Wells Jansz was editor of the Ceylon Evangelist, apparently a monthly, in about 1898. On p. 12 of her tract The Lord's Day—-, Lady Blount quotes him from "the September issue of his paper" as follows:

The Sabbath question has exercised our mind for several years, but the opportunity for coming to a final decision was only afforded at our recent visit to Calcutta, where we had the privilege of having sweet communion together with some of the brethern and sisters who keep the commandments of God and the faith of Jesus, and who are now engaged in preaching the entire message of the gospel to the deluded and priest-ridden nations of India. Conscientious of responsibility to our day and generation and constrained by the grace of God who willeth and worketh in us of his good pleasure, we feel it our duty, along with other long-forgotten and despised but vital doctrines of Christianity, to proclaim the truth on the Sabbath question as well for the benefit of those who are appointed heirs of salvation. We render grateful and heart-felt thanks to God, the Father of all light for bringing us to a further knowledge of his truth—a truth which is necessary and required to be observed by all those living in the last days.

It is not our intention to ask our readers to be satisfied with a mere statement that Sunday observance is unscriptural, or that it is obligatory on all Christians to keep the seventh day of the week as God's appointed rest day—a day to remember him and all his works. Our object being to lead all others into the truth, we shall give from time to time, our reasons and also our authority for holding to the seventh-day Sabbath. The conclusion we have now reached is the result of over five years of patient, thoughtful, and prayerful investigation, during which time we have had both written and oral argument with scores of brethern on both sides, who have made the Sabbath question a life study. Like all errors which today are sapping the life-blood of Christianity, the observance of Sunday as the Sabbath day, is a pagan innovation which was fostered and later on introduced into the Christian Canon by the Roman Church. In fact, the Roman Catholics boastfully claim to-day the honor of having changed the Sabbath from Saturday to Sunday! [ref. 6.13]

Jansz was a long-time agent for Earth Review, which listed him as agent for India and gave his address as 15, Ingham Street, Slave Island, Colombo, Ceylon.

The flat-earth movement still thrived in Canada, of course, where its leading exponent was Arthur Veitch White.

Arthur V. White was born in Woodstock, Ontario, on August 21, 1871. His father, James, was a prominent pioneer merchant and was once clerk of Oxford County. His mother was Dorothy

Jessie McLeod White. Arthur attended public school and high school in Woodstock and later the University of Toronto, from which he graduated in mechanical and electrical engineering.

White married Aidine Squire of Seattle, Washington. Her father was Watson C. Squire, a former U.S. Senator, and her mother Ida was a daughter of Philo Remington, a founder of Remington Arms Company. The Whites had three children, James Arthur, Remington, and Caroline Lathrop.

Part of the chronology of Arthur V. White's career is uncertain. At various times he was chief draftsman for Canadian General Electric, works manager for Hyslops in Toronto, and lecturer in mechanical drawing and machine design at the Toronto Technical School. He also spent five years as a consultant to Brown Brothers of London.

In 1911, White was consulting engineer for Canada for the International Joint Commission, and he contributed to a Lake of the Woods investigation associated with the Boundary Waters Treaty. White was a consulting engineer for the Canadian Federal Conservation Commission from its founding in 1910 to its dissolution in 1919. In 1921, he joined the Hydro-Electric Power Commission as consulting engineer to the executive, and he served until he retired in 1934. He also served in the Department of Public Works in Ottawa and was consulting engineer to the Commission of Conservation, Ottawa.

Though educated in mechanical and electrical engineering, White often functioned as a civil or hydraulic engineer. He was an authority on issues related to international waters between the U.S. and Canada. He was author of many government reports on water resources and water power including Fishways in the Inland Waters of British Columbia, Power Possibilities on the St. Lawrence River, Niagara Power Shortage, Report on the International Joint Commission Relating to Official Reference Re Lake of the Woods Levels, Water Powers of British Columbia, and Water Powers of Canada.

His Canadian Who's Who entry doesn't mention it, but White was an unrepentant flat-earther. For some years, he wrote a syndicated newspaper column called "Science and Scripture," and he published a carefully worded flat-earth article in the University of Toronto Monthly. White considered the latter sufficiently important that he had it reprinted as a pamphlet. (A copy of it is in the Firestone Library at Princeton University.) His flat-earth views are glowingly referred to in Voliva's special flat-earth issue of Leaves of Healing.

On December 7, 1950, Arthur V. White died at his home at 2 Earl Street, Toronto, after a brief illness. He was survived by his wife Aidine and his three children. His daughter Caroline was living at home, his son James in Toronto, and his son Remington in Beaverton. It's not known whether he retained his flat-earth views to the end.

Chapter 7
Lady Blount and the Decline of British Flat-Earthism

THE STAGE WAS NOW SET for one who would dominate the movement for more than two decades, a genteel and tiny tigress, Lady Elizabeth Anne Mould Blount. Lady Blount was born in south London at about 5:00 p.m. on Tuesday, May 7, 1850. Her father, architect and land surveyor James Zecharias Williams, hailed from Cader Idris, a mountain in northern Wales. Williams had an interest in astronomy and friends in high places—Prince Louis Napoleon, for instance, later Emperor of France. He was a middle-aged widower with

seven children when he married Elizabeth Anne Mould, daughter of a scholar and solicitor. Elizabeth Williams was pious and musically inclined. When the time came to deliver their first child, a girlhood injury impeded her. After a long, difficult, and fruitless labor, surgeons delivered the child by Caesarian section.

Forty-four years later, the surgeons were criticized in an astrological magazine. According to the July 1894 issue of The Future, they picked the worst possible time, astrologically speaking, "for they began it just as the evil planet MARS had culminated!" Had they waited until Jupiter culminated three hours later, the stars would have been more favourable. Stars or no stars, the now-routine operation was exceedingly dangerous when performed without anaesthetics, antiseptics, or antibiotics. The young mother died five days later. Her twice-widowed husband gave the baby her name, Elizabeth Anne Mould Williams.

Unfortunately, our only source of information about Elizabeth's early life is the 1894 horoscope, apparently published with her permission:

Mercury being strong in Gemini and so near Venus, and configured with the ascending degree (by the aspect of 135°) childhood was characterized by cleverness, studiousness, light-heartedness, and love of music. Lady Blount inherited from her mother exceptional musical talent. Jupiter being in a prominent position, in zodiacal parallel with the ascendant and connected with the Moon (in a Jovian sign) by zodiacal parallel, the religious feeling of the mother was also inherited by the child, free from narrow-minded sectarianism.

With all due respect for Jupiter, James Williams, like his second wife, was a devout Christian, and he might have influenced the religious convictions of his youngest daughter. In 1862, when Elizabeth was only 12, James retired to Hereford, a town of 10,000 lying in a wooded river valley near the Welsh border, 144 railway miles west-northwest of London and about 45 miles north of Cardiff as the rook flies. There he educated Elizabeth far beyond the norm for 19th century English women. As she matured, her beauty, intelligence, and wealthy father gave her above average prospects. In October 1870 [ref. 7.1] , at age 20, she married Walter de Sodington Blount. Walter was a Roman Catholic and seventeen years older than his Protestant bride, but he was eldest son of Baronet Edward Blount, and presumably his prospect of a title and 6000 acres more than compensated for these deficiencies.

There are indications that the marriage was not a happy one. Sir Walter inherited the title and land in 1881, but he was (in the eyes of his wife) cold, cruel, and Catholic. If he had any unusual opinions, he didn't express them in the public press. Not so his lady.

Lady Blount was a right-wing Shirley MacLaine, and she went out on many a limb. She promoted causes, pursued publicity, and was not reluctant to express an opinion. Like Charles Johnson, whom we will meet in Chapter 9, she was an ardent antivivisectionist. Among her medical unorthodoxies was her booklet entitled Magnetism as a Curative Agency. She was closely associated with the Anglo-Israelites, who still claim the Anglo-Saxons are the true heirs of Abraham, and the British monarchy reigns from the Throne of David.

Lady Blount first appears in flat-earth annals in 1892, when The Faith, a British Seventh-day Adventist periodical, published some of her planely worded letters-to-the-editor. Around the same time, she published a broadsheet blasting the spherical heresy. She was then 42 years old, the mother of four teenage children and, by her own admission, a geographer, explorer, mathematician, author, and poet.

Cyrus E. Brooks, editor of The Faith, represented the majority view in adventism. Brooks rejected zetetic astronomy and (after publishing a few letters, including one from Lady Blount) refused to print zetetic letters. His periodical remained a favorite of "Zetetes" and other zetetics, however,

and he retained the respect and friendship of many of them. In 1898, for instance, Brooks published Lady Blount's flat-earth novel Adrian Galilio: A Songwriter's Story.

Portrait of Lady Blount
Lady Blount (from her novel Adrian Galilio).

Lady Blount was one of the more prominent new zetetics. She made her Earth Review debut in the second issue with a letter praising the publication and ordering fifty copies for "free distribution." She then lived in Bath, a resort town famed since Roman times for its hot mineral springs. Bath was about a three-hour train ride (107½ miles) west of London, so she was a bit out of the mainstream of zetetic affairs. She could, however, contribute to the Earth Review, and contribute she did. To the July 1893 issue, she contributed a poem (or song), "The Glory of God;" [ref. 7.2] to the October issue, a letter and an article, "Scientific Credulity versus Religious Beliefs;" to the next issue, dated January 1894, an 80-line poem, "The Why and Because." The last verse gives its flavour and neatly sums it up:

The Law of the Lord is reliable, sure,
The Creator's description is perfect and pure,
And the Word of our God shall forever endure,
While the wisdom of worldlings shall fall:
And heaven's "above," saith the Lord, the most High,
The earth is "beneath" the grand dome of the sky,
And "under the Earth" is the "water," then why
Believe in the infidel's "ball"? [ref. 7.3]

The same issue contains an organizational manual for the UZS, the first published. It shows the Committee included Lady Blount of Bath. The July 1894 issue contains a sort of flat-earth catechism which she produced. At first she played second fiddle, but she gradually took over the orchestra.

Lady Blount felt called upon to raise the cultural level of the zetetic society. Modern sophisticates think it unseemly to commit hopes, fears, aspirations, or fetishes to rhymed verse. Victorians were less inhibited. "The Nebular Hypothesis," characteristic of Lady Blount's poetical works, scoffs at the idea that the solar system (including planet earth) condensed out of a cloud of hot gases.

THE NEBULAR HYPOTHESIS

Hypothesis quoted,
"All matter once floated
In atoms wide roaming through space";
When a power, perhaps "Nether,"?
Pulled all down together,
How it happened no mortal can trace!

But, dear me! however

Could there be a "Nether"?
Or an upward or downward at all?
With "atoms" dissevered,
Now gravity-tethered,
And shooting through space like a ball.

This power of such fame,
"Gravitation" by name,
Pounced down on the atoms while strewing;
But further back gaze,
O'er eternity's maze,
What before was good gravity doing?

The gravity theory,
When started was clearly,
A fancy which Newton had "run";
Imagine the notion,
This world, mostly ocean,
Once a cinder shot out from the sun!

Like Solar relation,
Inherent rotation,
Sent the "globe" whirling round, till full soon—
Just picture the view—
The sparks, how they flew!
And a beauty so bright made the Moon!

The Sun, the great "Master,"
Sure ought to go faster,
Than the sparks it sent backwards reviewing;
Yet globe and Moon too,
Keep old Sol well in view,
And play all around while pursuing!

The Globite avers,
It took Millions of Years,
For the earth to develop and cool, Sir,
But he who will try
To give God the lie,
Shall yet prove himself but a "fool," Sir. [ref. 7.4]

Shortly after this was published in Earth Review, it was reprinted in America, presumably by the growing zetetic contingent there. Lady Blount herself set the words of "The Nebular Hypothesis" to music. The result, a sprightly travesty of Gilbert and Sullivan, is incorporated into her flat-earth novel Adrian Galilio, or, A Songwriter's Story. The latter seems to include her "serious operetta" entitled "Astrea, or The Witness of the Stars."

The flat-earth operetta, according to the Earth Review, was eventually performed in public. Unfortunately (though perhaps mercifully), no reviews have survived. The May 1896 issue of Earth Review reprinted a fragment of it while the work was yet in progress. It is a conversation between two evil spirits sent to earth to attend a séance in the early centuries A.D. They discuss their plans for deluding poor humans and leading them away from Christianity. One spirit, a Prince among the powers of darkness, speaks as follows:

Spirits prepared throughout the ages,

Shall do our will at fitting stages:
Man's word 'gainst God's, shall be accepted,
And false cosmogony erected.
That earth's a tiny whirling globe,
Shall men set forth in righteous robe!
Above concern that Moses erred,
Tho' Jesus verified his word,
Denying Earth's Creator! [ref. 7.5]

The demon Prince was astonished to see a pope (of all people!) nearly muck things up by persecuting Galileo, but he was gratified to see the effort fail. [note 7.1]

One of Lady Blount's close collaborators was William Thomas Wiseman, F.R.G.S. [note 7.2] In 1895, the Sixth International Congress of Geographers was held in London, and they attended together, writing a joint report for Earth Review. [ref. 7.6] At about the same time, they apparently recycled Lady Blount's old "Nebular Hypothesis" once more. In a letter published in the July 1895 Earth Review, Wiseman wrote:

Lady Blount and myself have the pleasure to inform you that our Valse, "The Earth not a Globe," or "The Nebular Hypothesis" having been set to music has been played at the Crystal Palace by Godfrey's Military band. It was played there again to-day, May 3rd, I and her ladyship had notice, and both attended to hear it. It was well executed, and as you no doubt imagine gave us great pleasure, not alone for the music, but in having the subject made so prominently public. [ref. 7.7]

The pair collaborated on a number of musical compositions. A later issue of Earth Review advertised sheet music for the "Earth Not a Globe Valse" and "about 30 other Waltzes, Songs, Hymns, etc., by the same authors, from 1/- to 4/- each. Military Band Parts, when published, from 6/- each set." One of the numbers offered was "Je T'Aime" ("I Love Thee").

Like his friend and collaborator, William Thomas Wiseman was a wellspring of unorthodox ideas. In 1882, under the pseudonym "Abdiel," he had published Vaccination and Smallpox, a pamphlet opposing vaccination. He was also author of two religious tracts and a pamphlet entitled The Metropolitan Water Supply. An ardent Anglo-Israelite, Wiseman later founded and edited the The British Ecclesia, journal of the Anglo-Israelite group with the latter name.

Wiseman made a fleeting appearance in Earth Review with a one-page article, "The Earth an Irregular Plane." He tells how, as a youth, he stood on the Dover shore of the English Channel and watched a departing ship. When it appeared to be "hull down," he borrowed a telescope from an "old salt" who happened to be nearby. Through the telescope, he could still see the hull. The old sailor said he'd been all over the world and never believed it was spherical. Wiseman wrote:

I now, after many years, endorse the old sailor's experience, that the world is not a globe, and I have never found the man who could prove by any practical demonstration that he, or I, are living on a whirling ball of Earth and water! How is it that the atmosphere goes round with it? By what law does the dense Earth and the rare air rush round together? Declare, ye scientists, IF YOU KNOW! The Scriptures of God's inspired Prophets contradicts [sic] the unreasonable, illogical, unscientific delusion, and false philosophy, that the fixed Earth is a hollow fireball with several motions!

After a flurry of zetetic activity in 1895, Wiseman seems to have faded from the zetetic scene. Others came on to stay.

Though the British zetetic movement was certainly down, Lady Blount made sure that it wasn't out. She soon founded another journal, Earth, which she edited from at least January 1900 to November 1904. And she continued her lectures, debates, and letter writing.

Apparently, someone went back to the Old Bedford Canal in 1900–1901 and performed new experiments. These aroused sufficient interest among conventional scientists that on September 17, 1901 one H. Yule Oldham read a paper about the various Bedford Canal experiments before the British Association for the Advancement of Science. Oldham assured conventionalists that everything was all right. His paper is mentioned in the B.A.A.S. Proceedings, but it was not deemed worth printing. The paper is cited in English Mechanic 80:256.

Lady Blount was author of a little tract called "The Lord's Day," which advocated the Seventh Day Sabbath. It was distributed by the same Stanberry, Missouri, Adventist group from which Herbert W. Armstrong later emerged.

On May 11, 1904, Lady Blount returned to the Old Bedford Canal. Thirty-four years had not stilled zetetic outrage over Wallace's "Bedford Canal Swindle." Several flat-earthers, including Rowbotham, Carpenter [note 7.3] , and Naylor, had returned to the fateful stretch of water between the Old Bedford and Welney bridges and performed more satisfactory experiments, but these got little attention outside zetetic circles. Lady Blount was determined that this time it would be different. She would return with irrefutable evidence. Accompanying her were photographer E. Clifton and a camera equipped with a 5000 mm Dallmeyer telephoto lens. [note 7.4]

Lady Blount had a white sheet 15 feet square hung from Old Bedford Bridge, with the bottom of the sheet just above the water. Meanwhile, the skeptical Clifton retired to Welney Bridge, about six miles away. As he recalled later in a letter to Lady Blount, "On arrival at Welney I was surprised to find that with a telescope, placed 2ft. above the level of the water, I could watch the fixing of the lower edge of the sheet, and afterwards to focus it upon the ground glass of the camera placed in the same position."

Clifton was strongly impressed by the results. "I should not like to abandon the globular theory offhand," he wrote, "but, as far as this particular test is concerned, I am prepared to maintain that (unless rays of light will travel in a curved path) these six miles of water present a level surface." In fact, Clifton's description of atmospheric conditions that morning—"an aqueous shimmering vapour [floated] unevenly on the surface of the canal and adjoining fields"—suggests mirage, which is the bending of light rays by temperature variations in the atmosphere. But Clifton and Lady Blount didn't think so, and when they subsequently repeated the experiment, Clifton reported that he could distinctly see two images, the sheet and its reflection on the water.

Lady Blount tried to place these results before the public, but with indifferent success. A few newspapers published her letters. That autumn, the weekly English Mechanic and World of Science published an exchange of letters between her and their bemused readers. This culminated on October 28, 1904, with publication of the famous photograph (in which I can't even find the bridge). But there was no wholesale abandonment of the globe and, except among zetetics, the experiment was quickly forgotten.

The Universal Zetetic Society, of which Lady Blount was now president, was a mere shadow of its former self. Along with Albert Smith and perhaps William Thomas Wiseman, she tried to keep it going, though Wiseman was very busy as head of the Anglo-Israelite movement. In 1906, Lady Blount and Smith published Zetetic Astronomy, a modest book of 91 pages. The inside rear cover contained the following notice:

"**UNIVERSAL ZETETIC SOCIETY**—Founded in New York in Sept., 1873, and in London in Dec., 1883 (ten years after the American), as The Zetetic Society, by 'Parallax,' and others,

is now firmly established, by E.A.M.B., (Lady Blount), Ed. of The Earth, and her army of helpers, throughout the civilized world. Many local branches of the organization have been started, during the past five years, in all the principal countries, with the exception of Russia, where The Earth is not allowed to circulate."

The President of the Society is E.A.M.B. and vice president is C. de Lacy Evans, author of Errors of Astronomy, who was also "Vice-President of the Zetetic Society when first founded." The stated object of the new Universal Zetetic Society was "The propagation of knowledge relating to Natural Cosmogony in confirmation of the Holy Scriptures, based upon practical scientific investigation." Society Rule number 1 was: "The so-called 'sciences,' and especially Modern Astronomy, to be dealt with from practical data in connection with the Divine System of Cosmogony revealed by the Creator."

Also listed were the twenty-four members of the UZS Committee, a nice mixture of old and new names. The new committee included British stalwarts Alexander McInnes of Glasgow University; A. E. Skellam, for two decades an avid flat-earth lecturer; the brothers John and Isaac Smith of Halifax; and Albert Smith, here sans his zetetic pseudonym. Reverend E. W. Brookman of Toronto, the Adventist Elder Miles Smith of New York, and Dr. Thomas E. Reed of Middleton, Ohio lent an international flavor. Major-General Edward Armstrong and Dr. E. Haughton, Senior Moderator in Natural Science at Trinity College, Dublin, added a touch of authority. The British clergy were represented by the Reverends A. T. de Learsy, E. V. Mulgrave, E. W. Bullinger, and Archbishop C. I. Stevens.

Some of these are old friends. Others we will meet in the next chapter. Several should, however, be noticed here.

Charles Watkyns de Lacy Evans, "M.R.C.S., Ph.D., etc., late Surgeon, Gold Coast" did not call himself M.D., but he obviously had an interest in medicine. Evans had been vice president of the original Zetetic Society when it formed in December 1883. Later, he wrote a book on the cause of death, increased longevity, phosphorus, and so forth that appears suspiciously familiar from the title. Obviously, he was a disciple of Rowbotham. He also wrote Consumption: A Reinvestigation of its Cause and Cholera: Its Causes and Prevention, the latter being a reprint of a lecture.

The British flat-earthers had always hoped to convert the Church of England to the plane truth, but their successes were limited. Bagging a real, live Archbishop for the UZS Committee was perhaps Lady Blount's greatest coup. In the eighty-odd intervening years, however, Archbishop Stevens has been largely forgotten. The same cannot be said for his contemporary, Ethelbert William Bullinger.

Ethelbert William Bullinger, English divine and writer on New Testament criticism and Biblical theology, was born 15 December 1837. One of his ancestors, Swiss reformer Heinrich Bullinger of Zurich (1504–1575), was a follower of Zwingli, a collaborator with Calvin, and a sometime theological opponent of Luther. Just as Heinrich Bullinger's views strongly influenced the Reformation in England, so Ethelbert's views would influence American fundamentalists.

Educated at King's College, London, Bullinger was ordained in 1861. For nearly four decades, he served a succession of major churches in England. He was Secretary of the Trinitarian Bible Society from 1867 until his death. His recreations were music and chess, and he published two books of original hymn tunes. He was editor (and perhaps founder) of the periodical Things to Come. Bullinger's first appearance in flat-earth annals was probably in 1873, when one "E.B." of "the Vicarage" wrote a flat letter published in the June 1873 Zetetic [ref. 7.8] . In 1877, he subscribed for six copies of Carpenter's Delusion of the Day, but he was still at pains to conceal his flat-earth sympathies (he is one of two subscribers whose names are not listed). In the premier issue of Earth Review, there was the following quote from Bullinger (incorrectly identified as

"Rev. W. E. Bullinger, D.D."): "I AGREE with you in your contention respecting the Earth; for my motto has long been, 'Let God be true and every man a liar.'" [ref. 7.9]

His Number in Scripture and The Witness of the Stars are both in print and are highly regarded by many fundamentalists, including Henry M. Morris, founder and president of the Institute for Creation Research. The first tackles the numerological significance of virtually every number used in the Bible (seven, for example, is the number of spiritual perfection); the second proposes the theory that at Creation God encoded into the constellations a prophecy of the coming of Christ—thus, Virgo is the Virgin Mary, for example.

Though he died in 1913, Bullinger remains influential among fundamentalists who accept dispensationalism. This is the belief that God's master-plan for the World, from Creation to the End, set out as a sequence of stages or dispensations, can be gleaned from a literal interpretation of the Bible, from Genesis to Revelation. One of his books was The Foundations of Dispensational Truth (published posthumously, 1930), consisting of material reprinted from Things to Come. Of his seventy-seven published works, seven (including Number in Scripture and The Witness of the Stars) are still in print.

Meanwhile, the flat earth had sprung another pole. Albert Smith (and to a lesser extent Lady Blount) developed the "two poles" version of the flat-earth theory. Smith gave himself (under his pseudonym "Zetetes") credit for it in part two of his son Carl Albert Smith's book, Is the Earth a Whirling Globe?:

Zetetics owe much to a London medical gentleman, who last century, under the nom de plume of "Parallax," revived the zetetic cause by his able writings and powerful lectures. But it is seldom given to pioneers to dig out all the truths they unearth. Hence, early zetetics only acknowledged one pole, no evidence of a south pole having then been actually discovered by Antarctic explorers. It was left for "Zetetes" principally to carry on the war, and to be the first zetetic to acknowledge the proved existence of two so-called "poles." This he did many years ago in various articles published in a book entitled Zetetic Astronomy, now sold out of stock; and also in lectures in different parts of the country, and in public debates. He was the first editor of The Earth—Not a Globe—Review. [ref. 7.10]

Lady Blount continued her lectures, and in 1914 she published Our Enclosed World, a book of extracts from them. Her husband, Sir Walter de Sodington Blount, died in October 1915.

The 19th century British flat-earth movement foreshadowed the modern American creationist movement in every way but success. The British zetetics never succeeded in selling zetetic astronomy to a critical mass of Christians-in-the-pews, and it's not clear why. Zetetic Astronomy is far better science than Flood Geology, which modern creationists have sold to millions of Christians, some of them well-educated. Yet the general education level of the British public was substantially lower than that of the modern American public. (Education was not made compulsory in England until 1880.) Some possible reasons why the British flat-earthers failed are:

a) The flat-earth movement never had big money behind it. Creationism is promoted by multimillion dollar television ministries.

b) Mainstream British Christianity had no strong tradition of absolute literalism. The Bible is far more explicit about the Noachian Deluge than about the shape of the earth, but the Church of England had already made peace with uniformitarian geology (which finds no evidence of a universal flood) by the time the flat-earth movement got started. Indeed, the absolute literalists such as the Seventh-day Adventists were large contributors to the movement. Until this kind of absolutism developed among American fundamentalists, creationism got nowhere. Again, it

was the absolute literalists—the Seventh-day Adventists—who led the way in creationism.

c) It is much easier for would-be literalists to rationalize away the flat-earth verses of the Bible than it is to do the same with the creation story. English-speaking fundamentalists were aided in this by the King James translators, who themselves rationalized away some of the more explicitly flat-earth passages in the Bible.

d) The flat-earth movement never converted many Falwells. The only prominent churchman they converted was Ethelbert William Bullinger, and he was not nearly as influential in his lifetime as later. Furthermore, he was mainly a closet flat-earther, and he never beat the drums for the Plane Truth like Jerry Falwell has for creationism.

e) Scientists were more successful at ignoring the flat-earthers. The flat-earthers did get people to debate them, but they were freelance do-gooders, not respected scientists. Thus, the flat-earthers never managed to create the illusion that a scientific controversy exists. (The only scientist who actually did challenge the flat-earthers—Alfred Russel Wallace—did nothing but strengthen the movement.)

f) The sphere does not threaten fragile Christian egos like the image of the chimpanzee. (Fundamentalists want desperately to "be as gods," and they can't deal with the idea that they might be something less.) Preachers can easily argue that all of Christianity collapses if evolution is true.

g) The flat-earthers actually had a model to defend, and not a very good one. The creationists typically refuse to talk about creationism in public, concentrating almost exclusively on attacking evolution. The creationist tactic is intellectually dishonest but successful.

h) Preachers in British churches were not constantly attacking the sphericity of the earth. Fundamentalists have been preaching hatred for evolution (and, by extension, most of science) ever since Darwin. Many fundamentalists have been listening to anti-evolution sermons off and on all of their lives. Thus, when someone with scientific credentials comes along and says the same thing, they have been programmed to believe it.

i) Psychologically, fundamentalists "bet the farm" on doctrines tied to a certain interpretation of the Bible. First of all, there is auto-correlation; they wouldn't be fundamentalists if they didn't have a powerful opinion of their position in the universe—the image of God and all that. They have sold their souls for a doctrine much threatened by evolution.

In 1923, Lady Blount married Stephen Morgan, and she apparently had little to do with the Blounts or the flat-earth movement after that. Her grandson, Sir Walter Edward Alpin Blount (1917–2004), remembered her as a tiny old lady who always wore black and didn't say much—unless someone set her off with a word like "globe." Lady Blount died in December 1935. By then, the British flat-earth movement was in limbo, but zetetic seeds were firmly rooted across the sea.

Chapter 8
Voliva and Zion

WHEN WILLIAM CARPENTER DIED ON SEPTEMBER 1, 1896, 26-year-old Wilbur Glenn Voliva was a student at Hiram College, a small private school near Cleveland. Voliva was born on an Indiana farm on March 10, 1870. His father, James H. Voliva, was a Methodist lawyer and his mother Rebecca was a former Presbyterian. Wilbur was raised a Methodist, but at 14 he joined the "New Light" Christian Church. Five years later (1889) he was ordained a minister. During the next ten years, Voliva attended four Bible Colleges or seminaries and pastored six churches, switching denominations to the Disciples of Christ. After graduating from Hiram College in the spring of 1897, he became pastor of the Disciples Church at Washington Court House, Ohio.

A decade of theological training and pastoring churches of two denominations convinced Voliva that Christianity was riddled with hypocrisy. He was considering abandoning the ministry for law school when, in late 1898, he came upon an issue of Leaves of Healing, a magazine published by the Christian Catholic Apostolic Church. Voliva was so impressed by the content that he immediately went to Chicago to see, hear, and talk to John Alexander Dowie, founder of the sect.

Dowie preached what he called the "Full Gospel." Today's "Full Gospel" churches usually practice faith-healing and speak in tongues, and in extreme cases church members drink poison and handle venomous snakes. Dowie built his reputation and his church on faith-healing, but he eschewed speaking in tongues, and the only venom in his church was in his sermons. Dowie hated doctors, druggists, pork, oysters, liquor, labor unions, and secret societies, and he denounced them from the pulpit with more invective and less charity than Jimmy Swaggart. Voliva was much impressed with Dowie's doctrines, healing, and preaching style, and he left his pastorate, joining Dowie's church on February 22, 1899. He was ordained an Elder on Sunday, April 2, 1899 and put in charge of the Christian Catholic Church's North Side branch in Chicago.

Elder Voliva raised the membership of the North Side Tabernacle so successfully that Dowie raised his salary. After 14 months, he was sent to Cincinnati to take over church operations there. Again, Voliva preached and sold Leaves of Healing so successfully that he recruited hundreds of members and sent thousands of dollars back to headquarters.

Meanwhile, Dowie was working on Zion City. Many of Chicago's politicians, preachers, doctors, druggists, saloon-keepers, and journalists hated Dowie almost as much as he hated them. The fiery faith-healer had long been harassed with lawsuits and criminal prosecutions, the latter on charges that his Healing Homes were unlicensed hospitals. The persecution brought him sympathy, thousands of converts, and (most important) lots of money. In 1899, Dowie had begun secretly buying up a large tract of land on Lake Michigan, just south of the Wisconsin border. There he would build Zion City, a planned community where tobacco, liquor, labour unions, and the rest of his personal demons would be prohibited. A temple site was dedicated July 14, 1900, and sites were reserved for various purposes. The first lots were sold to church members in the spring of 1901. At about the same time, Dowie called Voliva back to Chicago to take over planning for Zion Educational Institutions.

Voliva was just getting into the educational work when word came that the mission in Australia was collapsing. Dowie decided to send his best man to take over. On Sunday, August 4, 1901, Voliva was ordained an Overseer in the church, and he and his family left for Australia on August 10 to salvage the situation.

Arriving in Australia, Voliva established his headquarters in Melbourne, and he soon had branches in Sydney and Adelaide and missions in New Zealand. As usual, he was highly successful. He rebuilt membership to several thousand members while establishing a sound financial reputation for the Australian church. In four years, he peddled more than 100,000 copies of Leaves of Healing and sent thousands of dollars and hundreds of converts back to headquarters.

Meanwhile, Dowie was undergoing a change. He began referring to himself in public as "Doctor Dowie" on the basis of an honorary D.D. degree. He designed and began wearing elaborate ecclesiastical robes covered with strange geometrical symbols. Worse, on June 2, 1901, Dowie pronounced himself Elijah the Restorer.

Dowie's Elijah Declaration caused consternation among his followers and brought denunciations from previously sympathetic Christian publications. He insisted that church officers either accept his claim that he was Elijah III [note 8.1] or resign. Dowie's faith-healing had long been ridiculed in the Chicago press, but the Elijah Declaration brought special merriment; a rival Elijah, Cyrus Reed Teed (also known as "Koresh"), had just left Chicago for Florida, taking his hollow-earth cult with him!

Work progressed on Zion City. Shiloh Tabernacle, a huge wooden building with a seating capacity of 8,000, was completed in 1902. A quarter mile east on Shiloh Boulevard, Dowie's 25-room mansion, Shiloh House, was completed that same year. While church members struggled physically and financially to build their homes and the rest of the city, Dowie spent huge sums of church money on himself and his family. Shiloh House cost $25,000 to build, and he spent another $50,000 to furnish it and stock his personal library. Then he bought an expensive summer home in Michigan in his wife's name and began work on a $75,000 townhouse in Chicago.

Zion City was built on faith and sweat but sustained on smoke and mirrors. Dowie knew how to build a sense of community in his followers. He had a flair for symbolism and pageantry, and church members were frequently decked out in colorful sashes and marched around town. Picnics, concerts, and other church activities brought believers together and separated them from outsiders. The charismatic Dowie exhorted, cajoled, and bullied the faithful into giving until it hurt. Money had poured into Zion's coffers in the beginning, and Dowie always assumed it would keep pouring. When it began to dry up, his extravagance and financial mismanagement made a crash inevitable. It came quickly.

On Sunday, September 24, 1905, Dowie had a stroke in front of his horrified congregation. The great healer was left partly paralyzed. Nevertheless, only four days later he left for Mexico, where he planned to found another community. When he returned to Zion around Thanksgiving, he was worse. He went to Jamaica to recover. In Zion, the roof fell in.

On December 29, Voliva got a telegram from Dowie's Jamaican headquarters ordering him to return to Zion immediately. Loading his family aboard the steamship Sonoma, Voliva embarked for home. Arriving in Zion in February 1906, Voliva found that Dowie was spending $1000 a week in Jamaica, and Zion City was bankrupt. He discovered that more than $75,000 was being spent on Dowie's new town house in Chicago when there wasn't enough money in the bank to pay salaries. There was general agreement in the church that Dowie had to go. Dowie had previously appointed him Deputy Overseer, and Voliva now seized control and tried to put Zion's financial house in order.

It took a year-long legal battle to finally and conclusively oust Dowie, but it was accomplished. Voliva's fiscal restraint was too late for Zion, and in March 1907, the city went into receivership. (On March 9, 1907 Dowie died. He was buried in the apostolic robe he had designed for himself.)

Voliva reorganized the church and set about clawing his way out of bankruptcy. The process entailed hardship, and many loyal church members worked without salary to keep things going.

Voliva's Theocratic Party gained political power by election fraud and then maintained it by further fraud, perjury, intimidation, and violence. Once in power, Voliva's hand-picked officials sometimes refused to put rival slates of candidates on the election ballot. On at least one occasion, Voliva associates met in his offices, selected a "Republican" ticket, ratified it, and put it on the ballot without the knowledge of local Republicans.

Voliva's takeover of the bankrupt city was almost complete. He implored and browbeat loyal church members into mortgaging their property and giving the money to him. He used the cash to buy the Zion properties back from the receiver piece by piece. When he redeemed the last piece early in 1910, "Zion Industries and Institutions (Wilbur Glenn Voliva)" owned the major businesses in town. Note the personal name in parenthesis; it was usually printed that way as part of the company name. Ads in Leaves of Healing advised mail order purchasers of Zion products to make their checks payable to Wilbur Glenn Voliva. Though he bought everything with the church's money, Voliva put every title in his own name, and he owned Zion Industries and Institutions outright!

Zion Industries produced Fig Bars and candies famous throughout the country, and locally they sold coal, real estate, dry goods, and just about everything else. Each morning, there was a devotional service on the job. Workers were encouraged to give 10% of their earnings to the church, preferably by payroll deduction. (A hint about worker compliance: Most of the managers were Deacons of the Christian Catholic Apostolic Church.)

Under Voliva, Zion saw tremendous political, financial, and religious strife. Some Methodists whose ancestors settled in the area long before Zion was founded resisted Voliva's control. In 1908, the little Methodist church, built 70 years earlier, burned under mysterious circumstances. Voliva's takeover caused so much dissension within his own church that many Dowie loyalists and others splintered off to form their own sects, one of which claimed to be the real Christian Catholic Apostolic Church. The anti-Voliva factions organized as the Independent Party, and Voliva openly boasted that he would drive them out of town. Billboards appeared at various locations around town with messages like the following:

ZION'S SLOGAN

This City for Zion People and for Zion People Only!!! The Zion Flag Floating Over Every Building—Over Every Foot, Inch and Pinch of the Original City Site. Traitors, Thieves and Thugs Will Find This City

HOTTER THAN HELL

The billboards were often defaced or even cut down by vandals, and Voliva threatened to electrify them so that the miscreants would be killed, but he never did.

Shiloh Tabernacle in Zion had seven pipe-organs electronically linked to form one massive organ with over 5,000 pipes. This organ was dedicated on June 12, 1912. That same year, Voliva made a preaching tour of cities with large CCAC contingents, traveling in a private railway car paid for by a supporter. He began the tour by speaking in Minneapolis the afternoon of September 29 and in St. Paul that evening. Other cities included Winnipeg, Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Antonio, New Orleans, and St. Louis.

Late in 1913, Voliva's wife, Mollie Steele Voliva, was stricken with an infection of the lymph glands. Her husband urged her to trust in God, and he refused to let her father, a physician, treat her. Mollie trusted and suffered for 16 months. She died on February 4, 1915, aged 45. Fourteen

months later, Voliva married 27-year-old Ida Emanuelson, a physics teacher in the Zion Parochial Schools.

Wilbur Glenn Voliva (seated) explains his "New Standard Map of the World" (from a newspaper, 1922).

It's not clear how or when Voliva concluded that the earth is flat. His introduction of the doctrine to the Christian Catholic Apostolic Church of Zion apparently began at Shiloh Tabernacle on Sunday, August 16, 1914, with a rambling sermon entitled "Exposure of Terrible Conditions in the Apostasy." Most of the sermon was standard Zion fare. The General Overseer raged against the medical profession, saying medical science is a farce and fraud; doctors are thieves, murderers, drunkards, and dope fiends; drug stores are worse than saloons. Voliva declared that science "is nothing but a lot of rot—the inventions of men inspired by the devil!" He specifically condemned evolution, geology, and higher criticism (textual and historical analysis) of the Bible. His numerous jibes at astronomy, however, were something new. Voliva had detected adverse theological ramifications in the conventional view of the earth and solar system, and he thundered against them:

Where is Heaven? Heaven is up yonder! This is the earth!

When the Blessed Lord ascended, they saw him going up, did they not? and the angels declared that in like manner He would come again, did they not?—and when he comes, He is coming to earth, is He not?

I shall ask you this question: If the world is whirling around in space at the rate of a million five hundred thousand miles a day; whizzing around many times as fast as lightning travels—how is the Lord going to light on it? Just tell me!

There is Heaven—right up there; and between this earth and Heaven where God's throne is, in the upper air, are evil, wicked, lying spirits; and down below is hell!

For a man who was never a paragon of prudence, Voliva's first public attack on astronomy was cautiously worded. While he ridiculed the idea of a globular earth, nowhere in the sermon did he actually say that the earth is flat. The only hint of familiarity with zetetic astronomy was his ridicule of the distance to the sun. The new doctrine rapidly became an obsession, however, and by Christmas of 1915, Voliva's views were much more focused and systematic. In a pulpit blast at "Modern Astronomy" on December 26, he put his cosmology in plain English:

I believe this earth is a stationary plane; that it rests upon water; and that there is no such thing as the earth moving, no such thing as the earth's axis or the earth's orbit. It is a lot of silly rot, born in the egotistical brains of infidels.

Neither do I believe there is any such thing as the law of gravitation: I believe that that is a lot of rot, too.

There is no such thing!

I get my astronomy from the Bible.

I believe the sun revolves over the earth, and that it is not stationary; and I believe that when Joshua prayed to God Almighty to stop the sun in its course, God performed a miracle and stopped it.

Like the August sermon, there is no clear indication of zetetic astronomy, unless it is the sun revolving above the earth. It was different when Voliva returned to the subject in his sermon on February 3, 1916. Under the subhead "The Bible Declares the Earth a Plane, not a Globe," he said:

The foremost writers say that those who believe in the stationary plane theory can explain all phenomena as good as they can, and in addition they have the evidence of their senses and the Word of God. However, for one to stand up in Chicago, in the shadow of the Chicago University and of the Northwestern University, and before all the preachers and lawyers and judges and doctors, and dare to question the modern astronomical theory, how they titter and laugh! "Why," they say "he must be crazy!" Who is crazy—the man who believes the Word of God or the people who run off after science, falsely so-called?

The claim that the "foremost writers" acknowledge the efficacy of flat-earthism alludes to the oft-recycled Woodhouse quote, first published in Earth Review. Whether Voliva got it from Earth Review or another source, he had obviously discovered the literature of zetetic astronomy.

Meanwhile, one of his lieutenants, Apostle Anton Darms, had searched the Good Book and found fifty reasons to reject the earth's sphericity, which he enumerated in a long article in the Christian Catholic Apostolic Church's official magazine, Leaves of Healing. By March 1916, the transition was complete. The earth was now flat in Zion, and Apostle Darms was assigned to rewrite the church's hymns where necessary. For example, one verse of an old, familiar hymn had always been sung:

Let every kindred, every tribe,
On this terrestrial ball,
To him all majesty ascribe,
And crown Him Lord of All.

Darms revised the verse to a form consistent with the new flat-earth orthodoxy:

Let every kindred, every tribe,
On this terrestrial plane,
To Him all majesty ascribe,
And praise His Holy Name.

That same year, 1916, Voliva established a parochial school system, Zion Educational Institutions, and he appointed Apostle Darms superintendent. Darms wrote the curriculum and lesson plans and hired the teachers, who were required to teach students that the earth is flat. Voliva's Theocratic Party controlled the School Board, so presumably teachers in Zion's public schools did the same, if they wanted to keep their jobs.

Zion is our only modern example of a flat-earth theocracy. Most wouldn't consider it pleasant. Voliva and his Theocratic Party made it clear that anyone not a member of the Christian Catholic Apostolic Church of Zion was welcome only as a visitor, and Voliva's tactics against the Independents would horrify a modern civil libertarian.

In 1914, Voliva and his minions passed the strictest set of blue laws seen in 20th century America. The police force, largely staffed and completely controlled by Voliva's men, was efficient at

enforcing them. The stories told in contemporary accounts are so strange they sound like folklore, but in the case of Zion, they seem to be true. Rather than merely screening films for immorality, Zion banned movie theatres altogether. Tobacco was banned in Zion, and when trains stopped in town, police boarded them to arrest smokers. Voliva continued Dowie's ban on profanity, pork, oysters, alcohol, doctors, drug stores, unions, and secret societies. Women were forbidden to cut their hair, expose their necks, or straddle a horse. Men were not allowed to spit in the streets or wear tan shoes. To ensure compliance, Zion citizens were encouraged to spy on each other. The laws, of course, applied to Independents as well as church members.

Some Zionites were known to take the train south to Waukegan for a taste of the demon rum. Others sneaked into movie houses or lit up cigarettes. Zion detectives sometimes lurked in Waukegan looking for familiar faces patronizing dens of iniquity. Worse treatment was sometimes in store for those who ventured back from Waukegan drunk. On one occasion, a returning inebriate was arrested by the Zion police and beaten severely. His son went to see him in jail and found him lying on a cot with one eye hanging down on his cheek, knocked (or gouged) out by the Zion Guard.

The elected officials of Zion, who mostly did Voliva's bidding, spent little on city services. Garbage service was poor, and the dirt streets turned to mud when it rained. In 1914, soon after Voliva's forces gained control, the Zion council voted to hand over to Voliva all the parks in Zion City as his personal property. The Zion police could then shoo the children of Independents out of the parks for trespassing on the General Overseer's land. When Voliva ordered the closing of the public high school in Zion, it closed.

Voliva had little time for other religions, and he scorched Christian Scientists and Roman Catholics in Leaves of Healing. He usually referred to the local Christian Assembly church as the "monkey house," but on occasion he called it a "spiritual whorehouse." Its pastor was "Jackass Dake." The Grace Missionary church, a splinter from Voliva's own sect, was the "goathouse," and its pastor was "little Grinny Granny Goodwin" (alternatively a "little pimp" or a "pukescooper"). Of course, this is only what Voliva said about them from the pulpit; what he said in private must be left to the imagination.

Like Dowie before him, Voliva frequently made personal denunciations from the pulpit. He once caused a minor stink by referring to a defecting deacon as "Whistlebritches." On another occasion, he humiliated a female church member in a Sunday sermon. That night, her teenage son set fire to the Tabernacle, damaging it severely.

Zion was founded as a theocracy, and Voliva fought to keep it that way. Some favored making Zion an open city, but Voliva and his Theocratic Political Party prevailed. Taverns, tobacco shops, theaters, doctor's offices, and so forth remained banned. At election time, Voliva appointed a Christian Catholic Church slate and his people duly elected it, sometimes with the help of substantial voter fraud. As a result, Zion was sharply divided by church affiliation. Many of the businesses that sprang up along 27th Street were run by Independents, and the stores there became known to Christian Catholic Apostolic Church members as "Rat Row."

Voliva never had as many spectacular healings as Dowie, though many were claimed to be healed. Under Voliva, the Christian Catholic Apostolic Church continued its missionary work, and Leaves of Healing was distributed in many foreign countries. One of the largest and most successful missions was in South Africa, once a republic run by the Boer flat-earther, Paul Kruger, and still something of a hotbed of zeteticism.

By 1922, Zion's financial health was restored, and Voliva decided that the best way to get his message out would be to start a radio station. WCBD, with 5,000 watts of power, became the voice of Zion, and Voliva went on the air regularly to thunder against the "Devil's Triplets"—evolution, modern astronomy and so-called higher criticism. He had a standing offer of $5,000

to anyone who could prove to him that the earth is a globe, and nobody ever collected. By this time, Voliva was by far America's best-known flat-earther, but he was hardly alone.

Reverend George H. Dowkontt, a well-known New York churchman, was outspoken in his support of Voliva's cosmogony. His father, George D. Dowkontt, was a medical missionary who emigrated to the U.S. from England around 1880. The elder Dowkontt opened a mission in New York similar to one he had run in London, his operation including a clinic and a "day nursery" (read, day care center). The mission was successful, and it was still operating in the 1890s. [ref. 8.1]

The son followed in his father's footsteps. Attending Princeton, George H. Dowkontt made the football team in 1894 and subsequently took degrees in medicine and theology. He put both degrees to work for several years as a foreign medical missionary. By 1929, he was back in New York, pastor of a Brooklyn church and director of the Fulton Street Prayer Meeting. An uncompromising fundamentalist, the Reverend Dr. Dowkontt was outraged by liberal theologians, whose views often paralleled those of infidels. To expose a leading example, he wrote The "Deadly Parallel;" a Comparison of Thomas Paine's "Age of Reason" with Harry E. Fosdick's "Modern Use of the Bible" in Parallel Columns, Showing Their Striking Similarities.

Thomas Paine was (and still is) a favorite fundamentalist whipping boy. Paine had written that modern astronomy flatly contradicts the astronomy inherent in the Bible. Both Harry Emerson Fosdick and Dowkontt agreed with Paine, but what frosted Dowkontt was that Fosdick concluded thereby that the Bible is not scientifically reliable. Like Voliva, Dowkontt concluded otherwise. He once told a New York reporter that "the Bible says the earth is flat and so does my common sense." [ref. 8.2]

Another flat-earth clergyman of this era was Father John Dumich, a priest of the Serbian Rite Orthodox church. Father Dumich pastored Orthodox parishes in Minneapolis and Chisholm, Minnesota, and in Rossford, Ohio (a Toledo suburb). His 1922 book Earth Is Not Round strongly suggests that English was his second language, and it reveals little knowledge of science or zetetic astronomy. Like John George Abizaid (of whom more below), and perhaps Voliva, Father Dumich seems to have come to his flat-earth views independent of established zetetic tradition.

Charles Sylvester DeFord lived in Fairfield, Washington, a small town twenty miles southeast of Spokane and six miles west of the Idaho border. DeFord, his wife, and six children moved to Washington from Missouri in 1902, settling first on a farm five miles west of Mount Hope. In Missouri, DeFord had been active in the Church of God (Adventist), a small sect organized in 1865. The Church of God (Adventist) agreed with the Seventh-day Adventists on most doctrines, but the sect refused to accept Ellen G. White as God's prophetess. Like the Seventh-day Adventist, they held that Saturday is the true Sabbath, the dead remain unconscious until resurrected for Judgment, and the souls of sinners will be destroyed at Judgment while the righteous are rewarded here on earth. Additionally, they considered the name "Church of God" divinely inspired. [ref. 8.3] [note 8.2]

The Church of God (Adventist) had its headquarters and publishing house at Stanberry, a small town in the northwestern corner of Missouri. The sect was at least sympathetic to flat-earthism. Around the turn of the century, the Church of God Publishing House published Lady Blount's tract on the Saturday Sabbath, The Day of the Lord, which ended with a poem alluding to the flat earth. DeFord maintained his connection with the sect for some time after moving to Washington, and during 1903 through 1905 he contributed four numbers to their bimonthly Bible Tract Series: Those False Prophets, Parable of the Ten Virgins, An Old Habit, and Crucifixion and Resurrection. [ref. 8.4]

Some time afterward, DeFord wrote and self-published a curious, undated tract entitled Christ Our Substitute which argues against that mainstay of fundamentalism, substitutionary atonement.

The tract ends with a despairing poem entitled "What Is Truth?" in which DeFord cataloged some of the violently contradictory doctrines offered by various churches and concluded as follows:

Can truths that differ as these do
And contradict each other so
Be truths that really are true?
Some preacher tell us if you know.

The movie meets my carnal needs.
Tho movies are but human show,
They're better than these wrangling creeds,
So to the movies I will go.

The burned-out tone suggests that DeFord knew firsthand about religious feuds and contradictions. Indeed, his Church of God (Adventist) has been so racked by schisms that it no longer exists under that name, though several descendant sects survive. It is not known whether flat-earthism was ever an issue in the Church of God's internal warfare, but one of the doctrinal contradictions DeFord listed in "What Is Truth?" was the question of the earth's shape. It was a question he personally had long since decided.

Exactly when DeFord's flat-earth pamphlet A Reparation: Universal Gravitation a Universal Fake, etc. was first published is unknown. The third edition (discussed below) dates from 1930 or 1931. The first two editions must have been small and obscure; they have vanished from the face of the earth without even a hint that anyone ever saw them. The curious work that remains opens with these words:

To me truth is precious. I love it. I embrace it at every opportunity. I do not stop to inquire, Is it popular? ere I embrace it. I inquire only, Is it truth? If my judgment is convinced my conscience approves and my will enforces my acceptance. I want truth for truth's sake, and not for the applaud [sic] or approval of men. I would not reject truth because it is unpopular, nor accept error because it is popular. I should rather be right and stand alone than to run with the multitude and be wrong.

The holding of the views herein set forth has already won for me the scorn and contempt and ridicule of some of my fellowmen. I am looked upon as odd, strange, peculiar; as being a little weak minded; as having a broken wheel or a slipping cog in my mental machinery. But truth is truth and though all the world reject it and turn against me, I will cling to truth still. [ref. 8.5]

The truth DeFord had in mind is that the earth is a stationary plane. He chose A Reparation for his title because he was convinced that a serious breach had been made in "the true science of the universe," leaving it sadly in need of repair. The zetetic work of reparation and restoration had been in progress for half a century, and DeFord thought permanent progress was being made. [ref. 8.6]

As his title suggests, DeFord was especially scornful of gravity. He found the very idea absurd. How can gravity be a contractive force, he asked? All other forces are expansive. [ref. 8.7] The gravity of the sun and moon is supposed to cause the tides. Why then don't tides occur all over the earth? According to the Youth's Companion of October 1909, the Mediterranean Sea has no tides. [ref. 8.8] Even the zetetic opponent David Neild, in The Earth a Globe, admitted that there are no tides in Tahiti. [ref. 8.9] "Universal Gravitation is a universal fake," he concluded. "It is one of the greatest deceptions ever foisted upon an over credulous world." [ref. 8.10]

DeFord had only contempt for astronomers. Planets supposedly remain in orbit because the centripetal force of rotation is balanced by gravitational pull. DeFord argued that the alleged

balance of force would actually bring things to a standstill. [ref. 8.11] On the other hand, astronomers also claim that the mutual gravitation between the planets is almost negligible. "Do you smile upon your sleeve," DeFord asked, "or do you just haw! haw! right out loud when you read such 'scientific' nonsense!" [ref. 8.12] To top it all off, DeFord had read Einstein's claim that a straight line is not the shortest distance between two points. [note 8.3] A ten-year-old knows better, he scoffed. [ref. 8.13]

To test the competence of astronomers, DeFord sent a simple question to "twelve astronomical experts in America and Europe," including the famous E. W. Maunder and the immortal [note 8.4] T. J. J. See: How much of a 150-foot lighthouse should be visible from a vantage point 640 feet above sea level and 40 miles away? [ref. 8.14] Maunder and See replied that the hypothetical lighthouse would be completely out of sight below the horizon. Two others replied that little or none of it would be visible. Five estimates fell in the 96–100 foot range (disregarding refraction, spherical geometry yields 98.2 feet visible). Two others estimated 120 and 125 feet (conventional, allowing for normal refraction). The twelfth wrote that 54 feet should be visible, but perhaps he meant invisible (that is, 96 feet visible).

The question DeFord posed to the astronomers was not hypothetical. The twin Cape Ann lighthouses near Gloucester, Massachusetts stood 150 feet high. The observatory on Great Blue Hill, eleven miles south of Boston Common, is 640 feet above sea level and 40 miles from the lighthouses. DeFord had it from the Chief Observer that both lighthouses were typically visible all the way down to the water. Reviewing the astronomers' answers, DeFord asked, "Now how much dependence can be put in men of science (?) who wander off into space and tell us all about conditions trillions of miles away, when they can not solve a simple problem right down here on earth itself?" [ref. 8.15]

Throughout, DeFord's Reparation mixes stock zetetic arguments with original insights. He made the usual zetetic arguments about sunset being caused by perspective [ref. 8.16] and the limited range of the sun's rays. [ref. 8.17] Then he declared that darkness would be impossible on a globular earth. If the sun were as large and powerful as astronomers suppose, its rays would go around the earth, rebound, and light up the back side as well. [ref. 8.18] Regarding lunar eclipses, zetetics had always attributed them to an unseen dark body passing in front of the moon, an assertion that brought sneers from skeptics. Now, DeFord discovered, astronomer Percival Lowell claimed there are myriads of dark stars in the sky. [ref. 8.19]

Considering DeFord's background and circumstances, A Reparation is a monument of scholarship. DeFord was familiar with the two periodicals published in Zion, Theocrat and Leaves of Healing. He quoted from or referred to flat-earth works by Lady Blount, Rowbotham, Carl Albert Smith, Thomas Winship, and Orlando Ferguson. He was familiar with The Earth a Globe by Reverend David Neild, the New Zealand antizetetic, and the work of geocentrist Charles Robertson. These are not the kinds of works one would find in Fairfield Public Library—if Fairfield then had a library! [note 8.5] Even conventional scholarship could not have been easy for DeFord. The nearest major libraries were in Spokane and Cheney, both about 20 miles away as the crow flies. Nevertheless, DeFord apparently spent some time studying recent geology books. Many flat-earth writers have accomplished much less with much more.

Dowkontt, Dumich, and DeFord were relatively isolated individuals, voices crying in the wilderness, and their impact was limited. Outside of Zion, the only large cluster of active flat-earthers was in the Boston area. Indeed, Boston was already a hotbed of flat-earthism back in 1914, when Voliva preached his first sermon against conventional astronomy. One Bostonian, Charles Morse, had already published three flat-earth works and another, John G. Abizaid, had published two editions of a pamphlet. Two other Bostonians would soon publish zetetic books. In short, Boston had no rival as the intellectual capital of flat-earthism in the United States.

Brookline, Massachusetts is a suburb three miles west of Boston Common and two miles south (and across the Charles River) from Harvard University. In 1913, Brookline was Boston's wealthiest residential suburb and (naturally) home of the Boston Country Club. In that year, 64-year-old Charles W. Morse, Brookline's "practical watch and clock repairer," published a 78-page book entitled Unpopular Truth Against Popular Error in Reference to the Shape of the Earth.

Morse was a long-time flat-earther whose two earlier flat-earth works, Is the Earth a Level Stationary Plain, or a Whirling Globe? and Is the Earth in Motion or at Rest? have not survived. A born controversialist, he was an inveterate writer of letters-to-the-editor, not just to the Boston papers, but to New York papers as well. Indeed, whenever someone wrote or spoke favourably about conventional astronomy, Morse would fire off a letter or letters demanding answers to tough questions. He rarely got a response. An exception was the famous French astronomer Camille Flammarion. When the Boston Herald published an article by Flammarion, [ref. 8.20] Morse responded immediately. The Herald refused to print his rebuttal, so Morse sent it to Flammarion himself. A friendly correspondence ensued, and Flammarion had the response and another article by Morse printed in the magazine of the French Astronomical Society. Morse was also invited to join the Society, which he did. [ref. 8.21]

Morse was especially outraged whenever he heard a minister of the gospel speak favourably about modern astronomy, and he sometimes got up and walked out of church rather than listen to such blasphemy. When he published Is the Earth in Motion or at Rest? two Baptist ministers responded favorably, but he was appalled to learn that most ministers preferred to compromise and reinterpret the Bible to fit science. [ref. 8.22]

As we saw in Chapter 5, Worcester, Massachusetts was a hotbed of zeteticism in the late 19th century, when George W. Bailey of that city wrote his ill-conceived rebuttal to zetetic astronomy. Apparently, the zetetic agitation continued, for in 1908, Professor Robert Marshall Brown of the State Normal School at Worcester performed an experiment on nearby Lake Quinsigamond intended to demonstrate the earth's curvature once and for all. Brown lined up three markers 4′ 2½″ above the water, the total distance being 1¾ miles. He claimed the center marker appeared distinctly above the line of sight between the other two, proving that the water's surface is curved. [ref. 8.23]

Brown's experiment was reported in an article entitled "How One Man Proved the Earth Round." [ref. 8.24] Morse disputed the report and fired off a warmly-worded response, which the Post published. Defenders of the globe responded to Morse, and the controversy raged in the letters column for several Sundays, until the editors closed it with an article in which one "Professor X" explained all. [ref. 8.25] Outraged at being silenced, Morse visited the Post offices and demanded the identity of Professor X. After repeated inquiries, he learned that Professor X was in fact a young Post staff member who knew "about as much about this subject as he does about the Kingdom of Heaven, which is mighty little." [ref. 8.26]

Morse was determined not to let Professor Brown's experiment go unanswered. As he later explained in Unpopular Truth, he decided to try it for himself:

The writer, with a first-class mechanic and a well-known up-to-date photographer, made a trip to Lake Quinsigamond on the 2nd day of June, 1908, and tried the same experiment in practically the same way, and took a photograph of the scene, which proved beyond any doubt in the minds of those present, that the water in that lake was level on the surface, and so acknowledged by the photographer, who still believes that the earth is a globe. [ref. 8.27]

Unfortunately, Morse chose not to publish this photograph, so we have to take his word about what it showed.

The old network of American zetetics, small but efficient, still existed, and Morse was plugged into it. Members exchanged information, documents, and (presumably) copies of precious and hard-to-get flat-earth books and pamphlets. Some material floated around for decades. For example, in early 1888, one D. McArthur, Esq., of Elgin, Illinois, sent Carpenter a spherical clipping from the St. Charles (Illinois) Chronicle about the lunar eclipse of January 28, 1888. Carpenter wrote a two-part response, but the Chronicle declined to print it. Morse eventually received a copy of Carpenter's unpublished response from one M. M. Baldridge of St. Charles, Illinois, and 25 years after it was written, he printed it in Unpopular Truth. [ref. 8.28]

Between the network and his own activities, Morse's reputation as a knowledgeable flat-earther was widespread. In March of 1911, some high school boys in a western state planned to debate the proposition: "Resolved that the Earth is round." They had heard about Morse's book Is the Earth in Motion or at Rest? and they wrote to request copies. Morse obliged, and he was pleased to learn upon later inquiry that the globular side was so discouraged by the arguments in his book that they called off the debate!

Morse's 1913 book, Unpopular Truth Against Popular Error in Reference to the Shape of the Earth, reveals that he was a widely read clockmaker. His knowledge of the Bible was, of course, detailed. His flat-earth reading included Thomas Winship's Zetetic Cosmogony, Rowbotham's second edition of Earth Not a Globe, Carpenter's One Hundred Proofs, Gleason's Is the Bible from Heaven? Is the Earth a Globe? and something by Lady Blount, perhaps her periodical The Earth. He cited geocentrists John Watts de Peyster, Frank Allaban, and J. R. L. Lange. Morse apparently made good use of the Boston Public Library, for he quotes two rare works from their outstanding collection, Atwoods Astronomy, Versus the Mosaic and Copernican Movements of the Earth [ref. 8.29] and Johannes von Gumpach's The True Figure and Dimensions of the Earth. (Von Gumpach thought the world was shaped like a watermelon, being elongated at the poles.)

Unpopular Truth is mostly derivative, and Morse quoted long passages from his favorite flat-earth works. He opened the book as a defender of truth, saying he had no fear of ridicule, and so forth. He called the Copernican system "a fraud, humbug and a swindle." [ref. 8.30] Morse hoped his book would make people think. Morse did not say when or how he became a flat-earther. (Presumably, it was after Carpenter and Gleason died, for he seems never to have corresponded with either of them.) He only said that he had been searching for years for proof that the earth is a globe, and that he began as a believer. Morse concluded that much of science is a conspiracy against Christianity. He wrote:

I believe that no one thing has drawn the people away from Christianity more than the teachings of geology and modern astronomy, together with the Darwinian theory of Evolution, as confirmed by the believers in and preachers of Christianity. [ref. 8.31]

Of the three branches of science assaulting Christianity, conventional astronomy was the worst. The Bible never says the earth moves but often says the sun does, [ref. 8.32] so the Catholic Church was right to oppose Galileo. [ref. 8.33] Morse wrote:

As far as I can see, astronomy robs us of the word of God altogether. Astronomy tells us there is no "up" and no "down," so there is no place either for Heaven or Hell; and geology tells us that the account of creation is a myth; and evolution tells us boldly, that neither the things in Heaven, nor the things on earth needed a creator. [ref. 8.34]

Mostly, Morse dealt in stock arguments recycled from the flat-earth books at his disposal. He cited examples of lighthouses seen when they should have been below the horizon. [ref. 8.35] He railed against geology and atheism. [ref. 8.36] He quoted Lady Blount and Clifton regarding their 1904 Bedford Canal Experiment. [ref. 8.37] His own reading provided some new ammunition. For example, a Chicago newspaper reported that the shoreline of Michigan City,

Indiana, was seen from the tops of Chicago skyscrapers one clear day. At the same time, ships on Lake Michigan were seen 40 miles away, presumably from the same vantage point. [ref. 8.38]

Morse was weakest when trying to deal with spherical arguments. How, he asked, could the time interval from sunrise to sunset be different from the time interval from sunset to sunrise on a globe. [ref. 8.39] He obviously didn't understand.

In closing, Morse thanked the newspapers for giving advertising space to his previous books and for publishing many of his letters-to-the-editor. He expressed hope that Unpopular Truth would make people think. Years before, when he had begun his search for proof that the earth is a globe, he was a believer. In order to retain his belief in God, however, he had to abandon something else he had believed in all his life—conventional astronomy.

Unpopular Truth was Morse's most important flat-earth book, and it strongly influenced all of his Bostonian zetetic contemporaries and successors, Abizaid, Collamore, and Goudey. Morse continued to fight the good fight in the newspapers, but Unpopular Truth was his last major publication. He died in 1932.

One of Morse's contemporaries was John George Abizaid, a Lebanese Christian who had emigrated to Boston late in the 19th century. A manufacturer of razor straps, Abizaid published a flat-earth pamphlet, The Enlightenment of the World Geography, in Arabic in 1906. He translated The Enlightenment into English in 1910, and his second (1912) and greatly enlarged third (1935) editions were bilingual. Abizaid also published a "New Correct Map of the Flat Surface, Stationary Earth" in about 1920.

Abizaid's links with zetetic astronomy are unclear. Perhaps he arrived at his flat-earth views independently and then got caught up in the flat-earth ferment in Boston. He had many unique ideas, and his "New Correct Map of the Flat Surface, Stationary Earth," published about 1920, only vaguely resembles Alexander Gleason's map. In his later years, at least, Abizaid was familiar with the conventional zetetic literature, and in 1933 he claimed to be former president of the Universal Zetetic Society. [ref. 8.40] Nevertheless, zetetic literature largely ignores him. He is not mentioned in flat-earth works by his fellow Bostonians.

Abizaid made clear the purpose of The Enlightenment in the preface to the third edition: "My reason for publishing this book is not for money or fame, but because I wish to show people who differ from my views where their mistakes lie." [ref. 8.41] A sincere and noble desire to educate the less-enlightened is the common currency of thinkers, conventional and (especially) unconventional. He promised "good ideas" and "absolute proofs," but the bottom line was the familiar one: "In this Book of Holy Writ are proofs given by the prophets that the world is flat and stationary, and that the sun moon and stars are always in motion." [ref. 8.42]

To one tired of hearing Rowbotham's zetetic arguments endlessly recycled, Abizaid's approach to the shape of the earth is refreshing. Consider the following argument:

They say the earth is round, both land and water, and that they are always moving around the sun. But if you ask them how the water keeps in its bed while the earth is turning, they will tell you to take a pail of water and swing it fast and see, for the water will not come out until the pail is slowed down.

Who has seen the earth turn around in the way that a person turns a pail? No one. And as long as no one has ever seen or felt the earth turn, you need not believe that it does so. [ref. 8.43]

Things moved along quickly when Professor Abizaid (as he called himself) was giving instruction. He promised proofs, and he delivered them wholesale:

Here is another proof to show that the earth is flat and stationary:

If the earth is round and in motion, as they claim, we should know, for when it turns around, at times we should find our heads and feet and the world above us, as though a person were standing on a ceiling with his head downwards and his feet up. [ref. 8.44]

Short and sweet. By p. 18 (the 13th page of text) his case was proven and his work accomplished. He had only to make provision for slow learners: "If anyone should wish to have a further explanation of my ideas, I will answer his questions, provided I am paid for my trouble." [ref. 8.45] The remainder of the English portion of the pamphlet is devoted to testimonials and such.

Most of the testimonials are from readers of previous editions. As unorthodox thinkers commonly do, Abizaid had sent copies to prominent people, and he received politely worded notes from Richard Byrd, Hubert Wilkins, Cardinal Farley, and several Harvard professors. Commander Byrd wrote as follows:

I received your book "The Enlightenment of the World," also the map for which accept my thanks. I am certain these works will be extremely interesting. [ref. 8.46]

Abizaid also received numerous enthusiastic letters showing that, to many Bostonians, the sphericity of the earth was far from proven. Two of Abizaid's sons, Roger and Charles, respectively a Doctor of Osteopathy and a law student, wrote to express their agreement. Abizaid published a list of 225 names of "those who know and believe that the earth is flat and stationary and the sun and moon is in motion." [ref. 8.47] Abizaids and numerous others with Arabic-sounding names comprise perhaps a third of the list, which is obviously incomplete (the authors of at least two flat-earth letters he published are not included). The first name on the list is that of Aurin F. Hill.

Architect, writer, and insurance salesman Aurin F. Hill was one of Boston's most persistent flat-earth activists. Hill donated a copy of Unpopular Truth to the Boston Public Library, and he appears frequently in Abizaid's works. Charles L. Hathaway was another flat-earther active in the Boston area. Hathaway apparently traveled and gave flat-earth lectures, and his opinions on the earth's shape were published in the Boston Post on February 12, 1899. According to Morse, "his argument and diagrams occupied about one side of the paper, and I claim his argument is unanswerable."

Robert Gould Shaw Collamore published His Pronouncement: A Layman's Version. A Layman's Message in 1924 with Dorrance & Company, a Philadelphia-based vanity press. He is a shadowy character who appears on the zetetic stage, plays his part, and then vanishes. Collamore lived in the Boston area, for he gives numerous quotations from Boston newspapers and makes geographical references to eastern Massachusetts. He was very familiar with some of the zetetic literature, but he apparently didn't have direct access to Rowbotham. He frequently quoted from von Gumpach, but the fact that he ignored Rowbotham suggests that he read von Gumpach for himself. Or, perhaps he lifted the quotes from Winship. Collamore quoted extensively from Empson Edward Middleton. He called South African flat-earther Thomas Winship "a friend of mine." [ref. 8.48] He also corresponded with Edwin Tenney Brewster, who agreed with him that the Bible is a flat-earth book and told him that there are probably tens of thousands who believe it. [ref. 8.49] He also referred to Iconoclast in Earth Review and Shoepfer in Scientific American. [ref. 8.50] (Both of these could have come from Winship, also.)

Unlike Morse, Collamore apparently didn't tangle with the local spherical opposition in the public press. His Pronouncement focuses on religious issues more than other Boston flat-earth books. Collamore was gravely concerned because some laymen and clergymen rejected the Biblical account of the creation and form of the earth while claiming to believe that the Bible is literally true. [ref. 8.51] He wrote:

The real Fundamentalist does not subscribe to some portions of the Bible and purposely qualify or exclude Genesis and other portions coinciding with and supporting Genesis. This is just what some persons calling themselves Fundamentalists do, although by reason of their belief in the Copernican theory they are to that extent actually Anti-Fundamentalists. [ref. 8.52]

Collamore paid tribute to Voliva, agreeing with a Methodist clergyman who had called Voliva "the only true, prominent Fundamentalist in the United States." Collamore found liberal preachers steeped in hypocrisy and evolution. [ref. 8.53] Thomas Paine and Robert Ingersoll, America's two most celebrated infidels, had used astronomy as an argument against the Bible, and liberal clergymen agreed that the Bible errs in describing the earth. [ref. 8.54] Late in the 19th century, Andrew D. White and John W. Draper had written influential books presenting the relationship between Christianity and science as almost incessant conflict, and Collamore accepted that view. [ref. 8.55]

Collamore offered several stock arguments against sphericity. His long section arguing that circumnavigation is no proof of sphericity is straight zetetic astronomy. [ref. 8.56] He took a rather pathetic shot at explaining day and night on zetetic principles. [ref. 8.57] He dragged out such chestnuts as the alleged Standing Orders of the House of Commons, [ref. 8.58] and he argued that canals are always dug according to flat-earth theory. [ref. 8.59] He ridiculed astronomical estimates of the distance to the sun. [ref. 8.60] Predictions of eclipses mean nothing, he argued, because the ancient Chaldean used the saros cycle to predict eclipses and found it perfectly dependable. [ref. 8.61]

Collamore was not overly impressed with the competence of navigators. He once sent a problem off to three different navigation schools, and they came up with three different responses. [ref. 8.62] He argued that errors in navigation had caused numerous disasters off Gloucester and Boston. [ref. 8.63] For navigation purposes, the earth is flat, [ref. 8.64] and he quoted several navigators "admitting" as much. [ref. 8.65]

One interesting argument, which Collamore seems to have originated, is based on the conventional view that the earth is an oblate spheroid. If the earth's equatorial diameter is greater than its polar diameter, then the mouth of the Mississippi is higher than the source. How then can water flow from Lake Itasca in northern Minnesota to the Gulf of Mexico? [ref. 8.66] It is uphill all the way! So far as Collamore was concerned, the flow of rivers like the Mississippi proves the earth is flat.

Collamore also claimed that Alfred Russel Wallace, villain of the Old Bedford Canal affair, had a change of heart in his later years:

[A]fter further study and consideration, he repudiated some of his former contentions and advanced his new theory, which startled some scientists but favorably impressed others. He claimed the earth occupied the central position and not the sun, and that the earth was the only inhabited planet and the sun and all other orbs were contributory to the earth. [ref. 8.67]

Presumably Collamore drew this inference from statements in one of Wallace's last published works, Man's Place in the Universe (1903). Despite Collamore's repeated insistence [ref. 8.68] and Wallace's well-known later eccentricities, the claim is false.

It's not clear what happened to Collamore. His background is hazy and his end is unknown. His Pronouncement was his only published book. Neither he nor his book was ever mentioned in print by another flat-earther.

Reverend Henry J. Goudey was a resident of Back Bay, Boston, on March 6, 1931, when he donated a copy of his Earth Not a Globe: Scientifically, Geometrically, Philosophically Demonstrated (Boston: by the author, 1930) to Boston Public Library. On the title page, Goudey

lists his other works as X-Rays of Truth, The Stone Kingdom, The Holy Spirit Not a Person, The Tabernacle of David Restored, A Kingdom of Conquest, and The Kingdom of God. Goudey's Kingdom of God was "designed especially for ministers and Bible students and represents the Kingdom of God as a reformatory institution, progressive in its nature and belonging to time and not the immortal state." [ref. 8.69] None of his other works has survived.

Little is known of Goudey's life. Unlike Morse's Unpopular Truth, Goudey's Earth Not a Globe is almost devoid of autobiographical information. Goudey did not claim originality for everything in his book, though he claimed he had made all of the thoughts his own. He acknowledged his debt to "Dr. Samuel B. Rowbotham, Prof. Wm. Carpenter, Prof. Alex. Gleason, Albert Smith, Fred H. Cook, C. S. DeFord, and others; nearly all of whom are now dead." [ref. 8.70] He referred to "W. G. Voliva, in his writing," presumably a reference to the special edition of Leaves of Healing. He also referred to von Gumpach in a manner that suggests he actually read the work. [ref. 8.71]

Goudey did his best to bring flat-earthism up to date. For example, rocket pioneer Dr. Robert H. Goddard of Clark College, in Worcester, Massachusetts, had in 1920 published a small pamphlet entitled A Method of Reaching Extreme Altitudes. [ref. 8.72] This pamphlet, which speculated about reaching the moon with a rocket and caused a minor stir in the national press, could hardly be ignored in a flat-earth stronghold like Worcester. Goddard's practical intention was lifting meteorological instruments above the altitudes reachable by balloons, and he spoke of sending rockets 60 or 80 miles straight up and having them fall back near the launch point. Following Rowbotham's alleged experiment with cannon balls shot straight up, Goudey argued that on a rotating earth, Goddard's then-hypothetical rocket would land far from the launch site. Similarly, he argued that falling bombs and flying airships refute the rotation of the earth. [ref. 8.73]

Goudey made numerous stock arguments. His discussion of surveying was unoriginal. [ref. 8.74] His claim that a telescope will always bring a hull-down ship into view is early Rowbotham. [ref. 8.75] He disposed of refraction with a bold assertion: "So as a ship and the observer are both in a medium of uniform density, the air, there is no refraction." [ref. 8.76] His long discussions of zetetic perspective are wholly derivative. [ref. 8.77] Eclipses are cyclic phenomena, he asserted, and they were successfully predicted hundreds of years before Copernicus. [ref. 8.78] He cited stock examples of eclipses of the moon with sun and moon above the horizon, saying refraction is not adequate to explain them. [ref. 8.79] Practical navigators operate on the assumption that the earth is flat. [ref. 8.80]

Goudey ridiculed measurements of distance to the sun in familiar zetetic fashion. [ref. 8.81] He gave examples of the signal of a heliograph being seen too far [ref. 8.82] and of mountains photographed from too far away. [ref. 8.83] With Rowbotham, he brushed off the dip of the horizon in a theodolite as being due to collimation error. [ref. 8.84]

Goudey owed much to Alexander Gleason. He referred to Gleason's experiments on the Erie Canal and Lake Erie. [ref. 8.85] He reproduced the deceptive diagram Gleason invented to rebut sphericity. [ref. 8.86] Regarding another thoroughly dishonest drawing, he said, "Now, in all fairness and honesty to all scientific intelligence and mechanical skill, we declare this diagram to be according to the so-called science of the globular theory." [ref. 8.87] He cited Gleason to prove that distances in the southern hemisphere work out on the zetetic scale but not on the globe. [ref. 8.88] (Actually, they don't work out on the zetetic scale, but Goudey could ignore this little detail as well as Gleason.)

On the issue of the sun's distance, however, Goudey departed from Gleason. The actual distance to the sun is easily calculated, he said. Using Gleason's own example, he noted that at noon on the equinox observers in Ottawa, Canada and South America both observe the sun at 45 degrees above the horizon. Its distance is therefore 2700 nautical miles, [note 8.6] though this distance

was not universally accepted among zetetics: "Professor Alex. Gleason gives the distance however, geometrically computed, as being only 1,725 nautical miles, which is also the average distance of the moon, north star, and other heavenly bodies." [ref. 8.89] (This apparently glaring discrepancy is due to Gleason's acceptance of Hampden's claim that distance from the north pole to the equator is 57½ degrees. [ref. 8.90]) As for the sun's diameter, Goudey calculated the diameter of the sun from area beneath it that is bathed in vertical rays. [ref. 8.91] He correctly attributed this method to Dr. Charles Robertson, [ref. 8.92] but he neglected to mention that Dr. Robertson was a geocentrist who contemptuously dismissed the flat-earthers.

Goudey made few original arguments. Perhaps he originated the claim that the north–south elongation of the continents is an argument against sphericity. [ref. 8.93] [note 8.7] His claim that Antarctic regions are colder than corresponding Arctic regions is also unfamiliar. [ref. 8.94]

The Boston zetetics made enough noise so that scientist Garrett P. Serviss wrote a long article refuting them for the Boston American of January 21, 1922.

Meanwhile, Zion had gained an unwanted notoriety, for Voliva's strident insistence that the earth is flat drew frequent comment in the local and even national newspapers, and articles about Voliva and Zion appeared in national magazines such as Collier's (May 14, 1927) and American Mercury (April 1930). Indeed, Zion became a national laughingstock.

With the stream of zetetic literature produced in Boston as an example, it is all the more remarkable that neither Voliva nor any of his disciples ever produced a flat-earth book, or even a pamphlet, to defend zetetic astronomy. The Christian Catholic Apostolic Church reprinted Carpenter's One Hundred Proofs that the Earth Is Not a Globe in 1929, and Voliva regularly denounced astronomy over WCBD. Except for occasional articles in Leaves of Healing and The Theocrat, the only flat-earth publication produced by Voliva and company was a special issue of Leaves of Healing entirely devoted to the shape of the earth.

The May 10, 1930 issue of Leaves of Healing runs 64 pages, not counting fold-out plates. With about 75,000 words of text and numerous illustrations, it is equivalent to a medium-sized book. The cover photo shows Voliva holding a book in one hand and pointing with the other to Alexander Gleason's flat-earth map, held by an assistant. The caption says he is "making a critical examination of the so-called proofs that the earth is a whirling globe."

In the introduction, Voliva stated zetetic astronomy's message as well as it's ever been done.

The so-called Fundamentalists of the Churches, in opposition to Modernism, strain out the gnat of Evolution and swallow the camel of Modern Astronomy. All the leading Modernists declare that the Bible teaches that the earth is a stationary plane. In that declaration, they are right, notwithstanding the fact that they reject the Bible and accept the teachings of Modern Astronomy. The Fundamentalists who profess to believe the Bible to be the Inspired Word of God, and who, in the face of this profession, accept the astronomical theories that are taught in schools, give the lie to their profession …

While it is true that Evolution has slain its thousands, it is equally true that Modern Astronomy has slain its tens of thousands! Multitudes of hitherto professing Christians, unable to reconcile the theories of Modern Astronomy with the plain declarations of the Bible, have accepted those theories and rejected the Bible, so that it can be truthfully said that the faith of millions in God, in Jesus Christ, and in the Bible as the Inspired Word of God, has been uprooted and completely destroyed.

Besides the introduction and several short pieces and extracts, the magazine consists of six major articles, one by Voliva, two by Chester M. Shippey, and three by Apostle Anton Darms. Voliva's lead article is entitled "Which Will You Accept? The Bible, the Inspired Word of God, or the

Infidel Theories of Modern Astronomy?" Sixteen years after his first public attack on sphericity, he was still singing the same song:

Modern Astronomy, Evolution, and Higher Criticism are a trinity of evils—Modern Astronomy by no means being the least of the three—which are doctrines of seducing demons, originated and taught for the purpose of destroying, in the minds, hearts, and lives of the people, their acceptance of the Bible as the Inspired Word of God, and their belief in and practice of the Christian religion.

The Bible plainly teaches that the earth is a plane. Modern Astronomy teaches that the earth is a globe. Both cannot be true. One of the two positions must be false. Which will you, as a professing Christian, accept—the plain teaching of the Bible, the Inspired Word of God, or the wild, harebrained speculations of infidel astronomers?

The infidel theme was an old zetetic favourite. Voliva quoted from Thomas Paine's Age of Reason, The Clarion (a British socialist magazine with atheist tendencies), the 19th century American skeptic Robert Ingersoll, and other free thought sources. (Some of the quotes seem to have been lifted from the Earth Review.) All of the freethinkers agreed that the Bible teaches that the earth is flat and science teaches that the earth is a globe.

Having tarred astronomy with the atheist brush, Voliva attacked it hammer and tongs. He lambasted astronomers' attempts to measure the distance from the earth to the sun. Copernicus estimated 3,000,000 miles; Kepler estimated 13,000,000; Newton first estimated 28,000,000 and then 54,000,000. Later, others estimated 95,000,000 or even 104,000,000 miles. Voliva thought he detected some discrepancies here, with the high and low estimates showing "just a little insignificant difference of 101,000,000 miles."

Voliva wrote that his $5,000 challenge brought him numerous letters from skeptics who betrayed "an appalling ignorance of the whole subject." Some, for example, argued that the earth is a sphere because it can be circumnavigated. For these benighted souls, he repeated one of his favourite illustrations:

Take a silver dollar to represent the stationary, plane earth. The centre of the dollar is the North Centre. Draw a line from the edge of the dollar to the North Centre. As you go toward the Centre you are travelling north; as you go from the Centre to the edge you are travelling south. East and west are simply points at right angles to north and south. Start from a given point and travel due east, and you will be compelled to come back to the point of departure.

A barrage of Scriptures followed. Voliva insisted that the "firmament" of the King James Bible was understood by the ancient Hebrews to be a solid dome covering and enclosing the earth.

Two articles by Chester M. Shippey, "Answers to Common 'Proofs' that the Earth is a Globe" and "The True Shape of the Earth: A Practical Discussion," addressed spherical critics. Shippey's answers were mostly stock replies, representing zetetic wisdom gleaned from three-quarters of a century of flat-earth works. We will summarize some of them here to give the flavour of the whole.

> **1.** Why do ships sailing out to sea seem to disappear over the horizon? Is that not proof that the earth is spherical? Answer: Not at all. Ships are often seen at distances where they should be out of sight behind the supposed curvature of the earth. Ships seem to disappear over the horizon for the same reason that the rails of a railroad track seem to meet in the distance. It is a matter of perspective. A good telescope will bring a disappearing ship back into view.

2. Where is the edge of the earth? Answer: The seas are surrounded by a great wall of ice. All of the great explorers in the Antarctic regions have reported ice barriers which they could not penetrate, and the further south one goes, the higher the barrier. No one knows what lies beyond.

3. How can there be day and night if the earth is flat and the sun is always above it? Answer: We live on a flat, stationary earth, and the sun, moon, and stars circle above us. The sun is a small body, only 32 miles in diameter. (We know this from measurements made in equatorial regions; the area below the sun in which a vertical pole casts no shadow is 32 miles in diameter.) The sun's influence is limited. When it gets too far away, it merges with the horizon and appears to set. When it comes back into range, it appears to rise.

4. Isn't the sun millions of miles away? Answer: Nonsense! The height of the sun is easily computed. At noon on the vernal or autumnal equinox, an observer in Maine will see the sun at an altitude of 45° above the horizon. An observer in southern Colombia, S. A. will see the sun directly overhead. The distance between the observers is about 3,000 miles, so simple geometry tells us that the altitude of the sun is also about 3,000 miles.

5. How can astronomers predict eclipses if they are wrong about the shape of the earth? Answer: Eclipses occur in cycles. Lunar eclipses, for instance, occur in a cycle of 18 years 10¾ days. The ancients used this cycle, which they called the saros, to predict eclipses when everyone knew the earth is flat. Besides, lunar eclipses disprove the globular theory. Copernicans claim that lunar eclipses occur when the earth gets between the sun and the moon, yet numerous lunar eclipses have been observed with the sun and moon well above the horizon (examples: July 19, 1750; April 20, 1838; May 26, 1868).

As always, however, the bottom line was the Bible. Apostle Darms provided the conclusive arguments in two articles, "The Teaching of the Word of God Regarding the Creation of the World and the Shape of the Earth in Fifty Questions, Answered by Scripture" and "Ten Reasons Why a Christian Should Reject Modern Astronomy." The former, a slightly revised version of his 1915 article, contains the most extensive list of Biblical flat-earth arguments ever compiled.

According to zetetic astronomy, the earth is enclosed by a solid dome, the firmament of the King James Bible. Isaiah 40:22 says of God, "It is He that sitteth upon the circle of the earth, and the inhabitants thereof are as grasshoppers." Job 22:14 says, "He walketh in the circuit of heaven." Darms argued that the Hebrew word chug, translated "circle" and "circuit", should have been translated "arch" or "vault" in both cases. (Modern scholars agree; the New English Bible gives "vaulted roof" and "vault," respectively.) Other verses say that the heavens are stretched out like curtains to enclose the earth.

The sun, moon, and stars must be small bodies to fit inside the dome. Regarding them, Genesis 1:17 says, "God set them in the firmament of the heaven to give light upon the earth." Revelation 6:13 also constrains the size of the stars, for it says "the stars of heaven fell unto the earth, even as a fig tree casteth her untimely figs, when she is shaken by a mighty wind." Darms argued that the stars could not fall on the earth unless they were much smaller than the earth.

Conventional astronomy holds that the earth orbits the sun. Numerous Biblical verses assert that the earth is immovable. Darms cited four, including Psalm 93:1, "The world also is stablished that it cannot be moved." Furthermore, he argued, the Bible teaches that the sun moves with respect to the earth; Joshua bid the sun (not the earth) to stand still at Gibeon (Joshua 10:12).

As for the shape of the earth, the Bible frequently says the earth has corners or ends (e.g. Isaiah 11:12 and Job 28:24). God "stretched out" (Psalm 136:6) or "spread forth" (Isaiah 42:5) the earth, terms that make sense for a plane but not for a sphere. Any doubts are erased by one of Daniel's visions: "I saw, and behold a tree in the midst of the earth, and the height thereof was great. The tree grew and was strong, and the height thereof reached unto heaven, and the sight thereof to the end of all the earth (Daniel 4:10–11)." Darms pointed out that no matter how high the tree, it could not be seen all over a spherical earth.

If you believe the Bible, you have to believe that this earth was created in six days of twenty-four hours each. The Twentieth Chapter of Exodus settles that, absolutely.

Darms argued his case at far greater length. When he was finished, he had quoted 229 verses selected from 39 of the 66 books of the Bible. Even this does not accurately describe the intensity of his scriptural barrage, for Darms used many of his favourite proof texts to make several points, thus repeating them again and again.

In his "Ten Reasons Why a Christian Should Reject Modern Astronomy," Darms likewise appealed to scriptural and doctrinal arguments. He listed the honour roll of zetetic writers known to him, but he felt that their accomplishments paled in comparison to another:

However great have been the efforts put forth by these and other writers that have taken in hand to defend the Bible, it must be said that to Wilbur Glenn Voliva belongs the honour of having brought this issue to the attention of more people than all other writers and lecturers on the subject combined. To this servant of God belongs the honour that no one else can claim of having a Church stand with him on this important teaching of God's Word—the Christian Catholic Apostolic Church in Zion.

Actually, it is not clear to what extent the church stood with him. Officially, Voliva was in absolute control of the Christian Catholic Apostolic Church, and its doctrines were whatever he said they were. No doubt Darms and others in the church were sincere flat-earthers, but some were biding their time in silence. Silence was a quality cultivated in Zion, for Voliva did not take opposition kindly, whether in ecclesiastical or temporal affairs. In some respects, Zion under Voliva was like a prison without walls.

By 1930, when he published the special flat-earth edition of Leaves of Healing, Voliva's iron grip on Zion was already slipping. In the late '20's, the Illinois legislature had investigated Voliva's financial and other activities and recommended prosecution. Nothing came of the investigation, but Voliva's influence was weakened. The Great Depression again brought severe financial problems to Zion, and Voliva's influence was further diminished. In 1935, Voliva was deposed as General Overseer of the Christian Catholic Church, which dropped the word "apostolic" along with flat-earthism.

After that, Voliva began wintering in Florida, and from 1939 onward, he spent most of his time there, returning to Zion only intermittently. Since about 1920, he had subsisted on a diet consisting largely of buttermilk and Brazil nuts, which he believed would sustain him to an age of 100. Now he was seriously diabetic, and his eyesight was failing. When he returned to Zion for the summer of 1942, ill health prevented him from going back to Florida. He died in Zion on October 11, 1942, at age 72, and General Overseer Michael Mintern, his successor, conducted the funeral.

Zion has changed, and today you can go into the bowling alley on Sunday and get a drink. The Christian Catholic Church is still a power in town, with a huge tabernacle and an impressive parochial school system. And there are still a lot of older people who have never believed that the earth is a globe.

In 1942, the last year of his life, Wilbur Glenn Voliva received a letter from a young Texan who wrote that he had never believed that the earth is globe. The correspondent had stumbled upon a reference to Voliva's flat-earth views, and he wanted more information. The 72-year-old Voliva sent a kind reply to 18-year-old Charles Kenneth Johnson.

Chapter 9
Johnson and Johnson: Two Witnesses

WHEN THE YEAR 2000 APPROACHED, the Flat Earth Society was headquartered on a California hillside among Joshua trees, creosote bushes, and tumbleweeds. The Mojave Desert lies below, looking flat as a pool table. About 20 miles to the west is the desert city of Lancaster; you can see right over it. Beyond Lancaster, 20 more miles as the cue ball rolls, the Tehachapi Mountains rise up from the desert floor. North of Lancaster is the Rockwell International plant where the Space Shuttle was built. Further north, out of sight behind a nearby hill, lies Edwards Air Force Base, where the Shuttle was tested. Los Angeles is not far to the south.

The headquarters building, a modest cabin on a 5-acre plot, was home to Charles and Marjory Johnson since 1972. At election time, it doubled as the polling place for the eastern half of the precinct. The power lines ended at the bottom of the hill, but the Johnsons had a diesel generating unit that supplied power for home and headquarters during the cool evening hours. Heading the Flat Earth Society was a full-time job for Charles Johnson, and having his office at home made it easy to catch up on his work after the desert sun set.

A small, nonprofit organization can take on the image of its leader, and Johnson's Flat Earth Society was no exception. Johnson was a remarkably well-read, strongly opinionated, self-taught individualist. Part of his time was devoted to editing what surely was the nation's most frankly worded quarterly, The Flat Earth News, for distribution to members. Part of his time was devoted to answering inquiries about the society.

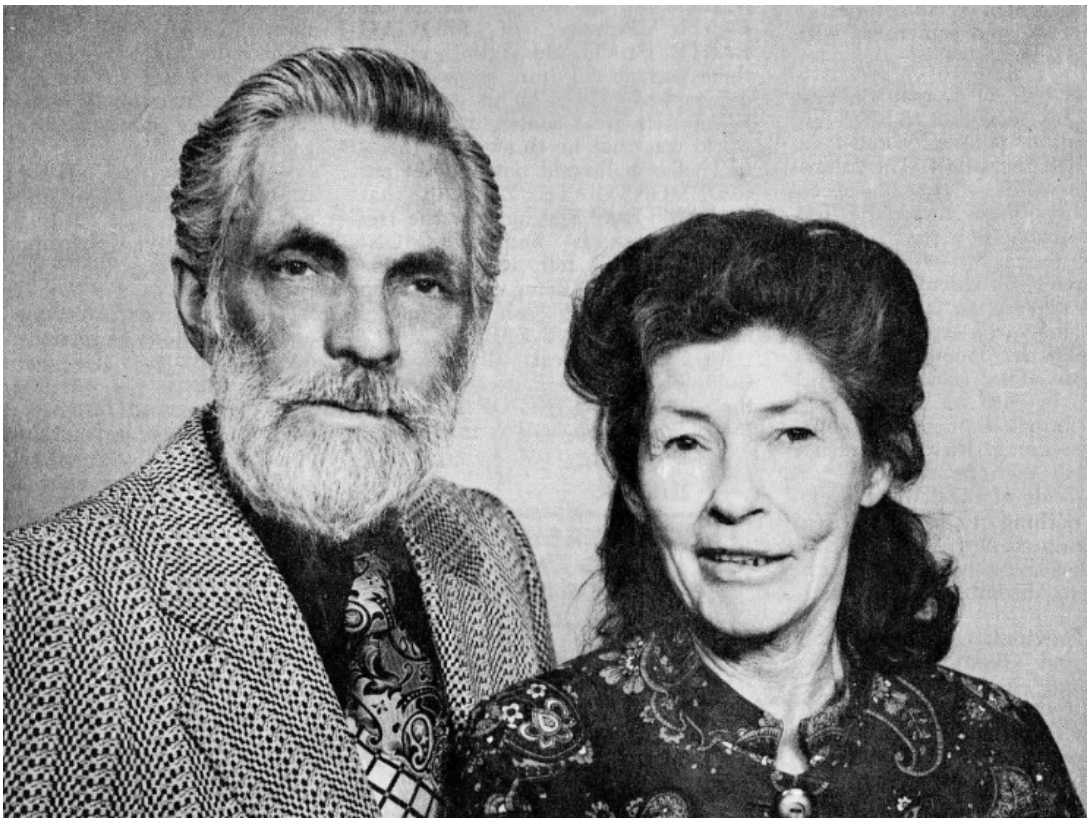
Charles Johnson was a bearded, distinguished-looking man who drank coffee seemingly by the gallon. He chain-smoked, hand-rolling cigarettes so skilfully that they would seem factory made. His soft voice still had a touch of Texas. Unlike the stereotypical prophet, he had a wry sense of humour and a booming laugh. Fond of plays on words, he stated "The foundation of science is the spinning grease-ball. They claim the ball comes from Greece, so I just say 'grease-ball.' It's a ball-bearing universe."

Charles Kenneth Johnson was born on his father's ranch near San Angelo, Texas, in 1924. Soon afterward, his family moved into town. Johnson's father was born "dirt poor" but, according to Charles, with hard work and a bit of borrowed money he became "quite a cattleman in Texas" to the extent that (also according to Charles) Larry McMurtry's Lonesome Dove could have been a biography of the elder Johnson. His father always told Charles to live in such a way that he wouldn't be ashamed to look any man in the eye. The elder Johnson died in the early 1940's when Charles was a young man of about 20 years. His mother, quite a bit younger than his father, died in 1996 at the age of 93.

Johnson could vividly recall the day, sometime in the early 1930's in San Angelo, Texas, when his grade school teacher first presented the globe to his class. Johnson was sceptical. Why, he asked, didn't things fall off? The teacher told him that if you swing a bucket of water over your

head fast enough, the water won't spill out. When he got home from school, he took a bucket out to the well, pumped some water into it, and swung it around. The water didn't come out but, like John G. Abizaid (see Chapter 8), he could see that the demonstration had nothing whatever to do with the shape of the earth. Johnson rejected the globe on the spot, and never found reason to change. "You can train the two-footed Animals in the schools," he once said. "You can tell them that the earth is a bowl of jelly, and they'd accept that just as well as anything else. Somebody would come along and say, 'It must be jelly, 'cause jam don't shake like this.' It would be a good dogma, and the average person would accept it just as well."

Johnson formally parted company with the spherical school system as a teenager, but he continued his education on his own, reading voraciously. He worked in various places in Texas, then in Colorado, and finally ended up in California. In 1959, he walked into a San Francisco record store to buy a copy of Acker Bilk's haunting hit, "Stranger on the Shore." Inside he found Australian-born Marjory Waugh buying the same record. He soon discovered that they had more in common than their taste in music. They were both ethical vegetarians and ardent antivivisectionists, but their overriding interest was geodesy. Marjory also was a life-long flat-earther. When fate plays cupid, who can resist? Love and marriage ensued.



Charles and Marjory Johnson (from The Flat Earth News, September 1979).

Sometime in the late 1960's, the Johnsons heard about Samuel Shenton, a Dover, England, sign painter who was trying to revive the British flat-earth movement. Charles Johnson immediately wrote to Samuel Shenton and applied for membership. He was accepted and a satisfying correspondence ensued.

Shenton and William Mills founded the International Flat Earth Society on December 20, 1956. Shenton was the guiding force. Mills died soon afterward, on May 25, 1960. Mills provided one of the links with the past, for he was related by marriage to Frederick Henry Cook, whose Terrestrial Plane, or the True Figure of the Earth was self-published in 1908. Indeed, one of Mills' sons died suddenly on December 18, 1957, and left £500 to be used to finance publication of his uncle's unpublished flat-earth manuscript. It is titled Our Earth Flat, Not Spherical and

is 382 pages in length. Cook apparently completed it in about 1947 as he wrote, "Nearly forty years have passed since the Author wrote his first book (on the true figure of the earth) …"

Shenton actively promoted the International Flat Earth Society. He gave dozens of lectures on the flat earth in which he would use his skill as a sign painter to prepare flip charts illustrating his view of the earth and universe. Shenton's view differed slightly from previous flat-earthers. He believed in a literal seven heavens, the first immediately above the dome covering the known world, and the rest stacked above it. He had a complex theory of how the alleged space capsules moved above (not around) the earth, and he explained this in detail in his lectures.

Shenton received enquiries from all over the world. Roughly half of them seem to have come from high school students, many of them in America. A typical letter began, "Dear Mr. Shenton, I am 14 years old …" Most of the letters from adults were obviously from curious skeptics, many of whom requested free information, pamphlets, and so forth. It's not clear how many of these requests Shenton honored. Some wrote to argue, assuming (generally wrongly) that they knew more about the evidence for the shape of the earth than Shenton did. Almost invariably these writers offered arguments flat-earthers considered decisively answered a century previously. Some were ambiguously worded as if intended to be misunderstood, and one doubts that Shenton was either conned or favourably impressed by these.

Another common class of letter was an invitation to speak. Shenton frequently honoured these requests, and the correspondence shows that he usually requested a modest fee (perhaps £5) plus travelling expenses. Many of the requests came from secondary schools, social clubs, or school-affiliated clubs (the Young Liberals or Young Conservatives, for instance). A few came from college and university departments.

The rarest letters were undoubtedly most valuable. A goodly minority wrote to Shenton to express their whole-hearted agreement with his flat-earth views. Some provided nuggets of history or links with the past. It was presumably from these that Shenton selected his members.

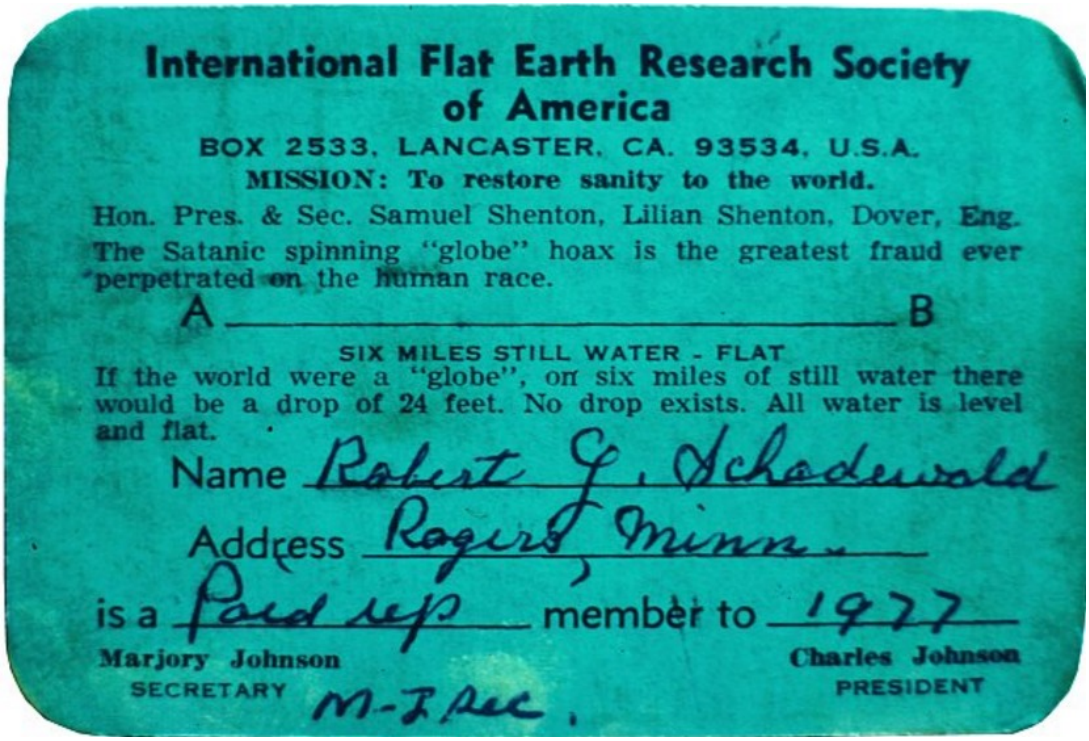
Shenton did his best, but he was never able to attract many members. With the advent of the space program, however, he attracted a lot of reporters eager to hear him explain the satellites allegedly orbiting the earth, photos of a globe supposedly taken from deep space, etc. As is their custom, the British news media had a lot of fun with Shenton. A few articles about him were printed in America, and it was one of these that alerted the Johnsons.

Before he died in 1971, it was Shenton's last wish that the mantle of leadership be passed on. After Shenton's death, there was a brief false start for the International Flat Earth Society as Shenton's widow, Lillian, tried to keep it going. Shenton, himself, had picked Ellis Hillman to become president, but it wasn't meant to be. With Hillman's unwillingness to step up and Shenton's experience with the British news media, Johnson believed that America would be more hospitable than England as international flat-earth headquarters and so the transfer to America was made. The mantle of leadership along with a small but precious library of flat-earth books was passed on to Johnson in 1972. Johnson's Flat Earth Society was a spiritual inheritor of the Universal Zetetic Society, which had flourished in England.

Letters poured into his Lancaster, California, headquarters from all over the earth. His job was to get the Plane Truth before the public, and he conscientiously answered all requests for information. He also reached the public through interviews in magazines and newspapers, frequent appearances on radio call-in talk shows, and occasional TV interviews and public lectures.

Under Johnson's full-time presidency, the society's paid-up membership grew from a few to a few hundred paid-up members. Membership was open to anyone regarded as sincerely seeking the truth. Ever since Johnson felt compelled to evict a skeptical writer for spherical tendencies,

he required prospective members to sign an agreement stating that they would never defame the society. Those accepted received a membership card, a certificate, and a subscription to The Flat Earth News, a marvellously outspoken quarterly tabloid with a style reminiscent of 19th century southern journalism.



International Flat Earth Research Society of America

BOX 2533, LANCASTER, CA. 93534, U.S.A.

MISSION: To restore sanity to the world.

Hon. Pres. & Sec. Samuel Shenton, Lilian Shenton, Dover, Eng.

The Satanic spinning "globe" hoax is the greatest fraud ever perpetrated on the human race.

A _____ B

SIX MILES STILL WATER - FLAT

If the world were a "globe", on six miles of still water there would be a drop of 24 feet. No drop exists. All water is level and flat.

Name Robert J. Schadewald

Address Rogers, Minn.

is a Paid up member to 1977

Marjory Johnson
SECRETARY

Charles Johnson
PRESIDENT

M-I Rec.

The author's certificate of membership of the Flat Earth Society

Samuel and Lillian Shenton are named as Honorary President and Secretary, though Samuel, at least, was no longer alive.

While Johnson didn't contribute much to flat-earth theory—he considered the zetetic system to be well established and essentially complete—he did speculate a bit on why the globular theory prevails. Johnson believed that the governments of the world are all run by flat-earthers, but they keep up the spherical pretence to keep the masses under control. The space program is partly for the latter purpose and partly as a WPA [note 9.1] project to provide jobs for otherwise unemployable Kennedy Democrats. One of these days, however, there will be a public declaration that the earth is flat, and a new era will follow. It almost happened at the end of World War II.

"Uncle Joe [Stalin], Churchill, and Roosevelt laid the master plan to bring in the New Age under the United Nations," Johnson declared in a 1980 interview. "The world ruling power was to be right here in this country. After the war, the world would be declared flat and Roosevelt would be elected first president of the world. When the UN Charter was drafted in San Francisco, they took the flat-earth map as their symbol."

Indeed, the United Nations seal, an azimuthal equidistant polar projection, is precisely the flat-earth map as drawn by Rowbotham and identical with the world map that hung on Johnson's office wall. However, Franklin Roosevelt died coincident with the UN's birth and Johnson believed that threw a monkey wrench into the plans. But, according to Johnson, the setback was only temporary, and the declaration may come sooner than most people think. When it does—when the government publicly admits that sunrise and sunset are mere optical illusions—the declaration will fulfil the prophecy of Isaiah 60:20 that "the sun shall no more go down." Johnson believed it will usher in an era of peace, prosperity and morality under a benevolent world government. Surely that's something to think about.

Johnson's Flat Earth Society's official letterhead boldly proclaims its mission: "To restore sanity to the world."

Seal of the United Nations

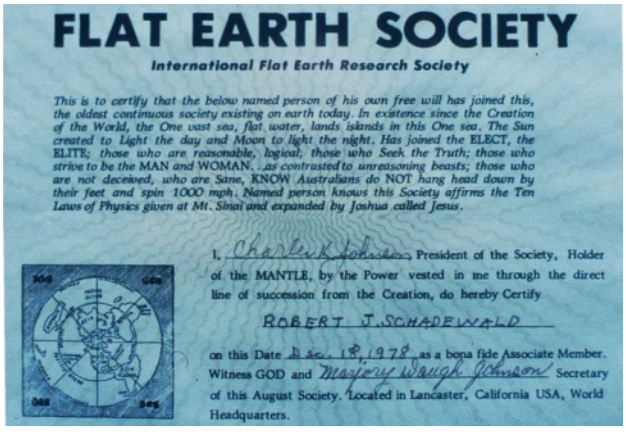
"In order to be sane," Johnson once told me, "you have to understand the reasonableness of your own common sense. You have to start out with self-evident things, instead of this wild, weird stuff" (read: space program).

Most people don't know the Flat Earth Society exists. Those who do are typically confused about who runs it. Some think it's an English society and that Johnson's group was a U.S. branch. Others confuse it with a Canadian outfit whose seriousness about the flat-earth business is open to serious question. Many seem astonished to learn that it still exists at all.

As seen in earlier chapters, old-time flat-earthers were often Scripture-spouting zealots. Indeed, Wilbur Glenn Voliva, America's foremost flat-earther in the 1920s, was head of the Christian Catholic Apostolic Church of Zion, Illinois. While Johnson acknowledges the work of his religiously-oriented predecessors like Voliva and England's Samuel Shenton, he had a different image of the Flat Earth Society.

"We don't quote Scriptures," he said, "though we mention that the Bible is a flat-earth book. We concentrate on the evidence."

Most of those currently seeking scientific truth in the Bible ignore its flat-earth implications. Geocentricity is another matter, and several prominent scientific creationists repudiate Copernicus on scriptural grounds, opting for the fixed-earth system of Tycho Brahe. Johnson scorns such halfway measures.


FLAT EARTH SOCIETY

International Flat Earth Research Society

This is to certify that the below named person of his own free will has joined this, the oldest continuous society existing on earth today. In existence since the Creation of the World, the One vast sea, flat water, lands islands in this One sea. The Sun created to Light the day and Moon to light the night. Has joined the ELECT, the ELITE; those who are reasonable, logical; those who Seek the Truth; those who strive to be the MAN and WOMAN, as contrasted to unreasoning beasts; those who are not deceived, who are Sane, KNOW Australians do NOT hang head down by their feet and spin 1000 mph. Named person knows this Society affirms the Ten Laws of Physics given at Mt. Sinai and expanded by Joshua called Jesus.

I, Charles K. Johnson, President of the Society, Holder of the MANTLE, by the Power vested in me through the direct line of succession from the Creation, do hereby Certify

ROBERT J. SCHADEWALD

on this Date Dec. 18, 1978 as a bona fide Associate Member. Witness GOD and Marjory Waugh Johnson Secretary of this August Society. Located in Lancaster, California USA, World Headquarters.

Membership certificate for the Flat Earth Society, somewhat later than the card shown right.

"I like 'Co-pernicious' much better," he said, deliberately mispronouncing the name of that Polish luminary. "Imagine this ball that they claim is just hanging there with ships sailing over it! At least 'Co-pernicious' had the sense to set the whole thing whirling to try to give some explanation for why you can hang on. Certainly, if I had to choose between the two, I'd choose Cope."

Johnson contended, "Nobody knows anything about the true shape of the world. The known, inhabited world is flat. Just as a guess, I'd say that the dome of heaven is about 4,000 miles away, and the stars are about as far as San Francisco is from Boston."

Although Johnson did not use the Bible as his sole evidence for the flat earth, his beliefs were nevertheless firmly confirmed by the Bible. Many verses of the Old Testament imply that the

earth is flat, but there's more than that. According to the New Testament, Jesus ascended up into heaven.

"The whole point of the Copernican theory is to get rid of Jesus by saying there is no up and no down," declared Johnson. "The spinning ball thing just makes the whole Bible a big joke."

Not the Bible, but Johnson's common sense allowed him to see through the globe myth while he was still in grade school. In 1981, Johnson went back to the John H. Reagan School that he attended in San Angelo, Texas. "It still looks like it always did. I know what room they showed me the globe in" he said. There it was, almost 40 years after Johnson first discounted it. Johnson printed a picture of himself pointing to the globe in The Flat Earth News. "The same school building, the same room, and the same globe responsible for the present Flat Earth Research Society." Johnson said, "It started with me right here when I was seven or eight years old." He contends that it is not just Bible believers, but sensible people all over the world who realize that the earth is really flat.

In the early 1970's, Charles Johnson heard about a group in San Diego dedicated to defending the Bible. The new organization, the Institute for Creation Research, insists that the Bible is literally true. Johnson contacted his San Diego counterpart, fellow Texas native and founder of the Institute for Creation Research, Henry Madison Morris.

The two titans of modern Bible-science, so alike and yet so different, did not hit it off. Johnson was a simple son of the Texas soil, unpolished, unpretentious, and largely self-educated. Morris was an unrepentant elitist who would flaunt his Ph.D. in hydraulic engineering like an insecure big spender flashing a roll of bills. [note 9.2] Morris headed a big-budget nonprofit organization, from which he drew a substantial salary. Johnson and the Flat Earth Society languished in semi-obscurity, operating on an annual budget which was typically supplemented from Johnson's personal funds.

Both considered themselves instruments of the Almighty. Both were self-educated students of the Bible, although they came to markedly different conclusions about what it teaches. Morris would get hysterical when anyone suggested that the Bible is a flat-earth book. Johnson felt that the Bible was partially corrupted, and contains many things that don't belong there, such as the stories of divinely ordered massacres. Morris ardently defended the Biblical stories of genocide. He would argue, for instance, that if the Canaanite women had not been massacred, they would have led Israelite men into idolatry. Likewise, the massacred infants were saved from earning damnation through idolatry.

Perhaps it was Johnson's experience with Morris that led him to purge the Bible-thumpers from the Flat Earth Society. Whatever the reason, Johnson did with the Flat Earth Society what Morris only claimed to have done with creationism: he put it on a secular, nonsectarian footing.

It was not science that led Johnson to his conviction that the earth is flat, but facts and evidence that he gathered through his own experience. Johnson believed that science is a religion of its own with its own dogmas and absurdities. "We concentrate on the evidence," Johnson said.

When asked his opinion of a bill which was proposed to be introduced in various state legislatures called A Balanced Treatment of Flat-Earth Science and Spherical-Earth Science Act Johnson replied, "But we don't believe in science. I mean, this is what you call the kiss of death when you say 'flat-Earth science'. That's what happens to the creationists, for instance." He continued, "It's like Baptists going into a Catholic church and wanting to teach Baptist doctrine." What, then, was the basis of the Flat Earth Society under Johnson? "Our stuff is not science, because science is the blind faith in Asiatic religion. In order to be a scientist you have to give up all desire for truth and facts." He continued, "It's not flat-Earth science, but flat-Earth facts that we have."

Would he have supported this type of bill, though, in the interest of fair-mindedness? "No, I wouldn't support that at all. This is a confrontation. We don't want to get equal time. The two can't exist together. The flat-Earth and the ball are not the same. If the flat-Earth is taught, the ball must be exposed as a total hoax and thrown out all together. It's all or nothing."

Would he have supported Morris's stance that creationism should be taught as an alternative theory of the origin of humankind? "If it weren't for Morris and his gang, they could teach creation in the schools: Some people think the universe and all forms of life were created, and that's it. That's all that needs to be said. But Morris wants to argue over how many hours were in a creation day, he wants all this science, and that has ruined everything. Morris wants to get in one version of religion and quote scriptures all the time."

As secretary of the Flat Earth Society, Marjory Johnson assisted in running it, and wrote a regular column in the News. She also helped her husband perform experiments to determine the earth's shape. If it is a sphere, the surface of a large body of water must be curved. The Johnsons checked the surfaces of Lake Tahoe and the Salton Sea (a shallow salt lake in southern California near the Mexican border) without detecting any curvature.

Charles Johnson claims that most of the people who shaped our modern world were flat-earthers, and some of them didn't have it easy, either.

"Moses was a flat-earther," he reveals. "The Flat Earth Society was founded in 1492 B.C. when Moses led the children of Israel out of Egypt and gave them the Ten Commandments at Mount Sinai."

Conventional biblical chronology, as established by Archbishop Ussher, dates the Ten Commandments to 1491 B.C., but it may be imprecise. Perhaps Johnson prefers 1492 for the symmetry. It was, after all, in 1492 A.D. that another famous flat-earther made history.

Have you heard the story about Columbus's problems with his crew? As some tell it, the crew nearly mutinied because they regarded the earth as flat, and feared they might sail off its edge.

"It was exactly the reverse," explained Johnson. "There was a dispute out there on the ship, but it was because Columbus was a flat-earther. The others believed the earth to be a ball, and they just knew that they were falling over the edge and couldn't get back. Columbus had to put them in irons and beat them until he convinced them they weren't going over any curve, and they could return. He finally calmed them down."

Johnson believes that the ball business—though it goes back to the Greek philosophers—really got rolling after the Protestant Reformation.

"It's the Church of England that's taught that the world is a ball," he argues. "George Washington, on the other hand, was a flat-earther. He broke with England to get away from those superstitions."

If Johnson is right, the American Revolution failed. No prominent American politician is known to have publicly endorsed the flat-earth theory in the past two centuries.

What did happen, according to conventional historians, was that Russia and the U.S. began space programs. After the Russians sent up Sputnik in 1957, the space race was on in earnest. The high point came in 1969, when the U.S. landed men on the moon.

That, according to Johnson, was nonsense, because the moon landings were faked by Hollywood studios. He even named the man who wrote the scripts: the science-fiction writer Arthur C. Clarke. But he acknowledged that the moon landings were at least partly successful.

"Until then," he said, "almost no one seriously considered the world a ball. The landing converted a few of them, but many are coming back now and getting off of it."

Perhaps the Space Shuttle was intended to bolster the beliefs of these backsliders. Whatever its purpose, Johnson was once convinced that it was never intended to actually fly. Because it was built and tested almost in his back yard, he knew many of the people who worked on it. What they told him about some aspects of its construction only reinforced his convictions.

"They moved it across the field," he sneered, "and it almost fell apart. All those little side pieces are stuck on with epoxy, and half fell off!"

The Shuttle had other problems besides heat resistant tiles that wouldn't stick. For instance, when the testers tried to mount it on a 747 for its first piggy-back flight, it wouldn't fit.

"Can you imagine that?" chortled Johnson. "Millions of dollars they spent, and it wouldn't fit! They had to call in a handyman from Rosamond to drill some new holes to make the thing fit. Then they took it up in the air—and some more of it fell to pieces."

Flat Earth Society members are still working actively to bring the Shuttle charade to an end. They hope to force the government to let the public in on what the power elite has known all along: the plane truth.

"When the United States declares the earth is flat," Johnson once told me, "it will be the first nation in all recorded history to be known as a flat-earth nation.

"In the old days, people believed the earth was flat, because it's logical, but they didn't have a picture of the way it was, as we have today. Our concept of the world is new.

"Marjory and I are the avant garde. We're way ahead of the pack."

The Johnson home was a half-mile from the nearest neighbour. Friends would drop in now and then, but their primary companions were a half-dozen dogs, several cats, a flock of chickens, and a myriad of sparrows roosting in the Joshua tree outside the door. No electric-power line ran to the house, and water had to be hauled up the hill. The physical isolation was the ultimate in privacy—but another kind of isolation proved to be less desirable.

"We're two witnesses against the whole world," Johnson once observed. "We've chosen that path, but it isolates us from everyone. We're not complaining; it has to be done. But it does kind of get to you sometimes."

In 1995, the Johnsons' home caught fire. Charles Johnson managed to rescue his wife, Marjory, by then an invalid, but most of the Flat Earth Society's records and its fine collection of flat-earth literature were destroyed. Marjory Johnson died in May 1996; Charles Johnson in March 2001.

Appendix A
The Flat-Earth Bible

WHEN I FIRST BECAME INTERESTED IN THE FLAT-EARTHERS IN THE EARLY 1970'S, I was surprised to learn that flat-earthism in the English-speaking world is and always has been entirely based upon the Bible. I have since assembled and read an extensive collection of flat-earth literature. The Biblical arguments for flat-earthism that follow come mainly from my reading of flat-earth literature, augmented by my own reading of the Bible.

Except among Biblical inerrantists, it is generally agreed that the Bible describes an immovable earth. At the 1984 National Bible-Science Conference in Cleveland, geocentrist James N. Hanson told me there are hundreds of scriptures that suggest the earth is immovable. I suspect some must be a bit vague, but here are a few obvious texts:

> 1 Chronicles 16:30: "He has fixed the earth firm, immovable."
>
> Psalm 93:1: "Thou hast fixed the earth immovable and firm …"
>
> Psalm 96:10: "He has fixed the earth firm, immovable …"
>
> Psalm 104:5: "Thou didst fix the earth on its foundation so that it never can be shaken."
>
> Isaiah 45:18: "… who made the earth and fashioned it, and himself fixed it fast …"

Suffice to say that the earth envisioned by flat-earthers is as immovable as any geocentrist could desire. Most (perhaps all) scriptures commonly cited by geocentrists have also been cited by flat-earthers. The flat-earth view is geocentricity with further restrictions.

Like geocentrists, flat-earth advocates often give long lists of texts. Samuel Birley Rowbotham, founder of the modern flat-earth movement, cited 76 scriptures in the last chapter of his monumental second edition of Earth Not a Globe. [ref. A.1] Apostle Anton Darms, assistant to the Reverend Wilbur Glenn Voliva, America's best known flat-earther, compiled 50 questions about the creation and the shape of the earth, bolstering his answers with up to 20 scriptures each. [ref. A.2] Rather than presenting an exhaustive compendium of flat-earth scriptures, I focus on those which seem to me the strongest. I also comment on some attempts to find the earth's sphericity in the Bible.

Scriptural quotes, unless otherwise noted, are from the New English Bible. Hebrew and Greek translations are from Strong's Exhaustive Concordance of the Bible. [ref. A.3] The Biblical cosmology is never explicitly stated, so it must be pieced together from scattered passages. The Bible is a composite work, so there is no a priori reason why the cosmology assumed by its various writers should be relatively consistent, but it is. The Bible is, from Genesis to Revelation, a flat-earth book.

This is hardly surprising. As neighbours, the ancient Hebrews had the Egyptians to the southwest and the Babylonians to the northeast. Both civilizations had flat-earth cosmologies. The Biblical cosmology closely parallels the Sumero-Babylonian cosmology, and it may also draw upon Egyptian cosmology.

The Babylonian universe was shaped like a modern domed stadium. The Babylonians considered the earth essentially flat, with a continental mass surrounded by ocean. The vault of the sky was a physical object resting upon the ocean's waters (and perhaps also upon pillars). Sweet (salt-free) waters below the earth sometimes manifest themselves as springs. The Egyptian

universe was also enclosed, but it was rectangular instead of round. Indeed, it was shaped much like an old-fashioned steamer trunk. (The Egyptians pictured the goddess Nut stretched across the sky as the enclosing dome.) What was the Hebrew view of the universe?

The Order of Creation

The Genesis creation story provides the first key to the Hebrew cosmology. The order of creation makes no sense from a conventional perspective but is perfectly logical from a flat-earth viewpoint. The earth was created on the first day, and it was "without form and void" (Genesis 1:2). On the second day, a vault—the "firmament" of the King James version—was created to divide the waters, some being above and some below the vault. Only on the fourth day were the sun, moon, and stars created, and they were placed "in" (not "above") the vault.

The Vault of Heaven

The vault of heaven is a crucial concept. The word "firmament" appears in the King James version of the Old Testament 17 times, and in each case it is translated from the Hebrew word raqiya, which meant the visible vault of the sky. The word raqiya comes from riqqua, meaning "beaten out." In ancient times, brass objects were either cast in the form required or beaten into shape on an anvil. A good craftsman could beat a lump of cast brass into a thin bowl. Thus, Elihu asks Job, "Can you beat out [raqa] the vault of the skies, as he does, hard as a mirror of cast metal?" (Job 37:18)

Elihu's question shows that the Hebrews considered the vault of heaven a solid, physical object. Such a large dome would be a tremendous feat of engineering. The Hebrews (and supposedly Yahweh Himself) considered it exactly that, and this point is hammered home by five scriptures:

> Job 9:8, "… who by himself spread out the heavens [shamayim] …"
>
> Psalm 19:1, "The heavens [shamayim] tell out the glory of God, the vault of heaven [raqiya] reveals his handiwork."
>
> Psalm 102:25, "… the heavens [shamayim] were thy handiwork."
>
> Isaiah 45:12, "I, with my own hands, stretched out the heavens [shamayim] and caused all their host to shine …"
>
> Isaiah 48:13, "… with my right hand I formed the expanse of the sky [shamayim] …"

If these verses are about a mere illusion of a vault, they are surely much ado about nothing. Shamayim comes from shameh, a root meaning to be lofty. It literally means the sky. Other passages complete the picture of the sky as a lofty, physical dome. God "sits throned on the vaulted roof of earth [chuwg], whose inhabitants are like grasshoppers. He stretches out the skies [shamayim] like a curtain, he spreads them out like a tent to live in …" (Isaiah 40:22). Chuwg literally means "circle" or "encompassed." By extension, it can mean roundness, as in a rounded dome or vault. Job 22:14 says God "walks to and fro on the vault of heaven [chuwg]." In both verses, the use of chuwg implies a physical object, on which one can sit and walk. Likewise, the context in both cases requires elevation. In Isaiah, the elevation causes the people below to look small as grasshoppers. In Job, God's eyes must penetrate the clouds to view the doings of humans below. Elevation is also implied by Job 22:12: "Surely God is at the zenith of the heavens [shamayim] and looks down on all the stars, high as they are."

This picture of the cosmos is reinforced by Ezekiel's vision. The Hebrew word raqiya appears five times in Ezekiel: four times in Ezekiel 1:22–26 and once in Ezekiel 10:1. In each case the context requires a literal vault or dome. The vault appears above the "living creatures" and

glitters "like a sheet of ice." Above the vault is a throne of sapphire (or lapis lazuli). Seated on the throne is "a form in human likeness," which is radiant and "like the appearance of the glory of the Lord." In short, Ezekiel saw a vision of God sitting enthroned on the vault of heaven, as described in Isaiah 40:22.

The Shape of the Earth

Disregarding the dome, the essential flatness of the earth's surface is required by verses like Daniel 4:10–11. In Daniel, the king "saw a tree of great height at the centre of the earth … reaching with its top to the sky and visible to the earth's farthest bounds." If the earth were flat, a sufficiently tall tree would be visible to "the earth's farthest bounds," but this is impossible on a spherical earth. Likewise, in describing the temptation of Jesus by Satan, Matthew 4:8 says, "Once again, the devil took him to a very high mountain, and showed him all the kingdoms of the world [cosmos] in their glory." Obviously, this would be possible only if the earth were flat. The same is true of Revelation 1:7: "Behold, he is coming with the clouds! Every eye shall see him …".

The Celestial Bodies

The Hebrews considered the celestial bodies relatively small. The Genesis creation story indicates the size and importance of the earth relative to the celestial bodies in two ways, first by their order of creation, and second by their positional relationships. They had to be small to fit inside the vault of heaven. Small size is also implied by Joshua 10:12, which says that the sun stood still "in Gibeon" and the moon "in the Vale of Aijalon."

Further, the Bible frequently presents celestial bodies as exotic living beings. For example, "In them [the heavens], a tent is fixed for the sun, who comes out like a bridegroom from his wedding canopy, rejoicing like a strong man to run his race. His rising is at one end of the heavens, his circuit touches their farthest ends; and nothing is hidden from his heat (Psalm 19:4–6)." The stars are anthropomorphic demigods. When the earth's cornerstone was laid "the morning stars sang together and all the sons of God shouted aloud" (Job 38:7). The morning star is censured for trying to set his throne above that of other stars:

You thought in your own mind, I will scale the heavens; I will set my throne high above the stars of God, I will sit on the mountain where the gods meet in the far recesses of the north. I will rise high above the cloud-banks and make myself like the most high (Isaiah 14:13–14).

> Deuteronomy 4:15–19 recognizes the god-like status of stars, noting that they were created for other peoples to worship.
>
> Stars can fall from the skies according to Daniel 8:10 and Matthew 24:29. The same idea is found in the following extracts from Revelation 6:13–16:
>
> … the stars in the sky fell to the earth, like figs shaken down by a gale; the sky vanished, as a scroll is rolled up … they called out to the mountains and the crags, "Fall on us and hide us from the face of the One who sits on the throne … "

This is consistent with the Hebrew cosmology previously described, but it is ludicrous in the light of modern astronomy. If one star let alone all the stars in the sky "fell" on the earth, no one would be hollering from any mountain or crag. The writer considered the stars small objects, all of which could fall to the earth without eradicating human life. He also viewed the sky as a physical object. The stars are inside the sky, and they fall before the sky opens. When it is whisked away, it reveals the One throned above (see Isaiah 40:22).

Weaker Arguments

Flat-earthers also offer some scriptural arguments that are (in my view) weak, ambiguous, erroneous, or irrelevant. (Ironically, it is these that apologists for sphericity usually choose to deal with in their rebuttals to the flat-earthers!) The weak and ambiguous arguments can help support a cumulative picture but are insufficient on their own.

One of the weaker scriptural arguments is that the sky literally has openings (windows) which God can open to let the waters above fall to the surface as rain (see Genesis 7:11, Genesis 8:2, Isaiah 24:18–19, Jeremiah 51:15–16, and Malachi 3:10). While the idea and scriptures are certainly consistent with the flat-earth cosmology, they could (for instance) refer to openings in a spherical shell surrounding a spherical earth. The same applies to the Tower of Babel story in Genesis 11:4, often cited as an attempt to literally reach the heavens.

Likewise, flat-earthers frequently cite the numerous Old Testament verses referring to the earth's foundations (see 2 Samuel 22:16, Job 38:4, Psalm 18:15, Proverbs 8:29, Isaiah 24:18, and numerous others). Foundations are, however, fairly well-covered by geocentricity. No one would argue for a flat earth solely on the basis of "foundations" quotes.

Another less-than-conclusive argument that the Bible is a flat-earth book is its references to the earth's "corners." For example, "After this, I saw four angels stationed at the four corners [gonia] of the earth holding back the four winds …" (Revelation 7:1). Spherical apologists are quick to point out that the Greek gonia can refer to regions rather than points. Most translations of the Bible opt for points (the King James version says "on the corners of the earth"), implying that the writer viewed the habitable earth as a four-cornered area. (This was indeed the way many early churchmen interpreted it. [ref. A.4] The modern flat-earth model doesn't have literal corners.) The corners could, however, be those regions at the ends of the earth referred to by Jeremiah: "[H]e brings up the mist from the ends of the earth, he opens rifts for the rain and brings the wind out of his storehouses" (Jeremiah 51:16). We shall return to the ends of the earth.

The Biblical view of the universe is relatively clear and consistent. Biblical statements bearing on cosmology are (with one possible exception yet to be discussed) consistent with the well-known flat-earth cosmologies of the ancient Near East, but they are often flatly contradicted by modern science. How do spherical apologists reply?

Spherical Apologetics

Those who claim Biblical support for a spherical earth typically ignore this forest of consistency and focus on one or two aberrant trees. Some take refuge in audacity. Henry Morris, president of the Institute for Creation Research, cites one of the more explicitly flat-earth verses in the Old Testament—Isaiah 40:22, the "grasshopper" verse quoted earlier—as evidence for the sphericity of the earth. Quoting the King James version "he sitteth upon the circle of the earth" Morris ignores the context and the grasshoppers and claims "circle" should read "sphericity" or "roundness". [ref. A.5] This divide and conquer strategy is poor scholarship and worse logic.

Heroic efforts have been made by apologists to explain away the firmament, which encloses the celestial bodies, has waters above it, and is a masterpiece proving the Creator's craftsmanship. The late Harold L. Armstrong argued that it is empty Newtonian space, and that the "waters above" still surround the edges of the universe, though perhaps not in liquid form [ref. A.6] . This simply ignores difficulties and invents evidence. Gerardus Bouw tried to identify the firmament as a mathematical plenum [ref. A.7] . In my view, it is a grave error to reinterpret ancient documents to force their authors to speak with modern voices. Gary Zukov [ref. A.8] and Fritjof Capra, [ref. A.9] for instance, read modern physics into the teachings of eastern mysticism. I consider all such attempts equally suspect.

Perhaps the scripture most frequently offered as evidence of the earth's sphericity is the King James version of Job 26:7, "He stretcheth out the north [tsaphon] over the empty place, and hangeth the earth upon nothing [beliymah]." (The New English Bible translates it, "God spreads the canopy of the sky over chaos and suspends earth in the void.") It is not clear what this means. The Hebrew tsaphon literally meant hidden or dark, and it was used in reference to the northern regions. Beliymah literally means "nothing." That would contradict all of the scriptures which say the earth rests on foundations, but that interpretation is not necessary. We will return to Job 26:7 later.

Speaking of foundations, Gerardus Bouw, in an undated paper entitled "The Form of the Earth," [ref. A.10] cites a barrage of scriptures about the foundations of the earth or world as evidence for sphericity. All (or nearly all) of these verses have traditionally been used by flat-earthers to prove the earth flat. If one views the earth as an architectural structure with floor, curtain walls, and a roof, it is natural to assume it has foundations (and, I might add, a cornerstone). Why a sphere would have foundations escapes me. Bouw's argument that these scriptures refer to the earth's core seems strained at best. Also strained is Bouw's interpretation of "the ends of the earth" as the points most distant from Jerusalem, and his identification of the Chukchi Peninsula of the Soviet Union, Alaska, Cape Horn, and the southeastern tip of Australia as the "four corners" of the earth.

Bouw's most interesting argument for sphericity is based on the gospel of Luke. He compares the King James version of Luke 17:31 and 17:34. The former says "In that day, he which shall be upon the house top …" and the latter "in that night there shall be two men in one bed…" (italics added). Bouw then cites 1 Corinthians 15:52 to argue that the events are simultaneous, claiming simultaneity is possible only on a spherical earth. First of all, the latter claim is wrong. The modern (though not the ancient) flat-earth model has day and night occurring simultaneously at different points on earth. Second, the Greek hemera was used much like the English "day." It could mean the daylight hours, a 24-hour day, or (figuratively) an epoch of unspecified length. Third, Luke appears to have been writing figuratively, and citing Paul to prove otherwise begs the question.

One more spherical argument deserves notice. The 1985 National Creation Conference in Cleveland ended with a formal debate on the relative merits of heliocentricity and geocentricity. Richard Niessen of Christian Heritage College, defending the Copernican view, remarked that the Bible teaches a spherical earth because it treats north and south as absolutes, but east and west as relative. As evidence of the latter, he cited Psalm 103:12 which says, "As far as the east is from the west, so far has he put our offences from us." Again, the modern flat-earth model holds that north and south are absolutes, but east and west are relative. In the ancient flat-earth model, however, east and west were about as far apart as you could get, which seems to be the image Psalm 103:12 was intended to invoke.

In my view, all arguments to prove the Bible teaches a spherical earth are weak if not wrong-headed. On the other hand, the flat-earth cosmology previously described is historically consistent and requires none of the special pleading apparently necessary to harmonize the Bible with sphericity.

The Book of Enoch

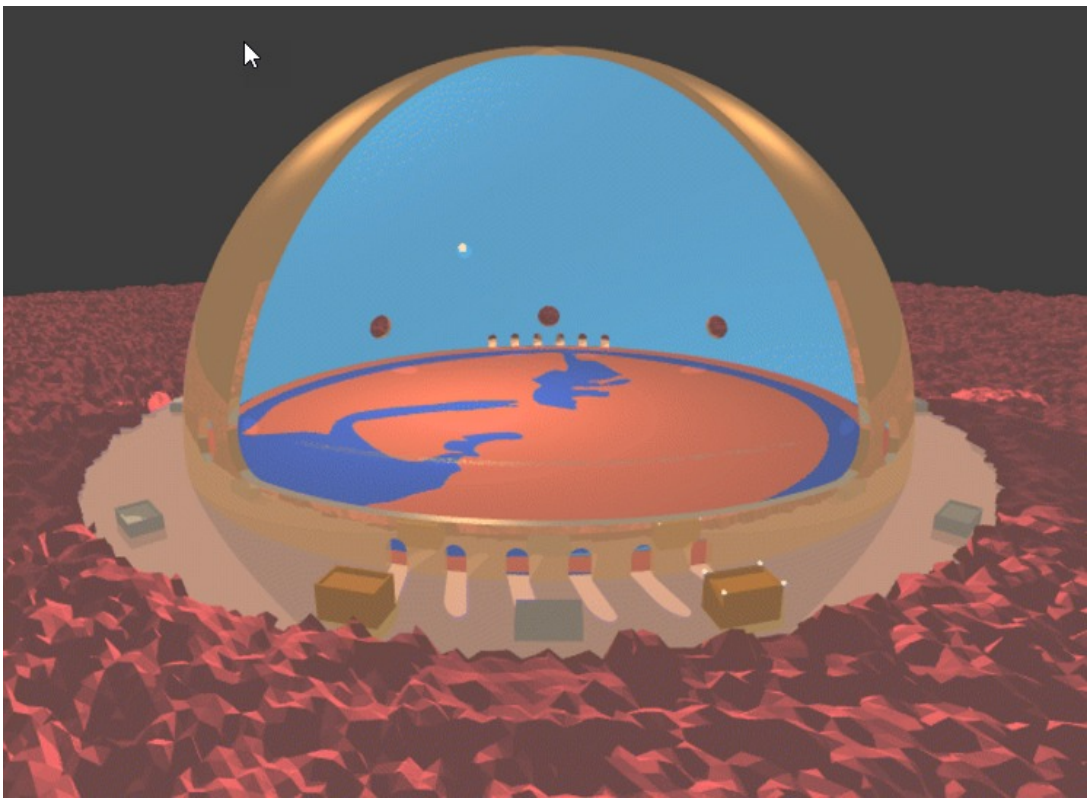
The cosmology previously described is derived from the Bible itself, following the 19th century flat-earthers. Some of the evidence is more ambiguous than we would like. Ambiguities in ancient documents can often be elucidated by consulting contemporary documents. The most important ancient document describing Hebrew cosmology is 1 Enoch (sometimes called the Ethiopic Book of Enoch), one of those long, disjointed, scissors and paste jobs beloved by ancient scribes. For a dozen or so centuries, European scholars knew 1 Enoch only from numerous

passages preserved in the patristic literature. In 1773, the Scottish adventurer James Bruce found complete copies in Ethiopia.

Numerous manuscripts of 1 Enoch have since been found in Ethiopian monasteries. Turn of the century scholars concluded that parts of the book are pre-Maccabean, and most (perhaps all) of it was composed by 100 B.C. [ref. A.11] These conclusions were largely vindicated when numerous fragments of 1 Enoch were found among the so-called Dead Sea Scrolls at Qumran. There have been two major English translations of 1 Enoch, the 1913 translation of R. H. Charles and the 1983 translation by E. Isaac. [ref. A.12] All of the quotations that follow come from the newer translation.

The importance of 1 Enoch is poorly appreciated outside the scholarly community. Comparison of its text with New Testament books reveals that many Enochian doctrines were taken over by early Christians. E. Isaac writes:

There is little doubt that 1 Enoch was influential in moulding New Testament doctrines concerning the nature of the Messiah, the Son of Man, the messianic kingdom, demonology, the future, resurrection, final judgment, the whole eschatological theatre, and symbolism. No wonder, therefore, that the book was highly regarded by many of the apostolic and Church Fathers. [ref. A.13]



The cosmos as described in the book of Enoch.

First Enoch influenced Matthew, Luke, John, Acts, Romans, and several other New Testament books. The punishment of the fallen angels described in 2 Peter seems to come directly from 1 Enoch, as does much of the imagery (or even wording) in Revelation. The Epistle of Jude contains the most dramatic evidence of its influence when it castigates “enemies of religion” as follows:

It was to them that Enoch, the seventh in descent from Adam, directed his prophecy when he said: “I saw the Lord come with his myriads of angels, to bring all men to judgment and to convict

all the godless of all the godless deeds they had committed, and of all the defiant words which godless sinners had spoken against him (Jude 14–15)."

The inner quote, 1 Enoch 1:9, is found in the original Hebrew on a recently-published Qumran fragment. [ref. A.14] By attributing prophecy to Enoch, Jude confers inspired status upon the book.

First Enoch is important for another reason. Unlike the canonical books of the Bible, which (in my view) were never meant to teach science, sections of 1 Enoch were intended to describe the natural world. The narrator sometimes sounds like a 2nd century B.C. Carl Sagan explaining the heavens and earth to the admiring masses. The Enochian cosmology is precisely the flat-earth cosmology previously derived from the canonical books.

The Ends of the Earth

The angel Uriel guided Enoch in most of his travels. They made several trips to the ends of the earth, where the dome of heaven came down to the surface. For instance, Enoch says

I went to the extreme ends of the earth and saw there huge beasts, each different from the other and different birds (also) differing from one another in appearance, beauty, and voice. And to the east of those beasts, I saw the ultimate ends of the earth which rests on the heaven. And the gates of heaven were open, and I saw how the stars of heaven come out … (1 Enoch 33:1–2).

(The sharp-eyed reader will note what I suspect is an editing error in the Isaac translation. The earth resting on the heaven makes no sense. R. H. Charles has "whereon the heaven rests.")

Again, Enoch says, "I went in the direction of the north, to the extreme ends of the earth, and there at the extreme end of the whole world I saw a great and glorious seat. There (also) I saw three open gates of heaven; when it blows cold, hail, frost, snow, dew, and rain, through each one of the (gates) the winds proceed in the northwesterly direction" (1 Enoch 34:1–2). This accords well with Jeremiah 51:16 which says, "he brings up the mist from the ends of the earth, he opens rifts for the rain and brings the wind out of his storehouses." In subsequent chapters, Enoch journeys "to the extreme ends of the earth" in the west, south, and east. In each place he saw three more "open gates of heaven."

There were other things to be seen at the ends of the earth. Earlier, we deferred discussion of the King James version of Job 26:7, "He stretcheth out the north over the empty place, and hangeth the earth upon nothing." On several occasions when Enoch and the angel are out beyond the dome of heaven, Enoch comments that there is nothing above or below. For instance, "And I came to an empty place. And I saw (there) neither a heaven above nor an earth below, but a chaotic and terrible place" (1 Enoch 21:1–2). Could this be the kind of nothingness referred to in Job?

An angel also showed Enoch the storerooms of the winds (18:1) and the cornerstone of the earth (18:2).

The Sun and Moon

And what of the sun and moon? Psalm 19:4–6 (quoted earlier) suggests that the sun holes up at the ends of the earth until it is time to rise. Enoch expands upon this idea. In 1 Enoch 41:5, he "saw the storerooms of the sun and the moon, from what place they go out and to which place they return …". Further, "they keep faith one with another: in accordance with an oath they set and they rise."

Enoch discusses the solar and lunar motions at length, explaining why the apparent azimuths of their rising and setting vary with the season. The explanation, found in the section called "The Book of the Heavenly Luminaries," begins thus:

This is the first commandment of the luminaries: The sun is a luminary whose egress is an opening of heaven, which is (located) in the direction of the east, and whose ingress is (another) opening of heaven, (located) in the west. I saw six openings through which the sun rises and six openings through which it sets. The moon also rises and sets through the same openings, and they are guided by the stars; together with those whom they lead, they are six in the east and six in the west heaven. All of them (are arranged) one after another in a constant order. There are many windows (both) to the right and the left of these openings. First there goes out the great light whose name is the sun; its roundness is like the roundness of the sky; and it is totally filled with light and heat. The chariot in which it ascends is (driven by) the blowing wind. The sun sets in the sky (in the west) and returns by the northeast in order to go to the east; it is guided so that it shall reach the eastern gate and shine in the face of the sky (1 Enoch 72:2–5).

The openings in the vault of heaven in the east and west are matched to the seasons. On the longest day of the year, the sun rises and sets through the northernmost pair. On the shortest day, it rises and sets through the southernmost pair. The return routes of the sun and moon are outside the dome. Perhaps they rest in their "storerooms" during their time off.

The Stars

Like the Bible, 1 Enoch typically depicts stars as living, anthropomorphic beings. The Sons of the Gods are also dealt with in 1 Enoch, and they are associated with stars. This is consistent with Job 38:7, which says that when the earth's cornerstone was laid "the morning stars sang together and all the sons of God shouted aloud."

As mentioned earlier, Matthew 24:29 and Revelation 6:13 deal with stars that fall to earth. The image comes from Enoch, but Matthew and John omit some details. In 1 Enoch 88:1, a star that fell from the sky is seized, bound hand and foot, and thrown into an abyss. A few verses later, other stars "whose sexual organs were like the organs of horses" are likewise bound hand and foot and cast "into the pits of the earth" (1 Enoch 88:3).

Most stars just go through their motions night after night. Some stars never set, and Enoch was shown their chariots (1 Enoch 75:8). Stars that do rise and set do so through openings in dome, just like the sun and moon. God, according to 1 Enoch, runs a tight universe, and stars that do not rise on time are thrown into the celestial slammer. Showing Enoch a hellish scene, the angel Uriel explains:

This place is the (ultimate) end of heaven and earth: it is the prison house for the stars and the powers of heaven. And the stars which roll over upon the fire, they are the ones which have transgressed the commandments of God from the beginning of their rising because they did not arrive punctually (1 Enoch 18:14–15).

Enoch was not told the sentence for tardy rising, but Uriel later shows him other stars "which have transgressed the commandments of the Lord," for which they were doing ten million years of hard time (1 Enoch 21:6). Enoch also was shown an even more terrible place, a fiery prison house where fallen angels were detained forever (1 Enoch 21:10).

1 Enoch deserves study for its cosmology, but there is much more of interest. It profoundly influenced Christian eschatology, and it is necessary reading for anyone trying to understand Hebrew religious thought at the dawn of the Christian era.

Conclusion

From their geographical and historical context, one would expect the ancient Hebrews to have a flat-earth cosmology. Indeed, from the very beginning, ultra-orthodox Christians have been flat-earthers, arguing that to believe otherwise is to deny the literal truth of the Bible. The flat-earth implications of the Bible were rediscovered and popularized by English-speaking Christians in the mid-19th century. Liberal scriptural scholars later derived the same view. Thus, students with remarkably disparate points of view independently concluded that the ancient Hebrews had a flat-earth cosmology, often deriving this view from scripture alone. Their conclusions were dramatically confirmed by the rediscovery of 1 Enoch.

Appendix B
Additional Notes on Zetetic Astronomy: Earth Not a Globe, 1st ed. 1865

THE BOOK OPENS WITH THESE WORDS: "The term 'zetetic' is derived from the Greek verb zeteo; which means to search or examine—to proceed only by inquiry." [ref. B.1] Rowbotham says further, "Speculative men, by force of genius may invent systems that will perhaps be greatly admired for a time; these, however, are phantoms which the force of truth will sooner or later dispel; and while we are pleased with the deceit, true philosophy, with all the arts and improvements that depend upon it, suffers." [ref. B.2]

Rowbotham argued that the Copernican system is without a proven foundation.—"The foundations or premises are always unproved; no proof is ever attempted; the necessity for it is denied; it is considered sufficient that the assumptions shall seem to explain the phenomena selected." [ref. B.3]

Let the practice of theorising be cast aside as one fatal to the full development of truth; oppressive to the reasoning power; and in every sense inimical to the progress and permanent improvement of the human race. [ref. B.4]

The hatred of theories was a recurring theme throughout the book, as further evidenced by quotations given in Chapter 1.

If the earth is a globe, standing water must be convex. Standing water is the key from the beginning. Rowbotham writes a very similar description to one found in his first flat-earth publication (1849) describing one of the experiments upon which zetetic astronomy was based:

In the county of Cambridge there is an artificial river or canal, called the "Old Bedford." It is upwards of twenty miles long, and passes in a straight line through that part of the fens called the "Bedford level." The water is nearly stationary—often entirely so, and throughout its entire length has no interruption from locks or water-gates; so that it is in every respect well adapted for ascertaining whether any and what amount of convexity really exists. A boat with a flag standing three feet above the water, was directed to sail from a place called "Welney Bridge,"

to another place called "Welche's Dam." These two points are six statute miles apart. The observer, with a good telescope, was seated in the water as a bather (it being the summer season), with the eye not exceeding eight inches above the surface. The flag and the boat down to the water's edge were clearly visible throughout the whole distance! [ref. B.5]

This was, of course, the location of Rowbotham's former Owenite colony. He described more and similar experiments, including a clever experiment involving a tightly stretched line to show that water is horizontal [ref. B.6] and the mirror experiment discussed by Proctor. [ref. B.7]

One important argument was his quotes from balloonists who say that from altitude, the earth looks positively concave. [ref. B.8] Elliott, an American balloonist, said, "I don't know that I ever hinted heretofore that the aeronaut may well be the most sceptical man about the rotundity of the Earth. Philosophy imposes the truth upon us; but the view of the Earth from the elevation of a balloon is that of an immense terrestrial basin, the deeper part of which is that directly under one's feet." [ref. B.9]

Rowbotham insisted that the north pole is the centre of the earth. [ref. B.10] As for the south pole, it doesn't exist. The extent of the southern ice, like the extent of the great deep, was completely unknown to him. For all he knew, both might extend infinitely.

[T]here is no practical evidence as to the extent of the southern ice and the 'great deep.' Who shall say whether the depth and extent of the 'mighty waters' have a limit, or constitute the 'World without end?' [ref. B.11]

A major problem for zetetic astronomy—one Rowbotham obviously hadn't thought of when he ignominiously ran away at Burnley—is why ships sailing out to sea seem to vanish hull first, going "hull-down" as nautical jargon had it. Rowbotham argued that it is false to assume that only a convex surface can cause ships to go hull-down. [ref. B.12]

The zetetic law of perspective is a crucial part of zetetic astronomy, for it is required to account for nearly all of the visual effects commonly attributed to the sphericity of the earth. Rowbotham dealt with it in detail. [ref. B.13] Artists make use of a concept called the vanishing point, the point at which a group of parallel lines appear to converge. In conventional perspective, the vanishing point is at infinity. Not so in zetetic perspective. According to Rowbotham, "parallel lines appear in the distance to converge to one and the same datum line, but to reach it at different distances if themselves dissimilarly distant." [ref. B.14]

Many of the conventional "proofs" of sphericity were easily dealt with. How can the earth be circumnavigated if it is not a sphere? Rowbotham suggested that the skeptical might experiment by walking around a small table. Is the table then a sphere? [ref. B.15] He correctly argued that this objection is based on the false premise that only a globe can be circumnavigated. [ref. B.16]

Arguments against rotundity: Rowbotham claimed Polaris has frequently been seen from below the equator, and this is a powerful argument against rotundity. [ref. B.17]

An obvious objection to zetetic astronomy is that it predicts that degrees of longitude should get longer the further south one goes. To this, Rowbotham replied that no actual measurement of a degree of longitude had ever been made south of the equator. Besides, distances south of the equator don't fit the globular view:

[P]ractical navigators give the distance from the Cape of Good Hope to Port Jackson as 8,000 miles; from Port Jackson to Cape Horn as 8,000 miles; and from Cape Horn to the Cape of Good Hope, 6,000 miles, making together 22,000 miles. The average latitude of these places is 45°, at which parallel the circuit of the Earth, if it be a globe, should only be 14,282 miles. [note B.1]

Here, then, is an error between the theory of rotundity and practical sailing of 7,718 miles. [ref. B.18]

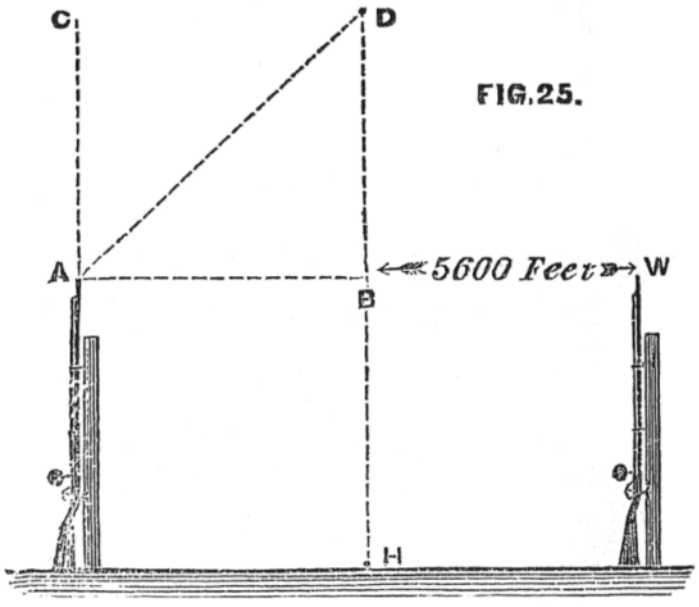
Rowbotham neglected to say what the distance around the 45th parallel should be according to zetetic astronomy, but it would be half again the circuit of the equator, some 32,400 nautical miles.

It was commonly believed in England that surveyors laying out railways and canals adjusted their sights for the curvature of the earth. Rowbotham said that method turned out to be unsatisfactory. It was replaced by a technique known as the foresight–backsight method, which, as Rowbotham recognized, works equally well on flat or spherical earths. [ref. B.19] Nevertheless, he insisted that the British government tacitly acknowledged that the earth is a plane. As proof, he cited standing order No. 6 of the House of Lords, which regulated plans submitted to the government for public works:

[A] datum HORIZONTAL LINE, which shall be the same throughout the whole length of the work, or any branch thereof respectively; and shall be referred to some fixed point stated in writing on the section, near some portion of such work; and in the case of a canal, cut, navigation, turnpike, or other carriage road, or railway, near either of the termini [emphasis presumably added by Rowbotham]. [ref. B.20]

To a flat-earther, horizontal means flat, not some uniform distance above sea level.

It was not just Newtonian gravitation that Rowbotham rejected, but much of Newtonian mechanics. He noted that a ball dropped from the masthead of a ship strikes the same place whether the ship is moving or not. That would be conventional, except that he claimed that on a moving ship, the path of the ball is a diagonal line. [ref. B.21] (The path would be curved.) More unconventional was his claim about what happened when the ball is thrown upward from the masthead. In this case, he claimed that the ball would expend its vertical and horizontal momentum simultaneously, and drop straight down from its zenith. This would cause it to miss a moving ship. [ref. B.22] He claimed that if such an experiment were tried from a moving earth, it should have the same result.



Air-gun experiment according to Rowbotham

If conventional theory is correct, Rowbotham argued, the motion of the earth's surface in England should be about 700 miles per hour. He says he fastened an air-gun to a post and adjusted it to

vertical with a plumb-line. [ref. B.23] "On discharging the gun, the ball ascended in the direction AC, and invariably (during several trials) descended within a few inches of the gun at A; twice it fell back upon the very mouth of the barrel. The average time that the ball was in the atmosphere was 16 seconds …" [ref. B.24] Allowing half the time for the ascent and half for the descent, Rowbotham calculated that the earth should have moved 5600 feet in the meantime! That is, the ball should have fallen more than a mile from the air-gun!

Having proved (to his own satisfaction) that the earth is an immovable plane, Rowbotham now calculated the height of the sun using reported observations of its apparent altitude and plane trigonometry. He concluded that its altitude is less than 4,000 miles.

The sun's path above the terrestrial plane is a circle. This can be inferred because part of its path is an arc, and from a favorable position it can even be observed directly:

Captain Parry, and several of his officers, on ascending high land in the vicinity of the north pole, repeatedly saw, for 24 hours together, the sun describing a circle upon the southern horizon. [ref. B.25]

Eclipses of the sun were not a matter of dispute. In both conventional and zetetic astronomy they are caused by the moon passing between the sun and the observer. If the earth is an immovable plane, however, it can't be the cause of the moon's eclipse. To rebut the idea that the earth passes between the sun and moon, Rowbotham noted that "cases are on record of the Sun and Eclipsed Moon being above the horizon together." [ref. B.26] He supported this claim with a barrage of references from conventional scientific sources.

As for the calculation of eclipses, often cited as evidence for the validity of modern astronomy, it proves nothing at all. "The tables of the moon's relative positions for almost any second of time are purely practical," Rowbotham wrote, "the result of long continued observation, and may or may not be mixed up with hypothesis." He noted that Ptolemy calculated all eclipses for 600 years, and the Babylonians are known to have calculated eclipses in 719 B.C. [ref. B.27] Science gadfly Sir Richard Phillips and astronomical writer Mary Somerville both acknowledged that eclipses can be calculated without modern astronomy. [ref. B.28]

Because gravitation is fallacy, the cause of the tides must be sought elsewhere. Rowbotham argued atmospheric pressure causes the earth to slowly rise and fall on the waters of the Great Deep like a huge ship gently rocking at anchor. [ref. B.29] The larger the vessel, the slower its motion, and the earth is so large it takes 12 hours to rise or fall. [ref. B.30] When the earth falls, the inrushing waters cause the flood tide, and when it rises again the waters recede.

The moon's phases are caused because not all of the moon is self-luminous. Apparently, it rotates to present more or less of the luminous part to the earth. The idea that the moon is a solid spherical body with mountains and so forth is absurd. [ref. B.31] Maps of the moon are pure fantasy, their features no more real than faces in a fire. [ref. B.32] People see them because various authorities tell them to study maps and drawings of the moon before looking at it, so they will know what to look for. [ref. B.33]

In early 1851, scientific journals were full of reports and comments on Foucault's pendulum experiments, which reportedly demonstrate the rotation of the earth. Rowbotham noted that many rejected this claim, and several who tried to replicate Foucault's experiment failed to get the same results. He quoted several authorities for this.

In the second-last section of the book, "Perspective on the Sea," Rowbotham argued that perspective works differently for objects up in the air and on the ground. "In the first case the centre of the object is the datum to which every point of the exterior converges; but in the second case the ground becomes the datum, in and towards which every part of the object converges in

succession, beginning with the lowest, or that nearest it." [ref. B.34] This is exactly what occurs when objects seem to disappear behind the curvature of the earth. On a flat canal, a telescope will always bring the object back into view, but on the undulating sea this is not always possible because of the swells. He claimed that a telescope magnifies the waves and exacerbates the situation. [ref. B.35]

In the final section, Rowbotham accused conventional astronomers of jugglery and fabrication [ref. B.36] and warned:

The soldiers of truth and reason have drawn the sword, and ere another generation has been educated, will have forced the usurper to abdicate. The axe is lifted—it is falling, and in a very few years will have "cut the cumberer down." [ref. B.37]

The flat earth also proves the inspiration of the Bible. Rowbotham also had some harsh words for those who argued that the purpose of the Bible was to teach people how to go to heaven, not how the heavens go:

To say the Scriptures were not intended to teach science truthfully, is, in substance, to declare that God Himself has stated, and commissioned His prophets to teach things which are utterly false! [ref. B.38]

Rowbotham argued that the implications of conventional astronomy threatened the very foundations of Christianity. For example, how did Adam's original sin affect those in other stellar systems, if such there be? [ref. B.39]

Rowbotham then fired a barrage of scriptures:

Hebrews 2:5, Ephesians 1:21, Luke 18:29–30, Matthew 12:32 teach that there is only one world. Revelation says the stars will fall on the earth. How can thousands of stars fall on earth if they are larger than the earth and millions of light-years away? [ref. B.40]

Exodus 20:4, Deuteronomy 4:18, and numerous other verses refer to waters under the earth. In many parts of the Atlantic and Pacific, no bottom can be found. [ref. B.41] There are no bounds to the great deep (Jeremiah 31:37). Neither the height of the heavens nor earth's foundations can be searched out. [ref. B.42]

Scripture teaches an absolute up and down, and heaven is above the earth:

Deuteronomy 26:15, Exodus 19:20, Psalm 102:19, Isaiah 43:15, Psalm 103:11, 2 Kings 2:11, Mark 16:10, and Luke 24:51. [ref. B.43] Even Jesus "lifted his eyes to Heaven and said, Father, the hour is come." [ref. B.44] If there is a plurality of worlds and no absolute up or down, where is Heaven to be found? [ref. B.45]

He concluded that the belief in heaven is endangered or destroyed by astronomy.

By exposing astronomy as a fraud, Rowbotham claims he deprives atheism of a powerful weapon: [ref. B.46]

The scriptures are therefore literally true, and must henceforth either alone or in conjunction with practical science be used as a standard by which to test the truth or falsehood of every system which does or may hereafter exist. Philosophy is no longer to be employed as a test of scriptural truth, but the scriptures may and ought to be the test of all philosophy. [ref. B.47]

Some might ask what is the benefit of Rowbotham's system. He argues that the great benefit of zeteticism is that it will bring noble-minded atheists to religion. [ref. B.48]

Appendix C
The Fathers of the Church and Flat-Earthism

FEW MODERN CHRISTIANS UNDERSTAND how thoroughly early Christianity was dominated by the Near East. Of the early Fathers, most wrote in Greek. At first, Alexandria, Egypt, was the intellectual center of Christianity, followed by Antioch and Rome (last). Later, Constantinople emerged as a rival. The Latin Fathers did not reach parity with the Greek Fathers until about the 4th century. Indeed, the 4th century was the great intellectual flowering of early Christianity. After centuries of struggle and occasional persecution, the Christians won with Constantine. That left them free to fight among themselves and persecute each other in the process of hammering out an orthodoxy.

For example, John addressed his Revelation to "the seven churches which are in Asia"—Ephesus, Smyrna, Pergamos, Thyatira, Sardis, Philadelphia, and Laodicea. All of these cities were in western Asia Minor (now western Turkey). According to the book, John had his vision on Patmos, an island in the Aegean Sea, just off Asia Minor. Canonical Epistles were explicitly addressed to Christians in Rome, Corinth, Ephesus, Philippi, Colossae, Thessalonica, and Galatia (a region). Except for Rome, all these were either in Greece or Asia Minor.

All of the important councils of the early church were held in Asia Minor. The first four ecumenical councils were Nicaea (325), Constantinople (381), Ephesus (431), and Chalcedon (451)—cities in what is now western Turkey. Not until 1123 was an ecumenical council held in the west (at the basilica of St. John Lateran in Rome).

While there is nothing explicitly spherical in the canonical Bible, one of the Apostolic Fathers, Clement of Rome, seemed to reveal Ptolemaic leanings in his non-canonical First Epistle to the Corinthians. (Clement reputedly was a disciple of Peter and later served as Bishop of Rome.) Clement wrote: "The ocean, un-passable to mankind, and the worlds that are beyond it, are governed by the same commands of their great master" (Clement 9:12). This is not necessarily Ptolemaic, but the concept of lands beyond the ocean was part of Greek astronomy and anathema to the known flat-earthers among the Fathers,

It is intriguing that the flat Fathers seem to have completely ignored the Book of Enoch as support for their views. It is not clear whether that was due to unfamiliarity, rejection, or both. Of the Fathers who did refer to the Book of Enoch (Tertullian, for one), none endorsed its cosmology.

Antioch was founded as a Greek city in about 300 B.C. by Seleucus Nicator, one of the heirs of Alexander the Great. In time, Antioch rivaled Alexandria in prestige and power, and the Romans tended to favour it over Alexandria because it was more centrally located. It was one of the first gentile cities evangelised by Christians, and, according to tradition, St. Peter was the first bishop of Antioch, before he moved on to Rome. By 400 A.D., the population of Antioch was 200,000, but that count probably didn't include slaves. By the 4th century, the Patriarch of Antioch ranked third after Rome and Alexandria in all of Christendom. It would eventually be eclipsed by Constantinople before its fall to the Saracens in 635.

Antioch gave its name to a school of theology that insisted on a literal interpretation of the Bible and the human limitations of Jesus. Antiochene theology sometimes opposed and sometimes agreed with Alexandrian theology. Generally, the Antiochene theologians rejected the allegorical interpretation of the Bible favoured by the Alexandrians and insisted on a more grammatical and literal interpretation. The Antiochene viewpoint was Aristotelian and historical; the Alexandrian was Platonic and mystical. Antiochenes sought the meaning intended by the writer rather than some obscure, hidden meaning. They also held some parts of the Bible to be more valuable than others. Except perhaps for that, they were much like modern fundamentalists.

Under "Antiochene Theology," the Oxford Dictionary of the Christian Church explicitly lists Paul of Samosata (3rd century), Lucian of Antioch (d. 312), Marcellus of Ancyra (d. c. 374), John Chrysostom (347–407), Theodore of Mopsuestia (c.350–428), Nestorius (d. c. 451), and Theodoret (c.393–c.458). Elsewhere, it also identifies Diodorus of Tarsus (d. 394) and Severianus of Gabala (fl. 400–408) as Antiochene theologians. Of the nine so identified, at least four—Theodore, Diodorus, Chrysostom, and Severianus—were dyed-in-the-wool flat-earthers, and I am not aware that any Antiochene explicitly endorsed a spherical earth. It seems that flat-earthism may have been a de facto doctrine of the Antiochene school.

Diodorus of Tarsus (d. 394) has been called "the father of Biblical interpretation." His biography is sketchy, but he was a native of Antioch, and he studied in Athens as a young man. After returning to Antioch, Diodorus headed a monastery outside of town, and his theology students at the monastery school included John Chrysostom and Theodore of Mopsuestia. In his theology, Diodorus followed the Antiochene tradition, and he insisted on a literal and historical exegesis of the Bible and the complete humanity of Jesus. He was the founder of the cosmological argument for the existence of God, and he opposed the doctrine of eternal punishment. Diodorus reportedly upheld the tabernacle shape of the universe and blasted the "atheists" who accepted the geocentric system in his book Against Fatalism. The reputation he earned in Antioch was such that he was consecrated Bishop of Tarsus in 378.

In about 400, one Severianus was made Bishop of Gabala, a city on the northern part of the Syrian seacoast, about fifty miles south of Antioch. An Antiochene theologian, he is best remembered for his political machinations. With Serapion and Theophilus of Alexandria, Severianus conspired against Chrysostom, who had formerly been his friend. He also was a strong opponent of the sphericity of the earth.

In his Six Orations on the Creation of the World, Severianus insisted that God made the highest heaven on the first day, "not the visible heaven, but the one above it, for the visible was made on the second day. God made the higher heaven—the heaven of heavens to the Lord, and it is higher than this visible heaven, and, as in a house of two stories, between it and the earth another heaven is interposed. God having thus created the world as one house, placed this visible heaven as a roof in the middle, and the waters above it." At the beginning of the second day, water lay over the earth, but God said, "Let there be a firmament in the midst of the water (Genesis 1:6)." According to Severianus, "thereupon a solid ice-like substance was produced in the midst of the waters, which made lighter the upper half of the water, and left the other half underneath." Elevated, this solid firmament became the roof of the lower world. To save this firmament from being damaged by the heat of the sun, moon, and stars, "He spread over the upper surfaces of heaven those sea-like expanses of water." This layer of water also prevents the heat of the sun from rising and being lost, illustrating once again "the wisdom of the Architect."

Severianus held that the sun, moon, and stars were made out of light created on the first day. He noted that the Bible says that "The sun goeth out upon the earth" and "from the end of heaven is his going forth, and at the end of heaven is his goal." He concluded that the sun does not return by a route under the earth, but rather via the north, apparently outside the vertical walls where the firmament comes down to earth.

As for those compromisers who would allow a spherical heaven, Severianus had nothing but contempt: "He made therefore the heaven, not a sphere, as those vain babblers conceive—for He did not make a rolling sphere, but, as the prophet says: Who hath made the heaven as a vaulted chamber and stretched it out as a tent to dwell in; for none of us is so impious as to be persuaded by these triflers, and not by the words of the Prophet, which declare that the heaven has a beginning and end."

Epiphanius, Bishop of Salamis (c.315–403), was another outspoken flat-earther from the same period and area. A native of Palestine, Epiphanius founded a monastery in Judea in about 335.

A scholar of some ability, Epiphanius wrote a valuable treatise on Hebrew weights and measures and another half-finished work on gems, but he is best remembered for his Panarion, also known as A Refutation of All Heresies. The latter is a hammer-and-tongs job better known for its heat than for the light it sheds on the views of those Epiphanius considered heretics. As the Oxford Dictionary of the Christian Church put it, "His unbending rigidity, his want of judgement, and his complete inability to understand any who differed from him, were reflected in his writings no less than in his life." Epiphanius was elected Bishop of Cyprus in 367 and (perhaps later) was made Metropolitan of the island, and he apparently remained in his see to the end of his long life.

Like Severianus, Epiphanius claimed that the higher heaven was created on the first day, and likewise the waters and angels. The second day was entirely devoted to the creation of the firmament. The quotes from Cosmas seem in perfect agreement with his quotes from Severianus.

John Chrysostom (347–407) was the most famous Antiochene theologian—indeed, the most famous of all the Greek Fathers of the Church (some would say Origen). Born to a wealthy Antioch family in either 345 or 347, John and his friend Theodore of Mopsuestia studied together under the great pagan orator Libanus at Antioch (law and rhetoric, respectively). In 369, however, the two friends abandoned worldly pursuits and together entered the school of Diodorus (later Bishop of Tarsus) in a monastery at Antioch. Diodorus was then the leader of the Antiochene school of theology and presumably already a vehement flat-earther.

John and Theodore of Mopsuestia remained friends until the former died. Both were outspokenly Antiochene in their theology, which means that they insisted upon a strict grammatical–historical interpretation of the Bible, and they flatly rejected the allegorical interpretations put forth by the Alexandrian school.

Regarding Chrysostom's views, Cosmas wrote, "He places the air first, then the moon, then the sun; in the next place, the firmament, then again, the heaven of heaven, without saying there are more than two heavens, and he ridicules those who say that it is a sphere, and maintain that it is in motion."

In Homily vii, Chrysostom wrote, "[W]ouldst thou learn about the earth? What dost thou know? Tell me. How great is its measure? What is its size? What is its manner of position? What is its essence? What is its place? Where does it stand, and upon what?" Further: "Again, concerning the sea? But certainly you will be reduced to the same uncertainty, not knowing where it begins, and where it ends, and upon what it is borne, what supports the bottom of it, and what sort of place there is for it, and whether after it there is a continent, or it ends in air and water." The last clauses in each quote are consistent with a flat earth and seem impossible to reconcile with a sphere.

Homily xiv on Hebrews deals with the Tabernacle. It is a commentary on Hebrews 8:1–2: "Now of the things which we have spoken this is the sum: We have such an high priest, who is set on the right hand of the throne of the Majesty in the heavens: a minister of the sanctuary, and of the true tabernacle, which the Lord pitched, and not man." Regarding the last part of this passage, Chrysostom asked rhetorically, "Where are they who say that the heaven whirls around? where are they who declare it is spherical? for both of these notions are overthrown here."

The Tabernacle fixation apparently began with Clement of Alexandria (c.150–215), but (being Alexandrian) he didn't take it literally. Others did. Chrysostom's Homily xv is on Hebrews 9:1–5, and it also deals with the Tabernacle. He wrote, "'For' (he says) 'there was a tabernacle made; the first, which is called holy, wherein was the Candlestick, and the Table, and the Shewbread.' These things are symbols of the world." This quote of Hebrews 9:2 and its treatment gives the impression that Chrysostom really did take the Tabernacle as a model of the world.

Theodore of Mopsuestia (d.c. 428) was a flat-earther who taught the tabernacle theory and had angels keeping the stars in motion. Together with John Chrysostom, he studied in Antioch, first under the pagan orator Libanus, and then at the monastery school of Diodorus of Tarsus, where he studied for ten years. In 392, he became Bishop of Mopsuestia, and he remained in his see for the rest of his life. A prominent Antiochene theologian, Theodore gained a reputation for his learning and ultraorthodoxy. His works were especially influential among the Nestorians, and some regard him as the real founder of the sect (Nestorius was his disciple). The so-called Nestorians carefully distinguished between the human and divine natures in Christ, and they refused to call Mary the Mother of God.

Mopsuestia was in Cilicia (now southern Turkey) on the Pyramus (now Jihun) River, whose mouth is at the northeast corner of the Mediterranean. Some of Chrysostom's letters to Theodore have been preserved. According to the introduction to two of the letters, John and Theodore remained good friends from their student days until Chrysostom died in 407. They studied together under Diodorus of Tarsus, who was a flat-earther.

Theodore apparently set forth his flat-earth view in a work on creation that has not survived. Fortunately, the work was attacked by Johannes Philoponus, a late 6th century grammarian of Alexandria, who defended sphericity in a book on the creation of the world. Apparently, Theodore quoted the Bible to prove that the heaven is not spherical and that the stars are moved by angels.

The name of Nestorius is attached to a popular "heresy" that sprang up in the 4th century and essentially took over the church east of the Euphrates River. Several sources agree that the true founder of Nestorianism was Theodore of Mopsuestia, an outspoken flat-earther who counted Nestorius among his disciples. The Nestorians held that there were two separate persons in the incarnate Christ, one human and one divine, and they refused to call Mary the Mother of God. The Nestorian Church gradually formed after the council of Ephesus, and its intellectual center was at first Edessa (known as the Athens of Syria). A school of Nestorian theology arose there under Ibas, who became Bishop of Edessa in 435. Several Persian kings supported them, but the Nestorians were expelled from Edessa in 489. By that time, a strong school had arisen at Nisibis, which became the center of Nestorian culture. The Patriarchate (Catholicos) was centered at Seleucia-Ctesiphon on the Tigris. After 498, the title was Patriarch of the East. The Nestorians proselytized widely, and they established Christian communities in India and China.

Bibliography

Blake, John Frederick, 1839–1906. Astronomical Myths, Based on Flammarion's "History of the Heavens". London: Macmillan and Co., 1877.

Cosmas Indicopleustes. Christian Topography.

Dreyer, J. L. E. "Medieval Cosmology." In Milton K. Munitz's Theories of the Universe. It is actually Chapter 10 of Dreyer's A History of the Planetary Systems from Thales to Kepler, Cambridge: Cambridge University Press, 1905.

Fox, Robin Lane. Pagans and Christians. New York: Alfred A. Knopf, Inc., 1989.

Jones, C. W. "The Flat Earth." Thought, v. 9, p. 296–307.

Jurgens, William A. The Faith of the Early Fathers. Collegeville, MN: The Liturgical Press, 1970.

Kaiser, Christopher. Creation and the History of Science. London: Marshall Pickering; Grand Rapids: William B. Eerdmans Publishing Co., 1991.

McCrindle … [in Cosmas].

Oxford Dictionary of the Christian Church. London: Oxford University Press, 1958. First published 1957. Edited by F. L. Cross.

Russell, Jeffrey Burton. Inventing the Flat Earth: Columbus and Modern Historians. New York: Praeger, 1991.

Schaff and Wace. A Select Library of Nicene and Post-Nicene Fathers of the Christian Church.

Concise Cyclopedia of Religious Knowledge. Hartford: S. S. Scranton Co., 1907. Edited by Elias Benjamin Sanford.

Stadelmann, Luis I. J. The Hebrew Conception of the World: A Philological and Literary Study. Rome: Pontifical Biblical Institute, 1970.

White, Andrew Dickson. A History of the Warfare Between Science and Theology in Christendom.

Wright, J. K. Geographical Lore of the Time of the Crusades. New York: Dover, 1965. Originally published in 1925.

Appendix D
Geocentricity

FROM THE TIME THE EARTH WAS DISCOVERED TO BE A SPHERE, most western thinkers have positioned it at the centre of the universe. When the heliocentric view triumphed in the centuries following Copernicus (1473–1543), some conservative Christians held to geocentricity, insisting that the Bible requires it. During the last third of the 20th century, the geocentric view made a remarkable comeback among ultra-conservative Christians as an adjunct to creation science.

The Pythagoreans (5th century B.C.), who were among the first to advocate the sphericity of the earth, also held that the sun was the centre of the universe. Although the spherical view triumphed among Greek thinkers within a century, heliocentricity quickly faded from sight. About 350 B.C., Aristotle argued in On the Heavens that the earth must necessarily be immovable and located at the centre of the universe. This view became a fundamental postulate of the Hellenistic system of astronomy, which Claudius Ptolemy (fl. 150) completed in a form that lasted for a millennium.

In the Christian church, some early Fathers held out for a flat earth, but most accepted a spherical earth centred in the midst of the firmament. Influential thinkers such as Ambrose (339–397), Jerome (342–420), and Augustine (354–430) endorsed this view. By late medieval times, so-called Ptolemaic astronomy had been thoroughly integrated into Christian thinking.

The Copernican Revolution in Astronomy

Nicholaus Copernicus (1473–1543) revived heliocentric astronomy with Revolutions of the Heavenly Spheres, published in the year of his death. Although his system aroused great interest

among astronomers, it did not gain their immediate and universal acceptance. The Danish astronomer Tycho Brahe (1546–1601), the best observer of the pre-telescopic era, rejected the Copernican system and instead promoted a geocentric system. In the so-called Tychonic system, the sun and moon orbit the earth, and the planets orbit the sun. In England, geographer and astronomer Nathaneal Carpenter (1588–1628?) advocated a modified Tychonic system with the earth rotating on its axis daily. In France, the great astronomer Jean Dominique Cassini (1625–1712) rejected the Copernican system in favour of a Tychonic system modified to use oval-shaped curves ("Cassinians") for the orbits of heavenly bodies.

Galileo Galilei (1564–1642), who first used a telescope for astronomy, adopted the Copernican system, as did Johannes Kepler (1571–1630), who discovered that planetary orbits are ellipses with the sun at one focus. Isaac Newton (1642–1727) provided an elegant theoretical basis for a Copernican system with Keplerian orbits in his Principia (1689), and heliocentricity rapidly triumphed among astronomers in the following decades.

Christian Opposition to Copernican Astronomy

Taken literally, the Bible describes an immovable earth and mobile sun. For example, 1 Chronicles 16:30 says, "He has fixed the earth firm, immovable." (New English Bible. See also Psalm 93:1, Psalm 96:10, Psalm 104:5, and Isaiah 45:18.) At Gibeon, Joshua commanded the sun to stand still but said nothing about the earth ceasing to rotate (Joshua 10:12). Likewise, when Isaiah moved the shadow on the dial of Ahaz, it was the sun that moved ten degrees (Isaiah 38:8). Religious opponents of Copernican astronomy cited these and other passages to justify their position.

Initially tolerant, the Roman Catholic Church eventually stood strongly against Copernican astronomy. Thanks to Galileo's advocacy, Copernicus's Revolutions of the Heavenly Spheres was put on the Index of prohibited books in 1616, and Galileo was forbidden to teach heliocentricity. After he continued to do so, Galileo was charged with "a vehement suspicion of heresy" in 1633, forced to abjure, and confined under house arrest for the rest of his life. The persecution of Galileo occurred as the heliocentric view was making rapid gains and perhaps already was dominant among astronomers. During the following century, opposition faded and most of mainstream Christianity accepted heliocentricity.

Sectarian Geocentric Systems

Outside the mainstream, geocentricity persisted among religious sectarians. Some sects developed unique astronomical systems. For example, John Reeve (1608–1658) and Lodowick Muggleton (1609–1679) founded a modestly successful sect known as the Muggletonians. Their doctrines included a unique cosmology with a spherical earth, heaven no more than six miles up, a moon that shines by its own light, and lunar eclipses caused by an unseen planetary body. One sect member, Isaac Frost, published a detailed description and defense of the Muggletonian astronomical system in 1846 in Two Systems of Astronomy.

Lieutenant Richard Brothers (1757–1825), self-proclaimed nephew of God and Prince of the Hebrews, developed another sectarian geocentric system while in a London asylum for prophesying the imminent death of King George III. In The Universe As It Is: Describing the Sun, Moon, Stars, and Comets, with Their Daily Motions Round the Earth, which Is At Rest! (1796?), Brothers taught that the sun is an egg-shaped ball of heat and light that moves through space large-end first. The moon is a rough body of ice, and the stars also are ice, created (like the moon) from waters above the firmament (Genesis 1:6). Two followers, John Finlayson and Bartholomew Prescot, published works defending Brothers' astronomy. Brothers died in 1825, and for all practical purposes, his astronomical system died with him.

Geocentricity Among Lutherans

Martin Luther (1483–1546) dismissed Copernicus as a "fool" and an "upstart astrologer," and perhaps that explains why geocentric beliefs seem more common among Lutherans than other denominations. For example, in Germany, Pastor G. F. L. Knak (fl. 1868) earned the ridicule of German intellectuals for his geocentric views. In America, Pastor C. F. W. Walther (1811–1887), the first president of the Lutheran Church—Missouri Synod (LCMS), disparaged Copernican astronomy in the pages of the synod's official publication, Der Lutheraner. Walther's intellectual successor in LCMS, theologian F. A. O. Pieper (1852–1931), also rejected Copernicanism. Thus, it is not surprising that most geocentric works published in America between 1870 and 1920 were written by members (mainly clergymen) of LCMS, and geocentricity was widely taught within the synod.

In 1873, the synod's St. Louis printing office published and distributed a geocentric pamphlet entitled Astronomische Unterredung zwischen einem Liebhaber der Astromonie und mehreren berühmten Astronomen der Neuzeit (Astronomical Conversation between a Lover of Astronomy and Several Famous Modern-Day Astronomers) by J. C. W. Lindemann, head of a LCMS teacher's college. Pastor J. R. L. Lange (b. 1858), another LCMS clergyman, published at least three geocentric pamphlets, Die unhaltbarkeit des kopernikanischen systems (The Untenability of the Copernican System) in 1895, The Copernican System: The Greatest Absurdity in the History of Human Thought in 1901, and Antikopernikanische Aufzeichnungen (Anti-Copernican Notes) in 1907. Lange advocated the Tychonian system, and his works reveal some familiarity with the history of science, especially the history of astronomy.

Perhaps the most prolific LCMS geocentrist was Frederick E. Pasche (1872–1954). Pastor Pasche wrote two substantial geocentric books in German—Christliche Weltanschauung. Kosmogonie und Astronomie (Christian Worldview: Cosmogony and Astronomy) in 1904 and Bibel und Astronomie (Bible and Astronomy) in 1906. In 1915, Pasche published a 49-page pamphlet entitled Fifty Reasons: Copernicus or the Bible. As the 20th century progressed, however, the LCMS became more urban and sophisticated, and geocentricity largely faded from view.

Geocentricity and Modern Creationism

The modern resurgence of geocentricity began in North America in 1967, when Canadian schoolmaster Walter van der Kamp circulated a geocentric paper entitled "The Heart of the Matter" to about fifty Christian individuals and institutions. Van der Kamp received only four favorable responses, but one was from Canadian astronomer Harold L. Armstrong, who subsequently (1973) became editor of the Creation Research Society Quarterly (CRSQ). Pastor Walter Lang, a Missouri Synod Lutheran and founder of the Bible-Science Newsletter, also was sympathetic, and van der Kamp made presentations on the Tychonian system at National Creation Conferences sponsored by the Bible-Science Association (BSA). From these seeds grew the Tychonian Society and its journal, The Bulletin of the Tychonian Society.

Two Cleveland astronomers, James N. Hanson and Gerardus Bouw, were among the early converts, and, in the summer of 1978, they organized perhaps the world's first geocentric conference. Early in 1984, Walter van der Kamp retired as leader of the Tychonian Society and editor of the Bulletin, and Bouw succeeded him. The next year, Bouw was chief organizer of the BSA-sponsored 1985 National Creation Conference. This conference included several geocentric papers, and its grand finale was a spirited two-hour debate on the scriptural and scientific merits of geocentricity. In 1990, Bouw reorganized the Tychonian Society as the Association for Biblical Astronomy (4527 Wetzel Avenue, Cleveland, OH 44109) and renamed the Bulletin to The Biblical Astronomer. Two years later, he organized another conference on geocentricity, which was held in conjunction with a major creationism conference.

Modern geocentrists have produced several books advocating Tychonian astronomy. Bouw's two books, With Every Wind of Doctrine (1984) and Geocentricity (1992), are the most sophisticated defences of geocentricity ever published, and the only ones written by an astronomer

with a Ph.D. from a first-class university (Case Western Reserve). In 1988, Walter van der Kamp published a small geocentric book, De Labore Solis: Airy's Failure Reconsidered. And in 1991, Marshall Hall of the creationist Fair Education Foundation published The Earth Is Not Moving.

All modern American geocentrists seem to be young-earth creationists who hold that the Bible compels them to reject Copernicus along with Darwin. The variant of the Tychonian system advocated by the Association for Biblical Astronomy can predict exactly the same relative motions between celestial bodies as the conventional system. This makes it far more coherent than Flood Geology, which often is helpless to account for geologic data. Nevertheless, most creationists seem embarrassed by geocentricity. (For example, the published proceedings of the 1985 National Creation Conference do not include or even mention the several geocentric presentations, let alone the two-hour debate on the relative merits of heliocentricity and geocentricity.) With a few exceptions, leading young-earth creationists publicly ignore—and often privately disparage—the geocentrists, who remain a small minority within the movement.

Selected Bibliography

Bouw, Gerardus. Geocentricity (Cleveland: Association for Biblical Astronomy, 1992). — With Every Wind of Doctrine (Cleveland: Tychonian Society, 1984).

Hall, Marshall. The Earth Is Not Moving (Cornelia, Georgia: Fair Education Foundation, 1991).

Schadewald, Robert J. "Scientific Creationism, Geocentricity, and the Flat Earth." In Scientists Confront Creationism, edited by Laurie Godfrey. New York: W. W. Norton, 1983.

Scientific Creationism, Geocentricity, and the Flat Earth," Skeptical Inquirer, Winter 1981–1982, pp. 41–47.

Stimson, Dorothy. The Gradual Acceptance of the Copernican Theory of the Universe (New York: By the author, 1917).

Van der Kamp, Walter. De Labore Solis: Airy's Failure Reconsidered (Pitt Meadows, B.C.: The author, n.d.).

Notes

If a back-button isn't available, you can use the note number as a link back to the text.

[1.1] Our sole source of information about Rowbotham's youth comes from his own writings, and readers might take the next few paragraphs with a bit of salt.

[1.2] A mechanism which can emulate the motions of the solar system.

[1.3] Fermented pear juice.

[1.4] Literally, naked philosopher. Hindu fakirs and holy men invaded the Hellenic civilization about the time of Alexander the Great (died 323 B.C.). The Gymnosophists were members of a Hindu sect now called the Jains.

[1.5] Sparse diet and alcohol are a deadly combination. Malnutrition, common among alcoholics, contributes so strongly to cirrhosis of the liver that many medical researchers once doubted that alcohol directly caused cirrhosis.

[1.6] Parturition means birth. This work has not survived.

[1.7] When Rowbotham quoted this account in the 1873 edition of Earth Not a Globe, he substituted the words "a gentleman adopting the name of 'Parallax'" for "Mr. S. Goulden" and made other less-substantial editorial changes.

[1.8] The English language evolves rapidly. When De Morgan chose the title for his column, a budget was a leather purse or satchel. The word acquired its present meaning from "the opening of the budget," a speech the Chancellor of the Exchequer gave at the beginning of each term of Parliament summarizing proposed expenditures. A paradox was a theory or doctrine contradicting general opinion. De Morgan's column was a bag of unorthodoxy. The articles in "A Budget of Paradoxes" were published as a book with the same title in 1872.

[1.9] This book is sometimes referred to as Zetetic Astronomy. In both the 1865 and 1873 editions the full title begins "Zetetic Astronomy. Earth Not a Globe. An experimental inquiry into the true figure of the earth …". Both editions have "Earth Not a Globe" on the spine and as the most prominent item on the title page.

[1.10] This philosophy was sometimes carried to the point of Know-Nothingism. In 1857, Thomas A. Davies, an engineer from New York City, argued that "The geologist, is a man of science so long as he develops and classifies facts." It is science to call fossils rocks, Davies argued, but it is mere hypothesis to assert that they were once living things. After all, the creator could have made them in their present form. This kind of thinking persists among modern creationists, and the word theory (as in theory of evolution) is still thundered contemptuously from Fundamentalist pulpits.

[1.11] If the earth were a globe of 8,000 miles diameter, the dip of the horizon in minutes of angle would roughly equal the square root of the observer's altitude in feet. This is about what is observed.

[1.12] John Knox (c. 1505–1572) was Scotland's most famous Reformer. William Law (1686–1761) was an English divine and sectarian controversialist. Sir Henry Havelock (1795–1857) led the British forces against the Indian Mutiny and died in the field—of dysentery!

[1.13] Consider a modest hill (say 200 feet) overlooking the sea. Conventional astronomy predicts that the horizon will dip about 15 minutes of angle; Carpenter said flatly that it would not dip at all. A simple observation could settle the question. If Carpenter shared Rowbotham's skepticism about optical theodolites, a good spirit-level equipped with aperture-type rifle sights would be adequate.

[1.14] This estimate is disputed for various reasons, including the fact that Glaisher survived.

[1.15] He was also a successful lawyer, prize-winning mathematician, and accomplished chemist. In 1839, he invented (independently of Fox Talbot) a photographic process using sensitized paper. He also translated the Iliad into verse.

[1.16] "Major" was his given name, not a military rank.

[2.1] A pretty hefty bird. In 1870, £500 amounted to about 133 ounces of fine gold. Adult male British wage-earners averaged about £60 annually.

[2.2] Here "Old Bedford Bridge" means the bridge at Salter's Lode, near Downham Market. (The name is sometimes applied to Welney Bridge.)

[2.3] Six miles, actually.

[2.4] A blunder by Walsh, who knew very well that the experiment was performed between Welney Bridge and Old Bedford Bridge. He confused it with an experiment by "Parallax," which he had read about in Carpenter's copy of Earth Not a Globe.

[3.1] Rowbotham was obviously miffed at Hampden for stealing some of his thunder, for he subsequently published a mean-spirited pamphlet, Experimental Proofs that the Surface of Standing Water Is Not Convex, but Horizontal, affirming the flatness of Old Bedford Canal and backhanding Hampden for his part in the wager. He also treated Hampden unkindly in the 1873 edition of Earth Not a Globe.

[3.2] Not in England, anyway. In 1873, the New York Zetetic Society (NYZS) was formed, its "Council" including two M.D.s, the Superintendent of the Baltimore Public Schools, and the U.S. Consul for China. The NYZS is discussed in Chapter 5.

[3.3] Apparently Brough found no competent Newtonians in Liverpool to hold him over for Saturday evening.

[3.4] The title was actually The Spherical Form of the Earth, a Reply to "Parallax" in Letters to a Friend (London: 1870).

[3.5] Apparently there was some spirited discussion among the participants and spectators, however. The August–September 1873 Zetetic reported that a "Newtonian" threatened a "Zetetic" with violence. Given his temperament, the Newtonian may well have been Dyer.

[3.6] It was never released.

[3.7] This was the Norwich court session Coulcher had to attend in August 1873.

[3.8] Numerous commentators, myself included, have made the same error regarding leading proponents of "creation science." But systematic deceit is often a symptom of desperate belief. For those committed to defending the indefensible, the armaments of honest argument are unavailable. They use what is left.

[3.9] Hampden first tried to launch a zetetic journal in 1871, but it's not clear whether any issues were ever published. About four years after The Truth Seeker's Oracle folded, he apparently published one or two issues of The Pillory, but none survive.

[3.10] Somehow, his followers were convinced that he was 89 years old, and that regular use of his phosphorized medicine made him look 20 years younger.

[3.11] The so-called third edition of 1883 was in fact reprinted from the 1873 plates.

[3.12] Can We Prolong Life? An Inquiry into the Cause of "Old Age" and "Natural Death," Showing the Diet and Agents Best Adapted for a Lengthened Prolongation of Existence, first published in 1879, ultimately went through four editions, the last in 1910.

[3.13] If the earth were a perfect sphere, its diameter at the equator would be 21,600/pi = 6875.49354… nautical miles.

[3.14] The Thomas G. Barnes Institute of Physics, named for creationism's leading theoretical physicist, seeks to prove precisely that.

[3.15] See The Seven Follies of Science by John Phin (New York: D. Van Nostrand Company, 1906).

[3.16] This seems a bit strong coming from a man who had repeatedly and publicly confessed that everything he wrote about Wallace was a lie!

[3.17] I fell for this myself and credited Hampden with writing it in "He Knew Earth Is Round, but His Proof Fell Flat," published in Smithsonian, April 1978.

[4.1] My first published article, "A Forgotten Pioneer," attempted to rescue aviation pioneer Alfred William Lawson from the dustbin of history.

[4.2] Carpenter's One Hundred Proofs that the Earth Is Not a Globe (Baltimore: 1885). This pamphlet is discussed in the next chapter.

[4.3] Unknown abbreviation, presumably Member of British Canoeing Association or some such.

[4.4] The flat-earthers were hardly alone in their reaction against science. Prime Minister Gladstone himself had recently published The Impregnable Rock of Holy Scripture, defending Genesis against the heresies of Darwin.

[4.5] Sectarian controversialists often manufacture triumphs over their opponents by citing statements they agree with as "admissions" or "confessions." A notorious modern example is the Bible-Science Newsletter, whose adversaries are forever admitting things in its pages.

[4.6] Unfortunately, The Coming Man is gone from the face of the earth. Extracts from it survive in the writings of other flat-earthers, such as "The Flood and Geology" reprinted by Winship in Zetetic Cosmogony.

[4.7] The essence of Lord Kelvin's idea has been revived in recent years by astronomers Sir Fred Hoyle and Chandra Wickramasinghe in two books, Evolution from Space (London: J. M. Dent & Sons, 1981) and Space Travellers: The Bringers of Life (Cardiff, Wales: University College of Cardiff Press, 1981). Few scientists take the idea seriously.

[4.8] In Numbers 22, Balaam beat his ass for saving his life.

[4.9] Richard J. Morrison was editor of astrological reference (Zadkiel's Almanac), an anti-Newtonian, and an otherwise multifaceted unorthodox thinker.

[4.10] This in itself was probably heresy to many flat-earthers. When British scientists began urging Parliament to adopt the metric system in the 1850s, outraged fundamentalists founded a whole genre of literature intended to prove that Moses built the Great Pyramid of Cheops, and he used God's "Sacred Inch" as his basic unit of measurement, thank you. The whole metric system was dismissed as an atheistic outrage spawned by the French revolution. This stock of pyramid literature was eventually adopted, adapted, and augmented by the Anglo-Israelites (who claim that Jews are impostors and the Anglo-Saxons are the true heirs of Abraham), the original Jehovah's Witnesses, the late Herbert W. Armstrong and his Worldwide Church of God, and miscellaneous Californians. For many modern pyramidologists, the antimetric origins of their ideas are lost in the mists of time. But that's another book …

[4.11] The sun's apparent position would actually be elevated somewhat by refraction, but never mind that.

[4.12] According to Naylor. The actual distance is 3.4 miles.

[4.13] Member, Institute of Civil Engineers.

[4.14] A Troughton's level, like the one Wallace used at Bedford Canal, was functionally equivalent to a dumpy level but used a different optical design.

[4.15] This must have been S. T. Bolt. He was probably selling issues of Earth Review, for which he was an official agent.

[4.16] An extremely loud whistle, patented in 1895. Also (perhaps more correctly) spelt Develine whistle.

[4.17] Homocea was then a popular patent medicine, and the slogan "Homocea touches the spot" was ubiquitous in its advertising.

[4.18] Fridtjof Nansen, a Norwegian Arctic explorer, had returned to Norway on August 13, 1896 after having reached 86° 14′ north latitude, only 226 nautical miles short of the pole.

[4.19] A very large marble thrown (rather than shot) at other marbles.

[5.1] At $20 an ounce, 2,250,000 ounces of gold, worth nearly a billion dollars at 1989 gold prices.

[6.1] New Orleans is at 30° North.

[6.2] A Bantu spear.

[7.1] In fairness to Lady Blount, she was writing fiction, and she may not have believed that modern astronomy was literally founded by the devil. The same cannot be said for Henry M. Morris, president of the Institute for Creation Research, who has seriously suggested in print that Satan personally came down to the top of the Tower of Babel to reveal evolution to the Babylonian king Nimrod and his priests. Readers who find that difficult to believe should consult page 74 of his Troubled Waters of Evolution (San Diego: Creation-Life Publishers, 1974).

[7.2] Fellow of the Royal Geographical Society. By the late 19th century, this title was available to anyone who paid the 21 shilling membership fee.

[7.3] It isn't certain that Carpenter did this.

[7.4] In those days before folded optics, the lens tube must have been about 16½ feet long!

[8.1] John the Baptist was Elijah II.

[8.2] The late Herbert W. Armstrong, founder of the Worldwide Church of God, was once a member of this sect, and he lifted from it most of his doctrines and the divinely inspired name!

[8.3] In the non-Euclidean geometry used in General Relativity, the shortest distance between two points is a geodesic curve, which is a straight line only where the curvature of space-time is negligible—such as here on earth.

[8.4] Thomas Jefferson Jackson See, a brilliant but eccentric American mathematician and astronomer, vehemently insisted he was immortal. He finally refuted this claim on July 4, 1962, at age 96.

[8.5] I doubt that any library on earth contains all of the works listed in this paragraph; they are not all at the Library of Congress, the British Library, or any of the dozens of other major libraries I've worked in.

[8.6] Recall that the a nautical mile is (by definition) a minute of arc on the earth's surface. From 45° latitude to the equator is therefore 45 × 60 = 2700 nautical miles.

[8.7] But see J.C. Holden's article "Fake Tectonics and Continental Drip," which derives the drip-shaped continents from a spherical argument. Journal of Irreproducible Results, v. 22, n. 2, pp. 26–27 (1976).

[9.1] The Works Progress Administration program was formed in 1935 to help alleviate unemployment during the Great Depression as part of President Franklin Roosevelt's New Deal. The name was changed to the Work Projects Administration in 1939. The WPA employed millions of people (mostly unskilled men) to carry out public works projects, including the construction of public buildings and roads.

[9.2] Big-time creationists traditionally sport doctorates, earned, honorary, or bogus. The Creation Research Society, which Morris helped found in 1963, awards voting membership only to those who claim advanced degrees. The Flat Earth Society has no such restrictions.

[B.1] The last figure, at least, is an error by Rowbotham. The rhumb line distance around the 45th parallel is 15,274 nautical miles.

[1.1] The crop statistics are for Norfolk and are derived from Kelly's Directory of the Counties of Cambridge, Norfolk and Suffolk (London: Kelly's Directories Ltd., 1937).

[1.2] E. Wastney in The Working Bee, August 3, 1839; quoted by W. H. G. Armytage, Heavens Below (1961), p. 148.

[1.3] The Zetetic, September 1872, p. 18–19.

[1.4] The Zetetic n. 2 (August 1872), p. 10.

[1.5] Ibid, p. 11.

[1.6] p. 7

[1.7] p. 15f

[1.8] p. 23.

[1.9] p. 80.

[1.10] An Inquiry into the Cause of Natural Death, 1845, p. 16.

[1.11] Ibid, p. 129f.

[1.12] Ibid, p. 130.

[1.13] Ibid, p. 134.

[1.14] Wiltshire Independent, January 18, 1849.

[1.15] Wiltshire Independent, January 18, 1849.

[1.16] Blackburn Standard, December 12, 1849.

[1.17] p. 13.

[1.18] Augustus De Morgan, A Budget of Paradoxes (1872), p. 307.

[1.19] [Reference to be supplied.]

[1.20] Proctor, Richard A. Myths and Marvels of Astronomy (1893), pp. 283–4.

[1.21] Ibid, pp. 284–5

[1.22] "Parallax" [i.e. Samuel Birley Rowbotham]. Earth Not a Globe (London: Simpkin, Marshall & Co., 1865), p. 3.

[1.23] Ibid, p. 7.

[1.24] Ibid, p. 38.

[1.25] Ibid, p. 176.

[1.26] Davies, Thomas A. Cosmogony, or, the Mysteries of Creation (New York: Rudd and Carleton, 1857), p. 34–36. Quoted and described by Herbert Hovenkamp in Science and Religion in America (Philadelphia: University of Pennsylvania Press, 1967), pp. 143–4.

[1.27] "Parallax" [i.e. Samuel Birley Rowbotham]. Earth Not a Globe (London: Simpkin, Marshall & Co., 1865), p. 11.

[1.28] Ibid, p. 18.

[1.29] Ibid, p. 55.

[1.30] Ibid, p. 67.

[1.31] Ibid, p. 68.

[1.32] Ibid, p. 32.

[1.33] Ibid, p. 33.

[1.34] Ibid, p. 33.

[1.35] Ibid, p. 165.

[1.36] Ibid, p. 60.

[1.37] Ibid, p. 61.

[1.38] Ibid, p. 85.

[1.39] Ibid, p. 87.

[1.40] Ibid, p. 90.

[1.41] Ibid, p. 104.

[1.42] Ibid, p. 75.

[1.43] Ibid, p. 121.

[1.44] Ibid, p. 122.

[1.45] Ibid, p. 181.

[1.46] Ibid, p. 182.

[1.47] Ibid, p. 185.

[1.48] Ibid, p. 204.

[1.49] Ibid, p. 206f.

[1.50] Ibid, p. 208
.
[1.51] Ibid, p. 196.

[1.52] Ibid, p. 197.

[1.53] Ibid, p. 219.

[1.54] Ibid, p. 220.

[1.55] Ibid, p. 219.

[1.56] Spiritual Messenger, September 1858 (v. 1, n. 1), p. 1.

[1.57] Ibid, p. 2.

[1.58] Ibid, p. 5.

[1.59] On p. 12, Carpenter quotes a section “from a paper … on Zetetic Astronomy” by Rowbotham, which in turn quotes the London Journal of July 18, 1857. This section was originally published not later than April 23, 1864. No edition of Zetetic Astronomy published between these dates has survived, but Carpenter might have referred to the broadsheet reviewed by De Morgan in 1857.

[1.60] Theoretical Astronomy, p. 124.

[1.61] Theoretical Astronomy, p. 8.

[1.62] Ibid, p. 14.

[1.63] Ibid, p. 20.

[1.64] Ibid, p. 27.

[1.65] Ibid, p. 34. On p. 79, Carpenter again denies any obligation to present an alternative.

[1.66] p. 50.

[1.67] Ibid, p. 71.

[1.68] Ibid, p. 123.

[1.69] Ibid, p. 69.

[1.70] Ibid, p. 128.

[1.71] Review in the May 7, 1864 issue, quoted in Theoretical Astronomy, p. Vi.

[1.72] Review in the February 11, 1865 issue, quoted in Theoretical Astronomy, p. X.

[1.73] Bresher, Major Rider, The Newtonian System of Astronomy: With a Reply to the Various Objections Made against It by “Parallax” (London: Whittaker & Co., 1868), p. 4.

[1.74] Ibid, p. 4.

[1.75] Ibid, p. 18.

[1.76] Ibid, p. 16

[1.77] Ibid, p. 23.

[1.78] Ibid, p. 38.

[1.79] Ibid, p. 117.

[1.80] Ibid, p. 117.

[1.81] Ibid, p. 118.

[1.82] Ibid, p. 118
.
[1.83] Ibid, p. 120.

[1.84] Ibid, p. 121.

[1.85] Ibid, p. 124.

[1.86] Ibid, p. 124.

[1.87] Ibid, p. 124.

[1.88] Ibid, p. 25.

[1.89] Ibid, p. 45.

[1.90] Ibid, p. 46.

[1.91] Ibid, p. 47ff.

[1.92] Ibid, p. 100.

[1.93] Ibid, p. 102.

[1.94] Ibid, p. 105.

[1.95] Ibid, p. 128.

[1.96] Dyer, J. The Spherical Form of the Earth. A Reply to Parallax, in Letters to a Friend (London: Trubner and Co., [1870]).

[1.97] Ibid, p. 9.

[1.98] Ibid, p. 13.

[1.99] Ibid, p. 15.

[1.100] Ibid, p. 22f.

[1.101] Ibid, p. 31.

[1.102] Ibid, p. 34.

[1.103] Ibid, p. 41f.

[1.104] Ibid, p. 56.

[1.105] Ibid, p. 60ff.

[1.106] Ibid, p. 66.

[1.107] Ibid, p. 67.

[1.108] Ibid, p. 67.

[1.109] Ibid, p. 68.

[1.110] Ibid, p. 73.

[1.111] Ibid, p. 80.

[1.112] Ibid, p. 81.

[1.113] Ibid, p. 93ff.

[1.114] Ibid, p. 96.

[2.1] I stole this little joke from Augustus De Morgan's Budget of Paradoxes and used it in "He Knew Earth Is Round, but His Proof Fell Flat" published in Smithsonian, April 1978. An editor there changed "Wallace said flatly …" to "Wallace stated unequivocally …" Fortunately, murder by telephone is not possible.

[2.2] Biographical information is mostly from Boase.

[2.3] Carpenter gives the amount in the introduction to The Delusion of the Day.

[2.4] John Hampden, The Popularity of Error, and the Unpopularity of Truth, p. 6.

[2.5] John Hampden, The Popularity of Error, and the Unpopularity of Truth, p. 34.

[2.6] John Hampden, The Popularity of Error, and the Unpopularity of Truth, p. 33.

[2.7] Letter of January 25, 1870, quoted by Hampden in Is Water Level?, p. 15.

[2.8] Quoted by Carpenter in Water Not Convex, Earth Not a Globe, p. 5.

[2.9] As quoted by Carpenter in Water Not Convex, the Earth Not a Globe, p. 4.

[2.10] Quoted by Carpenter in Water Not Convex, Earth Not a Globe, p. 7.

[2.11] Carpenter, Water Not Convex, p. 9.

[2.12] Carpenter, Water Not Convex, p. 10.

[2.13] Carpenter, Water Not Convex, p. 10.

[2.14] Carpenter, Water Not Convex, p. 16.

[2.15] Carpenter, Water Not Convex, p. 21.

[2.16] Carpenter, Water Not Convex, p. 21f.

[2.17] Carpenter, Water Not Convex, p. 22.

[2.18] Carpenter, “The Convexity of Water,” The Field, March 26, 1870.

[2.19] Carpenter, “The Convexity of Water,” The Field, March 26, 1870, p. 285.

[2.20] Wallace, letter to Hampden dated March 20, 1870, as reprinted in Hampden’s Is Water Level?, p. 16f.

[2.21] ibid.

[2.22] Reprinted by Hampden in Is Water Level?, p. 8.

[3.1] John Hampden, Is Water Level or Convex After All? The Bedford Canal Swindle Detected and Exposed (Swindon, Wilts: Alfred Bull, 1870), p. 3.

[3.2] Hampden, Is Water Level?, p. 3.

[3.3] Hampden, Is Water Level?, p. 4

[3.4] Hampden, Is Water Level?, p. 5

[3.5] Hampden, Is Water Level?, p. 6f.

[3.6] Hampden, Is Water Level?, p. 10.

[3.8] Hampden’s letter is quoted by Wallace in My Life, p. 387. It is also quoted by “Kappa” in “John Hampden Persecuted,” English Mechanic, n. 330, v. 13 (July 21, 1871), p. 436, c. 2. “Kappa” has “every bone in his body” where Wallace has “every bone in his head.” Presumably, Wallace had the letter before him when he wrote.

[3.9] The text of Hampden's letter to the Entomological Society and the account of the legal proceedings are from "John Hampden Persecuted" by "Kappa," English Mechanic, n. 330, v. 13 (July 21, 1871), p. 436, c. 2 Wallace noted Hampden's incarceration in My Life.

[3.10] Letter to Wallace dated July 12, 1871, as reprinted by James Marchant in Alfred Russel Wallace: Letters and Reminiscences (New York and London: Harper and Brothers, 1916).

[3.11] Empson Edward Middleton, The Trigonometreadidit Letters, p. 3.

[3.12] Empson Edward Middleton, The Trigonometreadidit Letters, p. 11.

[3.13] John Hampden, in a letter in The Zetetic, July 1872, p. 6.

[3.14] The Zetetic, January 1873, p. 55.

[3.15] As quoted in The Zetetic, n. 7 (January 1873), p. 55.

[3.16] The Zetetic, n. 7 (January 1873), p. 55.

[3.17] The Zetetic n. 7 (January 1873), p. 57.

[3.18] The Zetetic v. 2, n. 1 (March 1873), p. 2

[3.19] The Zetetic, v. 2, n. 2 (April 1873), p. 22.

[3.20] The Zetetic, v. 2, n. 4 (June, 1873), p. 25.

[3.21] Ibid, p. 26.

[3.22] Ibid, p. 26.

[3.23] ibid.

[3.24] Ibid, p. 27.

[3.25] The Zetetic, v. 2, n. 6 & 7, p. 41.

[3.26] ibid.

[3.27] Rowbotham, letter to E. Jones, The Zetetic, August and September 1873, p. 45.

[3.28] The Zetetic, November 1872, p. 36.

[3.29] The Zetetic, November 1872, p. 36.

[3.30] Ad in the back of The Delusion of the Day by William Carpenter (London: Heywood and Son, 1877).

[3.31] Law Reports, Queen's Bench Division (1876), v. 1, p. 192.

[3.32] The exact date of Hampden's letter is unknown, but Walsh responded to it on March 23, 1870, nine days before he delivered the stakes to Wallace.

[3.33] Truth-Seekers's Oracle, May 1, 1876, p. 3.

[3.34] Truth-Seeker's Oracle, June 1, 1876, p. 30.

[3.35] Truth-Seeker's Oracle, June 1, 1876, p. 25.

[3.36] According to an ad in the back of The Delusion of the Day.

[3.37] The Delusion of the Day, p. 2.

[3.38] Proctor printed the letter in Knowledge, April 6, 1883, p. 214. I have restored Wallace's name where Proctor deleted it, as well as deleting Proctor's editorial comments.

[3.39] Cosmos, September 1883, p. 2.

[3.40] Hampden in a letter in the May 2, 1884 issue of Knowledge, p. 317.

[3.41] Inscription according to Thomas Whittle, letter in Earth Review, October 1893, p. 14. Crystal Palace Cemetery is now officially known as Beckenham Cemetery.

[3.42] Parallax, v. 1, n. 1 (March 1885), p. 1.

[3.43] Parallax, v. 1, n. 1 (March 1885), p. 7.

[3.44] The British Library has three issues of Parallax, which its catalog claims is the complete run, but John Williams later advertised four back issues.

[3.45] The Earth; Scripturally, Rationally, and Practically Described n. 6, November 13, 1886, p. 47f.

[3.46] The Earth; Scripturally, etc., December 11, 1886, p. 60.

[3.47] The Earth; Scripturally, Rationally, and Practically Described n. 10, January 15, 1887, insert entitled "Her Majesty's Jubilee."

[3.48] The Earth in its Creation, etc. (1880), p. 15.

[3.49] Parallax, n. 3, May 1885, p. 36.

[3.50] The Earth; Scripturally, Rationally, and Practically Described, n. 2, September 18, 1886. p. 14.

[3.51] The Earth; Scripturally, Rationally, and Practically Described, n. 3, October 2, 1886, p. 21.

[3.52] The Earth; Scripturally, Rationally, and Practically Described, n. 3, October 2, 1886, p. 23.

[3.53] The Earth; Scripturally, Rationally, and Practically Described, n. 3, October 2, 1886, p. 23.

[3.54] The Earth; Scripturally, Rationally, and Practically Described n. 12, February 12, 1887, p. 91.

[3.55] The Earth; Scripturally, Rationally, and Practically Described n. 10, January 15, 1887, p. 78.

[4.1] London Times, September 20, 1892.

[4.2] The date is inferred. It is known that UZS was founded in September, and its financial year began on September 21. The location is also inferred.

[4.3] Earth Review, v. 1, n. 5 (January 1894), p. 110.

[4.4] So wrote Carpenter in the notes to One Hundred Proofs:

[4.5] I own what apparently was Isaac Smith's personal copy of Rowbotham's Zetetic Astronomy, 3rd edition, published in 1881. Penciled into the front of it is "Isaac Smith, Dec. /90." He apparently bought it from John Hampden, for the publisher's name is crossed out on the title page and "John Hampden, Croydon" is stamped in purple ink. The same stamp, in the same purple ink, is on the title page of the New York Public Library's copy of Hampden's Chart & Compass, Sextant & Sundial, etc. Hampden moved to Croydon in mid-1887 and died there January 22, 1891.

[4.6] Extract from a letter to William Carpenter published in the notes to the 12th edition of One Hundred Proofs. The notes are dated October 12, 1892.

[4.7] Earth Review January 1894, p. 106.

[4.8] Albert Smith in Earth Review, v. 1, n. 1, January 1893
.
[4.9] Quoted in Earth Review, v. 1, n. 1 (January 1893), p. 15f. The original source is not given.

[4.10] David Wardlaw Scott in Terra Firma: The Earth Not a Planet (London: Simpkin, Marshall & Co., 1901), p. 285, described Alexander McInnes as "a member of the Glasgow University Council."

[4.11] Carpenter refers to McInnes in the notes to his 12th edition of 100 Proofs (dated October 4, 1892), p. 69.

[4.12] Earth Review, July 1895, p. 88.

[4.13] Earth Review, January 1896, p. 133ff.

[4.14] Earth Review, April 1895, p. 53.

[4.15] Earth Review, v. 2, n. 1 (January 1896), recto and verso of rear cover. "The Tipsy Philosopher" originally appeared in Hampden's Earth and Its Evidences, Scripturally, etc., n. 17 (November 1887), p. 7.

[4.16] Earth Review, v. 3, n. 2 (May 1896), p. 16
.
[4.17] Earth Review, v. 3, n. 2 (May 1896), p. 19.

[4.18] "Iconoclast," "The Pendulum Trick Exposed." Earth Review, April-June 1897, p. 52ff.

[4.19] McInnes, letter published in Earth Review, May 1894 p. 159f.

[4.20] Earth Review, September 1894, p. 10.

[4.21] Naylor, "Zetetic Refraction, Part III," Earth Review, January 1896, p. 136ff.

[4.22] Earth Review, January–March 1897, p. 2ff.

[4.23] Earth Review, January–March 1897, p. 2.

[4.24] Earth Review, January–March 1897, p. 3.

[4.25] Quoted by “Hottentot” in Earth Review, October 1893, p. 24.

[4.26] Earth Review, v. 1, n. 2 (April 1893), p. 20.

[4.27] Earth Review, October 1893, p. 7ff.

[4.28] Earth Review, April 1895 (v. 2, n. 3), p. Iii.

[4.29] Earth Review, March 1894 (v. 1, n. 6), p. 136.

[4.30] Earth Review, January 1894, p. 113.

[4.31] Letter dated December 12, 1892 published in Earth Review, January 1893, p. 12.

[4.32] Earth Review, October 1895, p. 116.

[4.33] William Carpenter, notes to 13th edition of One Hundred Proofs, p. 78.

[4.34] From a notice dated March 29, 1897.

[4.35] Letter by Breach reprinted by William Carpenter in the notes to his 13th edition of One Hundred Proofs, p. 78.

[4.36] Earth Review January 1894, p. 108.

[4.37] Earth Review, May 1894, p. 162.

[4.38] Earth Review, May 1894, p. 163.

[4.39] Earth Review, May 1894, p. 166.

[4.40] The same damaged characters can be found in the same words on the same pages of both “editions.”

[4.41] Christopher, J. Steer. Natal, Cape of Good Hope (London: Effingham Wilson, 1850)

[4.42] Earth Review, v. 1, n. 7 (May 1894), p. 162.

[4.43] Earth Review, v. 2, n. 5, p. 96

[4.44] Earth Review, April 1893, p. 24.

[4.45] London Daily Mail, November 16, 1896, quoted in Earth Review, January–March 1897, p. 18.

[4.46] As quoted in Earth Review,

[5.1] Carpenter’s shop and business are described in the back of The Delusion of the Day, published in 1877.

[5.2] Obituary in Baltimore Sun, Sept. 2, 1896.

[5.3] Notes to the 12th ed. of One Hundred Proofs.

[5.4] Census figures show that 2,812,191 emigrants legally entered the U.S. during the years 1871 through 1880.

[5.5] The Zetetic, v. 2, n. 6 & 7, August & September 1873, p. 47.

[5.6] Daily Alta California, March 31, 1857, p. 1; Literary Churchman [London], v. 3, n. 2, April 4, 1857, p. 132.

[5.7] Details of the result are at http://www.all-biographies.com/politicians/john_thompson_hoffman.htm

[5.8] Charles C. Turner, The Romance of Aeronautics (London: Seeley, Service & Co., Limited, 1912), p. 110f. Encyclopaedia Britannica, 11th ed., 1:266a, erroneously gives the distance as 1120 miles.

[5.9] S. Paul Johnston, Horizons Unlimited: A Graphic History of Aviation (New York: Duell, Sloan and Pearce, 1941), p. 50-51.

[5.10] S. Paul Johnston, Horizons Unlimited: A Graphic History of Aviation (New York: Duell, Sloan and Pearce, 1941), p. 50-51.

[5.11] See the Philadelphia Record, June 5, 1886; New York Herald, December 19, 1885; Buffalo Times, December 28, 1885; Buffalo Courier, December 27, 1885 and January 1, 1886; Rochester Morning Herald, January 13, 1886; Hatchet, May 9, 1886; Saturday Evening Post (Philadelphia, July 31, 1886; Milwaukee Sentinel, August 1886 (in a long article, “The Great Zetetic Issue”).

[5.12] Notes to the 12th ed. of One Hundred Proofs.

[5.13] Obituary in Baltimore Sun, Sept. 2, 1896.

[5.14] Notes to One Hundred Proofs, p. 60.

[5.15] The Holley Standard, 8 February 1883.

[5.16] The Holley Standard, 8 February 1883.

[5.17] Quoted in The Earth; Scripturally, Rationally, and Practically Described, n. 17, November 1, 1887, p. 7.

[5.18] According to William Brookman of Toronto in a letter dated 11 January 1894 and published Earth Review, March 1894, p. 137. Brookman enclosed a clipping from a New York State paper, which was not reproduced in Earth Review.

[5.19] Carpenter, notes to the 12th edition of One Hundred Proofs.

[5.20] Clark, Elmer T., The Small Sects in America, p. 56f.

[5.21] The May 1888 issue of The Faith contains a long biographical sketch of Davis from which most of this information is derived.

[5.22] Grant, Miles, Spiritualism Unveiled and Shown to Be the Work of Demons (Boston: 1866), p. 66.

[5.23] Smith, Carl Albert, Is the Earth a Whirling Globe?, p. 112. Smith calls Grant "a well-known writer against Spiritism."

[5.24] I infer this from internal evidence in Bailey's Examination. At one point he refers to turning a sphere with a lathe, not an easy trick. Elsewhere, he calculated something down to thousandths of an inch. A century ago, anyone but a machinist or engineer would have used a rational fraction.

[5.25] Bailey, Examination, p. 3f.

[5.26] Bailey, p. 7.

[5.27] Bailey, p. 8f.

[5.28] Bailey, p. 11.

[5.29] Bailey, p. 15.

[5.30] Bailey, p. 12.

[5.31] From Earth Review, v. 1, n. 3 (April 1893), p. 14.

[5.32] Earth Review, October 1893, p. 13.

[5.33] Notes to One Hundred Proofs, p. 78.

[5.34] Earth Review, v. 3, n. 1 (April 1896), p. 12.

[5.35] Obituary in Baltimore Sun, Sept. 2, 1896.

[5.36] Earth--Not a Globe--Review.

[6.1] Slocum, Joshua. Sailing Alone Around the World (New York: Dover Publications, 1956), p. 237f.

[6.2] Slocum, Joshua. Sailing Alone Around the World (New York: Dover Publications, 1956), p. 243.

[6.3] Zetetic Cosmogony, 2nd ed., p. 89.

[6.4] Durban Daily News of July 31, 1942

[6.5] Zetetic Cosmogony, 1897, p. 31.

[6.6] Zetetic Cosmogony, 1897, p. 25.

[6.7] Zetetic Cosmogony, 2nd edition, 1897, p. 26.

[6.8] Zetetic Cosmogony, 2nd edition, 1897, p. I.

[6.9] Zetetic Cosmogony, second edition, 1899, p. 66.

[6.10] William Carpenter, p. 78 of his notes to One Hundred Proofs.

[6.11] On p. 54 of his notes to One Hundred Proofs, Carpenter wrote that he received this good news from Australia. Dines and Runciman were New Zealanders, so either one of them wrote to Carpenter from Australia or he got his information from an Australian correspondent.

[6.12] Letter from Harpur dated 7 January 1893, Earth Review, April 1893 (v. 1, n. 2), p. 14.

[6.13] F. Wells Jansz in a September issue of the Ceylon Evangelist, as quoted on p. 12 of Lady Blount's tract The Lord's Day ….

[7.1] So says her horoscope in The Future. Burke's Peerage and Baronetage says 1874, but Lady Blount personally provided vital statistics for her horoscope, and presumably she knew when she was married.

[7.2] Earth Review, July 1893, p. 14

[7.3] Earth Review, January 1894, p. 108.

[7.4] Earth Review, May 1894, p. 157.

[7.5] Earth Review May 1896, p. 19.

[7.6] "Geographers in Congress" by Lady Blount and Wiseman, Earth Review, October 1895.

[7.7] Earth Review July 1895, p. 93.

[7.8] The Zetetic, v. x, n. y (June 1873), p. Z.

[7.9] The quote was incorrectly attributed to "Rev. W. E. Bullinger, D.D."

[7.10] Albert Smith writing in p. 105

[8.1] The elder Dowkontt's mission is described in the article "John Harvey Kellogg, Social Gospel Practitioner," Illinois State Historical Society Journal, v. 57 (Spring 1964), p. 8.

[8.2] The biographical information and the quotation come from Moody Bible Institute Monthly, September 1929, p. 6.

[8.3] Information about the Church of God (Adventist) comes from Elmer T. Clark, The Small Sects in America, p. 57.

[8.4] Those False Prophets (v. 9, n. 2, April 15, 1903); Parable of the Ten Virgins (v. 9, n. 3, June 15, 1903); An Old Habit (v. 10, n. 7, January 15, 1905); and Crucifixion and Resurrection; Azazel and Other Essays (v. 10, n. 8, March 15, 1905).

[8.5] DeFord, 3rd edition, p. 3.

[8.6] DeFord, 3rd edition, p. 5.

[8.7] DeFord, p. 9.

[8.8] DeFord, p. 10.

[8.9] DeFord, p. 12.

[8.10] DeFord, 3rd edition, p. 19.

[8.11] DeFord, 3rd edition, p. 19.

[8.12] DeFord, 3rd edition, p. 20.

[8.13] DeFord, 3rd edition, p. 23
.
[8.14] DeFord, 3rd edition, p. 33.

[8.15] DeFord, 3rd edition, p. 34.

[8.16] DeFord, 3rd edition, p. 48.

[8.17] DeFord, 3rd edition, p. 47.

[8.18] DeFord, 3rd edition, p. 49.

[8.19] DeFord, 3rd edition, p. 60.

[8.20] Boston Herald, February 22, 1909, cited by Morse.

[8.21] Morse describes his interactions with Flammarion on p. 55f.

[8.22] Morse, p. 76.

[8.23] Brown's claim came to Morse's attention via an article entitled "How One Man Proved the Earth Round" published in the Boston Sunday Post of 23 February 1908.

[8.24] Boston Sunday Post, February 23, 1908 , cited by Morse.

[8.25] Boston Post, April 12, 1908, cited by Morse.

[8.26] Morse, p. 9.

[8.27] Morse, p. 60f.

[8.28] Morse, p. 34ff.

[8.29] Morse, p. 43.

[8.30] Morse, p. 8.

[8.31] Morse, p. 10.

[8.32] Morse, p. 17.

[8.33] Morse, p. 15.

[8.34] Morse, p. 22f.

[8.35] Morse, p. 46.

[8.36] Morse, p. 48.

[8.37] Morse, p. 64f.

[8.38] Morse, p. 47.

[8.39] Morse, p. 42.

[8.40] An article about Abizaid in the Boston Traveler of Dec. 27, 1933, reprinted in the 1935 edition of Enlightenment, identified him as “once president of the Universal Zetetic Society.” That information presumably came from Abizaid himself.

[8.41] Abizaid, John G. The Enlightenment of the World Geography, 3rd edition, p. 5.

[8.42] ibid.

[8.43] Abizaid, 3rd edition, p. 8.

[8.44] Abizaid, 3rd edition, p. 11.

[8.45] Abizaid, 3rd Edition, p. 18.

[8.46] Quoted in Abizaid, 3rd edition, p. 24

[8.47] Abizaid, 3rd ed., p. 30–31.

[8.48] Collamore, p. 78.

[8.49] Collamore, p. 124f.

[8.50] Collamore, p. 73.

[8.51] Collamore, p. 9.

[8.52] Collamore, p. 11.

[8.53] Collamore, p. 17f. The article that caught his attention was in Literary Digest, January 13, 1923.

[8.54] Collamore, p. 19.

[8.55] Collamore, p. 20f.

[8.56] Collamore, p. 26ff.

[8.57] Collamore, p. 69ff.

[8.58] Collamore, p. 76.

[8.59] Collamore, p. 86.

[8.60] Collamore, p. 91f.

[8.61] Collamore, p. 107.

[8.62] Collamore, p. 49f.

[8.63] Collamore, p. 45.

[8.64] Collamore, p. 47.

[8.65] Collamore, p. 48.

[8.66] Collamore, p. 112.

[8.67] Collamore, p. 127.

[8.68] Collamore makes the claim on pp. 74, 88, and 127ff.

[8.69] Goudey, p. 146. This is from an ad in the back of the book.

[8.70] Goudey, p. Viii.

[8.71] Goudey, p. 39.

[8.72] Willy Ley says in Rockets, Missiles, and Men in Space (New York: Viking Press, 1968), p. 99, that the pamphlet was published as Smithsonian Institution Publication n. 2540. Dated 1919, it was actually published in January of 1920.

[8.73] Goudey, p. 33.

[8.74] Goudey, p. 46.

[8.75] Goudey, p. 76.

[8.76] Goudey, p. 77.

[8.77] Goudey, p. 78.

[8.78] Goudey, p. 93f.

[8.79] Goudey, p. 96.

[8.80] Goudey, p. 118.

[8.81] Goudey, p. 98ff.

[8.82] Goudey, p. 56.

[8.83] Goudey, p. 58ff.

[8.84] Goudey, p. 61f.

[8.85] Goudey, p. 47.

[8.86] Goudey, p. 66.

[8.87] Goudey, p. 69.

[8.88] Goudey, p. 123.

[8.89] Goudey, p. 103.

[8.90] Goudey, p. 107.

[8.91] Goudey, p. 110f.

[8.92] Goudey, p. 112f.

[8.93] Goudey, p. 34.

[8.94] Goudey, p. 140.

[A.1] "Parallax" [i.e. Samuel Birley Rowbotham]. Earth Not a Globe (London: John B. Day. 2nd edition, 1873).

[A.2] Darms, Anton. "The Teaching of the Word of God Regarding the Creation of the World and the Shape of the Earth Fifty Questions and Answers," Leaves of Healing, v. 66, n. 9 (May 10, 1930), pp. 176–179, 182–184.

[A.3] Strong, James. The Exhaustive Concordance of the Bible (1894. Reprint. Nashville: Abington Press, 1978).

[A.4] Cosmas Indicopleustes. Topographia Christiana (548. Translated by J. W. McCrindle. London: The Hakluyt Society, 1897).

[A.5] Morris, Henry M. The Bible and Modern Science (Revised edition. Chicago: Moody Press, 1956), p 81.

[A.6] Armstrong, Harold. "The Expanding Universe and Creation," p. 46. In Repossess the Land (essays and technical papers from the 15th Anniversary Convention of the Bible-Science Association, August 12–15, 1979) (Minneapolis: Bible-Science Association, 1979), pp. 22–27.

[A.7] Bouw, Gerardus. "The Firmament." In Bulletin of the Tychonian Society, n. 43 (April 1987), pp. 11–20.

[A.8] Zukov, Gary. The Dancing Wu Li Masters (New York: William Morrow and Company, Inc., 1979).

[A.9] Capra, Fritjof. The Tao of Physics (1976. Reprint. New York: Bantam Books, 1977).

[A.10] Bouw, Gerardus. "The Form of the Earth." Contributions of the Northcoast Bible-Science Association No. 2 (Cleveland: Northcoast Bible-Science Association, n.d.).

[A.11] Charles, R. H. "Book of Enoch." In The Apocrypha and Pseudepigrapha of the Old Testament in English, v. 2, edited by R. H. Charles (London: Oxford University Press, 1913), pp. 163–281.

[A.12] Isaac, E. "1 (Ethiopic Apocalypse of) Enoch." In The Old Testament Pseudepigrapha: Apocalyptic Literature and Testaments, edited by James H. Charlesworth (Garden City, New York: Doubleday & Company, Inc., 1983), pp. 5–89.

[A.13] Ibid, p. 10.

[A.14] Shanks, Hershel. "Don't Let the Pseudepigrapha Scare You," Bible Review, v. 3, n. 2 (Summer 1987), pp. 14–19, 34–37, esp. p. 18.

[B.1] “Parallax” [i.e. Samuel Birley Rowbotham], Zetetic Astronomy: Earth not a globe, 1st edition, London, 1865, p. 3.

[B.2] Ibid, p. 3. Here Rowbotham is quoting Colin Maclaurin’s An Account of Sir Isaac Newton’s Philosophical Discoveries (1748), a source which he acknowledges in the 1865 edition, but not in the 1873 edition.

[B.3] Ibid, p. 5.

[B.4] Ibid, p. 7
.
[B.5] Ibid, p. 11.

[B.6] Ibid, p. 15.

[B.7] Ibid, p. 16.

[B.8] Ibid, p. 17.

[B.9] Ibid, p. 18.

[B.10] Ibid, p. 20.

[B.11] Ibid, p. 25.

[B.12] Ibid, p. 29.

[B.13] Ibid, p. 26f.

[B.14] Ibid, p. 28.

[B.15] Ibid, p. 36.

[B.16] Ibid, p. 37.

[B.17] Ibid, p. 42
.
[B.18] Ibid, p. 51

[B.19] Ibid, p. 54.

[B.20] Ibid, p. 55.

[B.21] Ibid, p. 63.

[B.22] Ibid, p. 65.

[B.23] Ibid, p. 67.

[B.24] Ibid, p. 68.

[B.25] Ibid, p. 75.

[B.26] Ibid, p. 90.

[B.27] Ibid, p. 104.

[B.28] Ibid, p. 105.

[B.29] Ibid, p. 107.

[B.30] Ibid, p. 108.

[B.31] Ibid, p. 123.

[B.32] Ibid, p. 124.

[B.33] Ibid, p. 125.

[B.34] Ibid, p. 155.

[B.35] Ibid, p. 164.

[B.36] Ibid, p. 178.

[B.37] Ibid, p. 179.

[B.38] Ibid, p. 185.

[B.39] Ibid, p. 187.

[B.40] Ibid, p. 196.

[B.41] Ibid, p. 200.

[B.42] Ibid, p. 201.

[B.43] Ibid, p. 202.

[B.44] Ibid, p. 203.

[B.45] Ibid, p. 204.

[B.46] Ibid, p. 215.

[B.47] Ibid, p. 216.

[B.48] Ibid, p. 218.

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