

A HISTORY OF THE EXTRATERRESTRIAL LIFE DEBATE

by Michael J. Crowe

Abstract. From antiquity to the present, humans have debated whether intelligent life exists elsewhere in the universe. This presentation will survey this debate, examining the roles played in it by science, religion, philosophy, and other areas of human learning. One thesis that will be developed is that whether or not extraterrestrials exist, ideas about them have strongly influenced Western thought.

Keywords: exobiology; extraterrestrial life ideas; plurality of worlds; religion; theology.

The goal of this paper is to provide a survey of the history, from antiquity to the twentieth century, of the extraterrestrial life debate, especially as it relates to religion. Because this is a large task, I shall have to leave out some important areas; for example, I shall not treat ideas outside the Western tradition. My own research¹ has focused on the period from 1750 to 1900.

In this presentation I shall suggest some ideas related to three questions frequently asked regarding extraterrestrial beings: (1) Do extraterrestrials exist? (2) Have they invaded the earth? and (3) What effects on terrestrial religious belief would result were astronomers to establish radio contact with extraterrestrials? On the first issue I shall not take a stance, although I shall make a modest recommendation. My research, being historical, does not provide a basis on which I can offer more than this. Regarding the second issue, I can be more positive. My historical research has convinced me that, at least in one sense, extraterrestrials have long since invaded our planet. Regarding the third issue, I shall argue, in what follows, that for centuries, ideas about extraterrestrial life

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have significantly influenced religion to the extent that the impact of the detection of an extraterrestrial civilization would have substantially less effect on terrestrial religious views than is commonly believed.

It is a widespread assumption that the extraterrestrial life debate began only in our century and that finally, in recent years, as one author has stated, the “long-standing belief that the only intelligent life in the universe exists on our planet, Earth, is gradually disappearing” (Smith 1977, xiii). Historical research shows that this characterization badly misrepresents the situation. In fact, the debate over whether intelligent life exists elsewhere in the universe was already underway in Greek and Latin antiquity.

Among the ancient authors who advocated life elsewhere were Leucippus (fl. 480 B.C.E.), Democritus (d. 361 B.C.E.), and Epicurus (342–270 B.C.E.), as well as the Roman poet Lucretius (99–55 B.C.E.). All these authors were atomists who believed that the proper way to understand the world is in terms of the motions of atoms in a void. Epicurus, for example, stated: “There are infinite worlds both like and unlike this world of ours. For the atoms being infinite in number . . . are borne far out into space” (Epicurus [c. 300] 1957, 5). The atoms being infinite in number form an infinite number of worlds. It would be easy to misunderstand this position. What the atomists were claiming was not that inhabited planets orbit the sun or some other star but rather that somewhere in space, probably beyond our view, exist other universes comparable to our own—with an inhabited world, like the earth, at the center. One source of the atomists’ view of other worlds was their adoption of what Arthur Lovejoy has called the “Principle of Plenitude,” a principle that Lovejoy describes as the doctrine that “no genuine potentiality of being can remain unfulfilled, that the extent and abundance of the creation must be as great as the possibility of existence and commensurate with the productive capacity of a ‘perfect’ and inexhaustible ‘Source,’ and that the world is better, the more things it contains” (Lovejoy [1936] 1960, 52). The Source for the Epicureans was the infinity of the atoms, whereas many later authors identified it with God.

Extraterrestrials also had their opponents in antiquity. Among the most influential of these were Plato (428–348 B.C.E.) and Aristotle (384–22 B.C.E.). Plato, for example, argued that the uniqueness of the creator implies the uniqueness of the creation and that, were the universe a composite, it would be subject to decomposition. Aristotle also opposed the atomist position, basing some of his arguments on particular aspects of the sophisticated cosmology that he had developed. Other ancient authors presented somewhat different positions; for example, Plutarch (c. 46–120) speculated on lunar life, whereas the Stoic philosophers supported the concept of a plurality of temporally successive worlds.

What position did early Christian authors take on the idea of extra-terrestrial life or the idea of a plurality of worlds as this issue has been known throughout most of history? Those who discussed the issue were generally opposed to extraterrestrials. One reason for this is that early Christian scholars tended to favor Platonic and Aristotelian philosophy over the materialistic philosophy of the atomists. Augustine of Hippo (354–430) attacked this idea in his *City of God*, although he seems to have been more concerned with criticizing the Stoic notion of successive worlds in time.

Many Christian authors in the period after 1200 treated this topic. Among the most important were Albertus Magnus (1193–1280) and his student Thomas Aquinas (1224–74). Albert showed his readiness to approach this question by commenting that “Since one of the most wondrous and noble questions in Nature is whether there is one world or many, . . . it seems desirable for us to inquire about it” (S. Dick 1982, 23). Because both Albert and Aquinas adopted the Aristotelian system, they ended up opposing the doctrine. Then, in 1277, a remarkable development occurred. In that year, Etienne Tempier, the bishop of Paris, issued a condemnation of doctrines that seemed to set limits to God’s powers. One of the propositions condemned, number 34, was “that the First Cause [God] cannot make many worlds” (S. Dick 1982, 28). This condemnation opened the door to speculation about other worlds. Among the authors from the fourteenth century who took advantage of this freedom were Jean Buridan (c. 1295–1358), who was rector of the University of Paris; Nicole Oresme (1325–82), eventually the bishop of Paris; and the Franciscan philosopher William of Ockham (c. 1280–1347). Although all ended up opposing the idea of a plurality of worlds, their analyses pointed to the problematic character of some of the arguments that Aristotle and Aquinas had brought against the doctrine.

A dramatic event occurred in 1440, when Nikolaus of Cusa (1401–64) published his famous *Of Learned Ignorance*, in which he advocated not only the idea of a plurality of worlds but also the existence of life on the moon and sun.² It should not be assumed that Cusa was a minor philosopher or someone on the fringe of Christianity. In fact, this author, who was the first prominent Latin Christian scholar to embrace extraterrestrials, was a priest who seven years after the publication of his book was made a cardinal.

So far as is known, the first author who raised the question of whether the idea of a plurality of worlds is compatible with the central Christian notions of a divine incarnation and redemption was the French theologian William Vorilong (d. 1463), who, after giving reasons for believing that God could create another inhabited world, added the following:

If it be inquired whether men exist on that world, and whether they have sinned as Adam sinned, I answer no, for they would not exist in sin and did not spring from Adam. . . . As to the question whether Christ by dying on this earth could redeem the inhabitants of another world, I answer that he is able to do this even if the worlds were infinite, but it would not be fitting for Him to go unto another world that he must die again. (McColley and Miller 1937, 388)

It is a curious fact that the person who in the period after the Middle Ages did more than any other to open the door to extraterrestrials was a canon in a Polish cathedral whose passion was mathematics and who never in his published writing mentioned the question of life elsewhere in the universe. What this isolated sixteenth-century figure did was to publish in 1543 a book advocating the heliocentric theory. This was Nicholas Copernicus (1473–1543), who thereby changed our earth into a planet and inevitably, if gradually, transformed stars into other suns, which many later authors assumed are surrounded by inhabited planets. Although no evidence indicates that Copernicus recognized the ramifications that his hypothesis would have for belief in extraterrestrial intelligences, others soon saw such implications. As early as 1550, the Lutheran reformer Philip Melancthon (1497–1560) warned against the Copernican cosmology and the idea that Christ's incarnation and redemption could have occurred on another planet:

[T]he Son of God is One; our master Jesus Christ was born, died, and resurrected in this world. Nor does he manifest Himself elsewhere, nor elsewhere has He died or resurrected. Therefore it must not be imagined that Christ died and was resurrected more often, nor must it be thought that in any other world without the knowledge of the Son of God, that men would be restored to eternal life. (Dick 1982, 89)

The sixteenth-century author who most enthusiastically rushed through the door opened by Copernicus and who carried millions of extraterrestrials with him was Giordano Bruno (1548–1600). In a number of his books, Bruno championed the Copernican system and embellished it with an abundance of extraterrestrials. Concerning Bruno, two comments need to be made. The first concerns the sources of his pluralism. There is a debate among historians over whether scientific advances or religious and metaphysical ideas have been more powerful in leading authors to advocate extraterrestrials. Arthur Lovejoy, for example, maintained that the "Principle of Plenitude" played a far larger role than many assumed. Such ideas certainly dominated Bruno's mind, as is suggested by the fact that he populated not only the planets and stars but also attributed souls to planets, stars, meteors, and the universe as a whole. The second point is that, although Bruno was notoriously burned at the stake in 1600 by the Roman Catholic Church, the church authorities guilty of this action were almost certainly more distressed by Bruno's

denial of Christ's divinity and Bruno's alleged diabolism than they were about his cosmological doctrines. In short, Bruno was not, as is sometimes asserted, a martyr for extraterrestrial life.

The three most important physical scientists of the first half of the seventeenth century were Galileo Galilei (1564–1642), René Descartes (1596–1650), and Johannes Kepler (1571–1630). Although all three were Copernican, each showed caution concerning extraterrestrials. For example, Galileo in his *Starry Messenger* of 1610, which was the first book reporting on the celestial observations made possible with the newly invented telescope, noted similarities between the moon and earth. Nonetheless, twenty-two years later in his *Dialogue on the Two Chief World Systems*, Galileo suggested that if life exists on the moon, it must be “extremely diverse and far beyond our imagining” (S. Dick 1993, 504). In a letter written in 1647 (but probably not published until 1903), Descartes, after noting that Christ's blood had saved many humans, stated the following:

I do not see at all that the mystery of the Incarnation, and all the other advantages that God has brought forth for man obstruct him from having brought forth an infinity of other very great advantages for an infinity of other creatures. And although I do not at all infer from this that there would be intelligent creatures in the stars or elsewhere, I also do not see that there would be any reason by which to prove that there were not . . . (Descartes 1903, 54–55)

The case of the Lutheran astronomer Kepler is more complicated. Although he adopted the Copernican system early in his career and became one of its most important champions—and although he wrote a book, his *Somnium*, dealing with the possibility of life on the moon, it is clear that he was repelled by the universe of Bruno and that he went to some lengths to design a universe in which the earth retained a primacy. To him humankind is, as he explained in one of his last books, the “predominant creature” in the universe (Kepler [1619] 1962, 873).

Whereas Galileo, Descartes, and Kepler showed caution, various other authors from the first half of the seventeenth century rushed ahead. Among these were Tommaso Campanella (1568–1634) and John Wilkins (1614–72). Campanella published in 1622 his *Apologia pro Galileo*, which can be seen as propluralist. The Englishman Wilkins in 1638 published a very popular volume arguing for life on the moon, which in the seventeenth century had become and would remain for more than two centuries a battleground concerning life elsewhere.³

In the last half of the seventeenth century, two books, both written within the Cartesian tradition in physics, forcefully placed the issue of extraterrestrial life before the public. In 1686, Bernard le Bovier de Fontenelle (1657–1757) created a sensation by championing extraterrestrials in his *Entretiens sur la pluralité des mondes*. Whereas Rome deemed

this volume dangerous, placing it on the Index in 1687, the public proclaimed it a delight. By 1800 the popularity of Fontenelle's presentation had carried it through dozens of editions as well as translation into at least nine languages.

However gifted Fontenelle was in literary matters, he lacked the credibility accorded creative scientists. Thus it was particularly striking when in 1698 there appeared a volume advocating extraterrestrials authored by one of the leading scientists of the century: Christiaan Huygens (1629–95). Huygens's posthumous *Cosmotheoros* (or, in its English title *Celestial Worlds Discover'd: Or, Conjectures Concerning the Inhabitants, Plants and Productions of the Worlds in the Planets*) would within two decades be available in five languages beyond its original Latin version. The success of these two volumes, despite the slim scientific evidence on which they rested, ensured extraterrestrials of a place in future centuries. Moreover, even though the Cartesian system of physics gradually lost out to the system presented by Isaac Newton (1642–1727) in his *Principia* (1687), this change had little effect on belief in life elsewhere in the universe. The era of the extraterrestrials had begun.

Extraterrestrials were very prominent in the eighteenth century, or that period known as the Enlightenment. In fact, at least a majority of the leading Enlightenment intellectuals entered the extraterrestrial life debate, the great majority favoring the idea of a plurality of worlds. Among these authors were poets as prominent as Alexander Pope (see his *Essay on Man*), Edward Young (see his *Night Thoughts*), and Friedrich Klopstock (see his *Der Messias*). Philosophers were no less active; for example, Immanuel Kant (1724–1804) treated this subject in nine of his books, whereas François Marie Arouet, popularly known as Voltaire (1694–1778), dealt with it in at least a dozen of his publications. Scientists, especially astronomers, were no less enthusiastic. Extraterrestrials appeared frequently in the writings of Thomas Wright (1711–86), Johann Lambert (1728–77), and William Herschel (1738–1822), who are known as the pioneers of modern stellar astronomy. And these ideas had effect; for example, a compelling case can be made for the claim that William Herschel built many of the giant telescopes that helped him become the pioneer of galactic astronomy not to observe nebular objects but rather in hopes of confirming what he believed were observations of life on the moon.

One might suspect that eighteenth-century religious writers would oppose the new doctrine, but the reverse is far closer to what happened. Some saw extraterrestrials as evidence of God's beneficence, whereas others urged that God's efforts in creating this vast universe would have been wasted were life confined to the earth. Near the end of the eighteenth century, the consensus among Christians seems to have been that

belief in a universe teeming with intelligent life enhances one's religious perspective.

In 1793, however, the rapprochement worked out between extraterrestrials and religious writers began to shatter as thousands of people read a book written by Thomas Paine (1737–1809). Entitling his book *The Age of Reason*, Paine argued that astronomical science had made it impossible for any thinking person to accept the central Christian notions of a divine Incarnation and Redeemer. In his book Paine recounted that James Ferguson, a popular and pious lecturer on astronomy, had convinced him that a good and generous God must have populated the moon and planets. In confronting Christianity with this astronomical claim, Paine became a deist—that is, a person accepting a remote, impersonal God but denying such central Christian doctrines as Christ's Incarnation and Redemption. In his book Paine argues that although the existence of intelligent life only on the earth is not a specific Christian doctrine, it is nonetheless “so worked up therewith from . . . the story of Eve and the apple, and the counterpart of that story—the death of the Son of God, that to believe otherwise . . . renders the Christian system of faith at once little and ridiculous . . . (Paine [1793–95] 1961, 276). Paine presses the same point in even stronger language:

From whence . . . could arise the . . . strange conceit that the Almighty . . . should . . . come to die in our world because, they say, one man and one woman had eaten an apple! And, on the other hand, are we to suppose that every world in the boundless creation had an Eve, an apple, a serpent, and a redeemer? In this case, the person who is irreverently called the Son of God, and sometimes God himself, would have nothing else to do than to travel from world to world, in an endless succession of death, with scarcely a momentary interval of life. (Paine [1793–95] 1961, 283)

Paine's conclusion was stark: either reject belief in extraterrestrial life—a doctrine that he claimed had been established by astronomy—or reject Christianity.

Paine's *Age of Reason* attracted an immense readership both in Britain, where sixty thousand copies of it were printed, and in America, where a single Philadelphia bookshop sold more than fifteen thousand copies. It also generated more than fifty published responses, some explicitly opposing Paine's extraterrestrial life attack on Christianity.

That some prominent persons sympathized with Paine's argument against Christianity is revealed in many ways, not least by a letter that former U.S. President John Adams sent to former U.S. President Thomas Jefferson on 23 January 1825. Adams warned Jefferson that, in hiring faculty for the University of Virginia, he should avoid selecting European professors because “they all believe that great Principle which has produced this boundless universe . . . came down to this little ball, to

be spit upon by Jews. And until this awful blasphemy is got rid of, there never will be any liberal science in the world” (Adams 1856, 415).

Two other prominent figures who were deeply influenced by Paine’s argument against Christianity were Ralph Waldo Emerson and Mark Twain. Experts on Emerson have long recognized the powerful impact of astronomy on his writings and religious convictions. A single example must suffice. One of the most famous events in nineteenth-century American literary and religious history occurred in September 1832, when Emerson resigned his pastorate because he could not reconcile his religious convictions with those involved in administering the Lord’s Supper. Evidence indicates that on 2 June 1832 Emerson first revealed these difficulties to his congregation. Their source appears to lie in a sermon entitled “Astronomy,” which Emerson had delivered six days earlier (27 May). Its theme is set out most concisely in a rhetorical question he had entered in his diary on 23 May; given modern astronomy, he asks, “Who can be a Calvinist or who an Atheist[?]” (Emerson 1952, 24). In his sermon Emerson asserted that modern astronomy modifies and enlarges theological doctrines. For example, he stated that the old idea of the earth as the center of the universe may have fitted the Christian notion of atonement but that Copernican astronomy had “made the theological *scheme of Redemption* absolutely incredible” (Emerson 1938, 174–75). Astronomy had purified the teachings of the New Testament in such a way that God remained, but “no mystic sacrifice, no atoning blood” (Emerson 1938, 177). Our religion, thus purified, could be shared with the denizens of other planets, where it would “not teach any expiation by Jesus [nor] any mysterious relations to him” (Emerson 1938, 177). In short, Emerson, as Paine had earlier, decreed that belief in extraterrestrial life entails rejection of some central Christian doctrines.

In 1858 Mark Twain was deeply moved by reading Paine’s *Age of Reason*. About a decade later he began to compose a satirical story embodying Paine’s objection to Christianity, but he withheld his manuscript from publication until 1907, when it appeared as *Extract from Captain Stormfield’s Visit to Heaven*. In the story, Stormfield dies and arrives at heaven where he is asked from whence he came. He tries in succession the replies “San Francisco,” “California,” and “America” but is told, “There ain’t no such orb” (Twain 1909, 17). He then explains that he is from “*the world*,” to which the gatekeepers respond that there are billions of worlds. Finally, he identifies our planet as “the one the Saviour saved” but is told that this applies to countless worlds. Finally the gatekeepers locate our planet on a giant map where it is known as “the Wart” (Twain 1909, 24). The bitter denunciation that Twain feared would result from his book does not seem to have come, possibly be-

cause the intensity of Twain's hostility to Christianity had already by then become known.

Numerous Christian authors in the period after Paine responded to his polemics. Three of the most successful were Timothy Dwight (1752–1817), Thomas Chalmers (1780–1847), and Thomas Dick (1774–1857). Dwight served as president of Yale University from 1795 until his death in 1817. One of Dwight's goals as Yale president was to combat deism, to which end he prepared a series of 173 sermons, which he repeated every four years lest any undergraduate miss his message. In these evangelical sermons Dwight not only urged students to good actions but also marshalled extraterrestrials on behalf of his evangelical urgings. For example, in his fifth sermon Dwight stated that God "called into existence . . . the countless multitude of Worlds [which] he stored, and adorned, with a rich and unceasing variety of beauty and magnificence, and with the most suitable means of virtue and happiness" (Dwight 1818, 1:78–79). In his next sermon Dwight called Yale students to repentance by asking them: "How different will be the appearance, which pride, ambition, and avarice, sloth, lust, and intemperance, will wear in the sight of God, in the sight of the assembled universe . . ." (Dwight 1818, 1:105). Lunarians also were employed. Dwight informed those hearing his seventh sermon that although many astronomical investigations had shown that the moon lacks an atmosphere, nonetheless "it is most rationally concluded, that intelligent beings in great multitudes inhabit her lucid regions, being probably far better and happier than ourselves" (Dwight 1818, 1:207).

Late in the series of sermons Dwight turned to the problems raised by Paine's polemics, resolving them by the suggestion that a rebellion from God occurred only among angels and among terrestrials. In particular, "The first [rebellion] was perpetrated by the highest [i.e., the angelic], the second by the lowest [i.e., human] order of intelligent creatures. These two are with high probability the only instances, in which the Ruler of all things was disobeyed by his rational subjects" (Dwight 1818, 5:508). Thus Dwight was combating Paine's objection by declaring that humanity is the only race in the universe that fell into sin and required redemption. This bold response to Paine made for powerful preaching; in fact, Dwight's sermons were so effective that in a number of years as many as a third of Yale's graduates entered the ministry.

Ideas of extraterrestrial life played an even larger role in the evangelical movement in Scotland, where Thomas Chalmers was not only the leading evangelical but also the most prominent Scottish religious figure of his day. Chalmers's rise to fame began with a series of sermons he delivered in Glasgow in 1815. In these sermons Chalmers mixed evangelical piety with extraterrestrial themes similar to those of Dwight,

thereby delighting hundreds who waited hours to experience his eloquence. His sermons, when published as *Astronomical Discourses on the Christian Revelation*, went through dozens of editions in both Britain and America.

Even more energetic about employing extraterrestrials in the service of religion was another Scotsman, Thomas Dick. From his observatory near Dundee, Dick deluged America with books blending ideas of extraterrestrial life with various religious themes. He edified readers of his first book, *The Christian Philosopher* (1823), by stating that the wisdom of God is shown by our sun's being placed at just such a distance as benefits us most. Dick hastened, however, to add that the sun's position does not prevent other planets from being happily inhabited by beings appropriately formed for their varying distances from the sun. We learn from this book that rational beings dwell not only on all the planets but also on the moon and sun. For example, Dick stated that God placed within the immense body of the sun "a number of worlds . . . and peopled them with intelligent beings." (T. Dick [1823] 1844, 81). Turning to the moon, he predicted that "*direct proofs*" of the moon's habitability would be forthcoming, supplementing this with appendices in which he discussed whether the observations of the German astronomers Schröter and Gruithuisen provided such proofs (T. Dick [1823] 1844, 150–52). Dick, moreover, boldly claimed that the existence of extraterrestrial life "is more than once asserted in Scripture" (T. Dick [1823] 1844, 153).

Dick presented similar ideas in his *Philosophy of Religion* (1826) and his *Philosophy of a Future State* (1828). In the former book he asserted that "the grand principles of morality . . . are not to be viewed as confined merely to the inhabitants of our globe, but extend to all intelligent beings . . . through the vast universe [in which] *there is but one religion*" (T. Dick [1826] 1850, 65). In the latter book he calculated that 2,400 million inhabited worlds exist in the visible creation. In his *Celestial Scenery* (1837), he provided a table of the population of each planet, including even the ring, and the edge of the ring, of Saturn! (See table 1.)

Consideration of Dwight, Chalmers, and Dick suggests how deeply ideas of extraterrestrial life had entered into religious thought in the nineteenth century. The same point can be made even more forcefully by noting three very prominent religious figures who not only founded major religious denominations but also provided these new religions with scriptures incorporating into them extraterrestrials. These three persons are Emanuel Swedenborg (1688–1772), a scientist turned sage, whose revelations provide the basis for the New Jerusalem or Swedenborgian Church; Joseph Smith (1805–1844), the founder of the Church of Jesus Christ of Latter-day Saints (or Mormon Church); and Ellen G. White (1827–1915), the prophetess of the Seventh-day Adventist Church.

TABLE 1
Thomas Dick's Table of the Solar System

Planet	Square Miles	Population	Solid Contents
Mercury	32,000,000	8,960,000,000	17,157,324,800
Venus	191,131,911	53,500,000,000	248,475,427,200
Mars	55,417,824	15,500,000,000	38,792,000,000
Vesta	229,000	64,000,000	10,035,000
Juno	6,380,000	1,786,000,000	1,515,250,000
Ceres	8,285,580	2,319,962,400	2,242,630,320
Pallas	14,000,000	4,000,000,000	4,900,000,000
Jupiter	24,884,000,000	6,967,520,000,000	368,283,200,000,000
Saturn	19,600,000,000	5,488,000,000,000	261,326,800,000,000
Saturn's outer ring	9,058,803,600	↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓	
Saturn's inner ring	19,791,561,636	8,141,963,826,080	1,442,518,261,800
Edges of the rings	228,077,000	↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑	
Uranus	3,848,460,000	1,077,568,800,000	22,437,804,620,000
The Moon	15,000,000	4,200,000,000	5,455,000,000
Jupiter's satellites	95,000,000	26,673,000,000	45,693,970,126
Saturn's satellites	197,920,800	55,417,824,000	98,960,400,000
Uranus's satellites	169,646,400	47,500,992,000	84,823,200,000
[Total] Amount	78,196,916,781	21,894,974,404,480	654,038,348,119,246

Source: Dick [1837] 1848, 135.

One of Swedenborg's most remarkable writings is entitled *Earths in Our Solar System Which Are Called Planets and Earths in the Starry Heavens; Their Inhabitants, and the Spirits and Angels There, from Things Heard and Seen*. Published in 1758, the work provides (as its title indicates) reports of conversations that Swedenborg said he had had with extraterrestrial beings. Moreover, he worked out an elaborate theology that included extraterrestrials and provided a method for bringing the Christian message to them. The Swedenborgian Church, which was founded shortly after the prophet's death by a number of his disciples, now has about forty thousand members.

White, during the 1840s, became involved with the Millerite movement, which had predicted that Christ's Second Coming was imminent. By November 1846 she had begun to experience visions involving extraterrestrial beings. Regarding Saturn, she reported: "The inhabitants are a tall, majestic people. . . . Sin has never entered here" (Loughborough [1905] 1972, 206). Further vision came in 1849, convincing her associates that she possessed special gifts. By the early 1860s she and her

associates had founded a new denomination, which they designated the Seventh-day Adventist Church. For it White provided a theology that involved extraterrestrials—including the doctrines that sin occurred only on earth and that, correspondingly, Christ came only to our planet. As she wrote in one of her books, *The Story of Patriarches and Prophets*: “It was the marvel of all the universe that Christ should humble himself to save fallen man. That he who has passed from star to star, from world to world, superintending all . . . , [should take] upon himself human nature, was a mystery which the sinless intelligences of other worlds desired to understand” (White [1890] 1948, 69–70).

This theology not only provided a way around Paine’s dilemma; it also presented a remarkable cosmic conception that seems to have enhanced the attractiveness of this new religion. White’s denomination has continued to grow and in fact to spread throughout the world, current membership being about 4.4 million.

The third case of a new religion’s embracing extraterrestrials is the most remarkable of all. Joseph Smith provided his Latter-day Saints not only with the *Book of Mormon* but also with a number of other scriptures, including *Doctrine and Covenants* and *The Pearl of Great Price*. In both of these texts Smith advocated the idea that the universe contains a vast number of inhabited worlds. In the later work, God is presented as revealing that “I can stretch forth mine hands and hold all the creations which I have made; and . . . among all the workmanship of mine hands there has not been so great wickedness as among thy brethren” (Smith [1851] 1957, 7:36). Another pluralist notion advocated by Smith was the idea that some inhabited worlds had already passed away and that new inhabited worlds would arise. Overall, the doctrine of a plurality of worlds was given even greater primacy in the theology of the Mormons than in that of the Swedenborgians or Adventists.⁴ Possibly this emphasis has played a significant role in the spread of the Mormon community, which now includes more than 8 million members.

The depth to which ideas of extraterrestrial life had penetrated in these three denominations should serve to make plausible what historical research has shown is the case: numerous religious thinkers of the nineteenth century grappled with extraterrestrials.

The degree to which belief in extraterrestrial life had permeated the public in the first half of the nineteenth century is indicated by an event that occurred in 1835. In that year, Richard Locke (1800–1871), a writer with the *New York Sun* newspaper, created a sensation by publishing a series of articles reporting that intelligent beings had been telescopically observed on the moon. The noteworthy feature of this event is that nearly everyone believed Locke’s report, even though substantial

evidence had already been gathered to show that the moon lacks an atmosphere. Locke's articles won him a place in the history of journalism as the author of what is now called "the Great Moon Hoax." From studying that period I have located evidence that indicates that Locke's goal was not to perpetrate a hoax but rather that he was writing satire, a satire that misfired because of the gullibility of his readership. Whatever the case, Locke's articles provided a wake-up call to the effect that claims for extraterrestrial life, including reports of two astronomers that they had detected buildings on the moon, rested on very slight evidence.

Skepticism regarding claims for extraterrestrial life also increased somewhat after 1853, in which year a British scientist, William Whewell (1794–1866), published a book, *Of the Plurality of Worlds: An Essay*, in which he argued that many of the arguments, both religious and scientific, that had been made on behalf of extraterrestrials could not withstand careful scrutiny. For example, Whewell examined what was known about each of the bodies in our solar system and showed that conditions hostile to life prevail on nearly all of them. Whewell recognized the obstacles he faced; early in his book he stated: "It will be a curious, but not a very wonderful event, if it should now be deemed as blamable to doubt the existence of inhabitants of the Planets and Stars as, three centuries ago, it was held heretical to teach that doctrine" (Whewell 1859, iii). Whewell's fears proved to be justified. A great controversy arose in which nearly everyone, whether scientific or religious, educated or not, argued against him. Nonetheless, during the final half of the nineteenth century, evidence accumulated to show that the only solar system object besides the earth that can possibly support life is Mars. This set the stage for a huge debate regarding life on Mars—which debate extended from about 1877 (when Giovanni Schiaparelli reported detecting canals on Mars) until about 1915 (when it was realized, at least in the astronomical community, that essentially no evidence supports the existence of life on Mars and that much goes against it). One factor contributing to the decline of belief in extraterrestrials in the latter half of the nineteenth century was the development of biological science, from which astronomers learned the delicacy of the conditions necessary for life.

By 1917 more than 140 books dealing with the question of extraterrestrial life had appeared (Crowe 1988, 646–57). By 1917, however, the confidence prevalent a century earlier that the universe teems with life had seriously diminished. Just at this time, extraterrestrials came under attack from a new direction. Various factors led astronomers to conclude that they would have to give up the nebular hypothesis of planetary formation in favor of the claim that planets are thrown off by the close encounter of stars. The significance of this is that whereas nebular hypotheses of planetary formation predict a large number of planets,

encounter theories predict few. The pendulum swung again in the 1940s in the direction of favoring belief in extraterrestrials when nebular theories were given a new life. At the same time, the development of radio astronomy led to increased hopes of contact with extraterrestrials.

CONCLUSION

In bringing this presentation to a conclusion, I ask you to consider a question raised by the astronomer Harlow Shapley in his introduction to a volume of various papers presented at an earlier Star Island conference, which he edited in 1960. Shapley's question was "Will the now widely accepted hypothesis of highly developed sentient life throughout the stellar universe affect religious creeds?" (Shapley 1960, vii). It seems to me that the materials I have presented shed very significant light on this question. They show, first of all, that Shapley was seriously wrong in thinking it was only in the period around 1960 that the extraterrestrial life hypothesis had come to be widely accepted. As we have seen, that hypothesis had become nearly a commonplace two centuries earlier. Second, the materials that I have presented should make clear that ideas on extraterrestrial life's having an effect on religion is not something, as Shapley seemed to imply, that might begin to happen sometime in the future. Rather, for more than three centuries some people have marshalled extraterrestrials to drive believers from churches, whereas others have enlisted extraterrestrials to support their religious creeds. It is in this sense that, although I do not pretend to know whether extraterrestrials exist, I am convinced that they have long since invaded our planet. They have altered our religions, helped build a number of astronomical observatories, provided income for a number of writers on the subject of astronomy and science fiction, secured an audience for numerous films and television shows, and in general affected us more than we may realize.

At the beginning of this presentation, I promised to make a modest recommendation regarding claims for extraterrestrial life. My four-word suggestion, which I believe is the most important message to be found in my book, comes from the eighteenth century and was made by one of the wisest men of that period, John Wesley (1704–91). Had the suggestion been followed, the history of the extraterrestrial life debate might have been entirely different. For example, it would have kept Thomas Paine from making his excessive attacks on religion and Thomas Dick from making his wild claims in support of religion. In 1765 Wesley became involved in a dispute over extraterrestrials, about whose existence he had some reservations. In defending his position, he urged his adversaries to "Be not so positive" (Wesley 1978, 13:399). This seems to me to be wise advice.

NOTES

1. This paper is based largely on Crowe 1988. It has also drawn on three other studies of the history of ideas of extraterrestrial life. These are: Dick 1982, Dick 1996, and Guthke 1990. Those desiring more-detailed information on matters discussed in this paper may wish to consult these volumes.

2. Cusa stated, for example, that “Life, as it exists on earth in the form of men, animals and plants, is to be found, let us suppose, in a higher form in the solar and stellar regions. Rather than think that so many stars and parts of the heavens are uninhabited and that this earth of ours alone is peopled—and that with beings, perhaps of an inferior type—we will suppose that in every region there are inhabitants, differing in nature by rank and all owing their origin to God, who is the centre and circumference of all stellar regions” (Cusanus [1440] 1954, 114–15). Cusa speculated even on the nature of his extraterrestrials, prefacing his remark by the admission that such speculation is groundless: “Of the inhabitants then of worlds other than our own we can know still less, having no standards by which to appraise them. It may be conjectured that in the area of the sun there exist solar beings, bright and enlightened denizens, and by nature more spiritual than such as may inhabit the moon—who are possibly lunatics—whilst those on earth are more gross and material” (Cusanus [1440] 1954, 115–16). Having populated the sun and moon, he added, “And we may make parallel surmise of other stellar areas that none of them lack inhabitants, as being each, like the world we live in, a particular area of one universe which contains as many such areas as there are uncountable stars” (Cusanus [1440] 1954, 116).

3. One of Wilkins’s arguments for extraterrestrial life draws on the “Principle of Plenitude.” He stated: “There is a great chasm betwixt the nature of men and angels: it may be the inhabitants of the planets are of a middle nature between both these. It is not impossible that God might create some of all kinds, that so he might more completely glorify himself . . .” (Wilkins [1638] 1970, 102).

4. For a far more detailed study of the idea of a plurality of worlds in Mormon thought, see Paul 1986 and 1992.

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