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Cover: The Tyconic geocentric orrery, made by Pastor Paul Norwalt in 2000. See story on page 5 for details.

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EDITORIAL

This issue is at least a month late. For that, I apologize. An army of factors conspired to keep me busy with other things (Lu. 11: 53-54). But then, you have your own problems, too.

Presenting a Tyconian orrery

Yet, not all the factors were negative. For one, we now have a geocentric orrery based on the Tyconic model. For details, see "A Geocentric Orrery" starting on page 5 of this issue.

It's renewal time for most readers

For most of you, it is time to renew. If you should renew, there will be a renewal notice inserted in your copy of the *Astronomer*. This is the only notice you will get. Past experience has shown that given the number of trial subscriptions, renewal notices are a waste of money, money which can be used for publication and projects such as the video project, the orrery (second generation model), and so forth.

Foreign printed matter and book postal rates went up 40% last year. This will force foreign subscriptions to rise to \$20 and membership to \$25 with the next issue. Renew now for 2001 or later, and overseas readers will save \$5.00.

In this issue

In this issue we resume the debate on the size of the universe started with an article by David Lifschultz entitled "Spatial Measurement and Modern Science," which appeared in *The Biblical Astronomer* vol. 9(90):5, Fall 1999. That was followed by my "Spatial Measurement and Science: A Reply" in vol. 10(91):10 of the Winter 2000 issue. The third was David Lifschultz's reply which appeared in the Spring 2000 issue, "Spatial Measurement and Science Part II," no. 92, p. 5. The current article is a reprint of one written by astronomer John Byl in 1992. It deals with two topics: whether the universe is infinite, and whether it is eternal. This issue has recently become a hot topic among creationists, especially in their defense of heliocentrism.

Lord willing, in the next issue we shall look at the steps that go into building the distance scale. So far, we've only looked at parallax. There remains one more thing to consider about parallax, namely, the possibility that the parallax is due to the earth's diameter. After that, it's on to other techniques extending beyond parallax.

Also in this issue, we present a concise history of the Leonid meteor shower, a shower of shooting stars, which happens mid-November every year. Once every 33 years, the Leonids, as the shower is called, may present a meteor storm. During a meteor storm, one may see as many as 50 meteors per second. For example, the Leonids this year (2000) showed a maximum rate estimated at 20,000 per hour. A storm almost ten times as intense happened in 1966 and, possibly, in 1833. Unfortunately, there was no clear, cloud-free area within 150 miles of Cleveland during the forecasted storms this year, so I did not get to see it. The forecasts were quite accurate, raising hopes for predicting meteor storms. A more intense storm than this year's is predicted for next year. I hope to give particulars in the Summer 2001 issue so that you, too, will know where to look and when.

Next, there is a report on the flat earth controversy. An exchange of emails from various sources collected over the past year form the basis of a patch-work report on the persecution of round-earth advocates by flat-earth advocates in the Roman and Orthodox churches, and a first-hand account of life in the most prominent flat-earth community of the twentieth century.

Panorama surveys life on Mars; effects of an inconstant speed of light; two health issues: one caused by evolutionists, the other by high-tension power lines; the Higgs bozon; the black hole at the core of the Milky Way; the missing mass; and the effect geocentricity had on an eighth grade class.

Finally, we are down to our last case of *Geocentricity* books. The current version will not be reprinted. Likely, there will be a revised edition in a year or so, Lord willing. The revisions affect one chapter in the science section. The historical and Biblical sections need only minor revision. With fewer than 40 copies left, anyone who has been meaning to buy one but has been putting it off should consider buying a copy now.

In the meantime, may the grace of our Lord abound in you all throughout this festive season and through the first year of the twenty-first century, 2001. Happy third millennium!

A GEOCENTRIC ORRERY

Last spring, a gentle lady wrote asking about the possibility that the shadow of the moon during a solar eclipse could prove geocentricity. Part of my response was presented in the article “Is the Moon’s Shadow Proof of Geocentricity?” which appeared on page 8 of *Biblical Astronomer* number 92. In the sequence of events which transpired over the next month or so, money was donated for a video showing the motions of the “solar system” from a geocentric perspective. “Coincidentally,” I received a call from Pastor Paul Norwalt of the Merrimack Baptist Temple, of Merrimack, New Hampshire. During the conversation, he mentioned that he was being led of the Lord to make a geocentric orrery. And that is exactly what he did.

What is an orrery?

An orrery is a mechanical model of the solar system. The orrery developed from model planetaria over the course of some fifty years, though some credit George Graham with its invention about the year 1700. In about 1710, an instrument maker named John Rowley made a copy of Graham’s machine for Charles Boyle (d. 1735), the fourth Earl of Orrery. Rowley dubbed the device “The Orrery.” Orreries rapidly

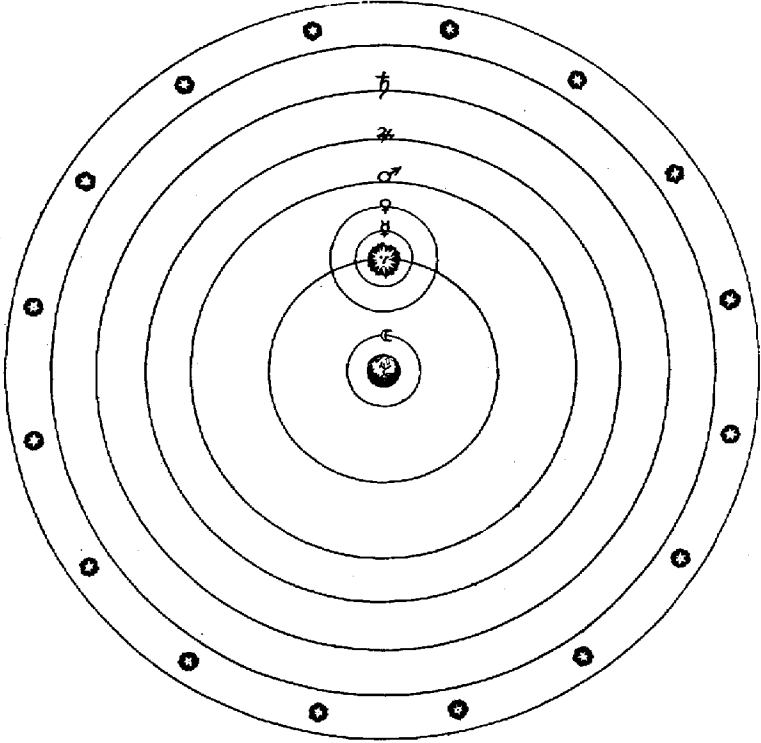
became popular as both a teaching aid and as an opulent piece of furniture.



At left, an early orrery dating from about 1750; made by Benjamin Cole and now owned by St. Andrews University in Scotland.

Typically orreries are heliocentric and may run to scale time-wise, as the above model, or may shorten periods to speed up the action. What is unusual about the new Tychonic orrery is that it is a geocentric orrery not based on the Ptolemaic model (see below) which is the second-most common form of orrery. This orrery is based on the model of the motion of the cosmos envisioned by the Danish ob-

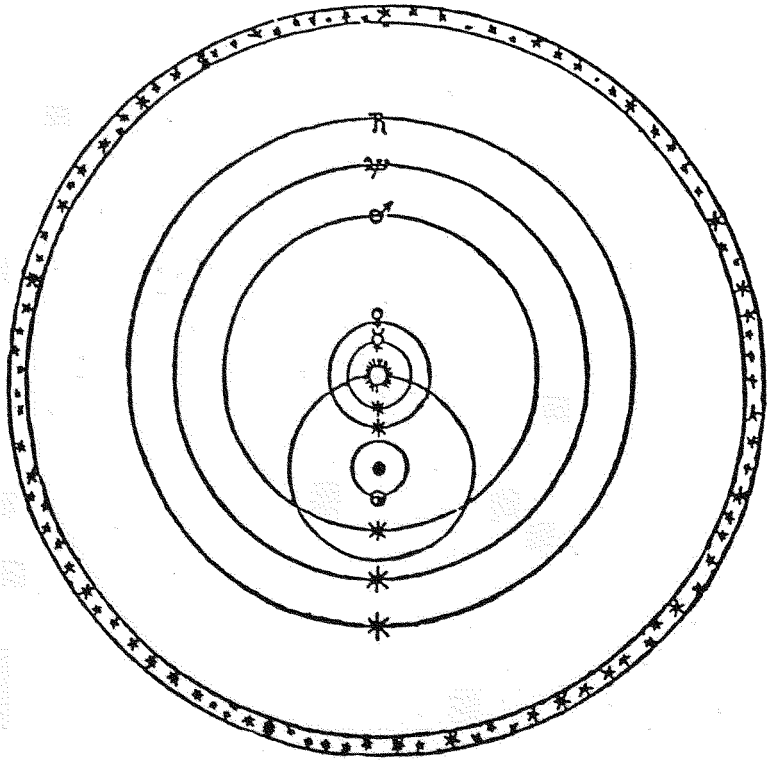
servational astronomer Tycho Brahe. Brahe's model has all the planets orbiting the sun except for the earth. The sun circles the earth, carrying the planets with it (see next page).



Above: The model of the planetary system according to Claudius Ptolemy: an early geocentric model.

The Tyconic orrery

After developing several animations, plans, and a stopover in Cleveland, Pastor Norwalt felt ready to proceed. A last minute check about the directions in which the various motions should go, and the orrery was finished. Arrangements were made to unveil the orrery at an afternoon presentation at the Merrimack Baptist Temple on Saturday, October 21, 2000. As Pastor Norwalt scoured the area for parts and advice, many people became intrigued and wanted to see it work; so many that two sessions were deemed necessary. The first was on Saturday afternoon, the second in the evening. The evening session drew attendees from as far away as Pittsburgh.



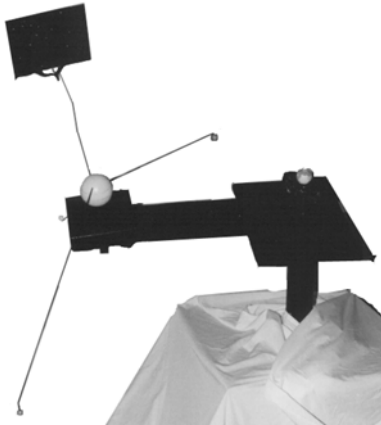
The modified Tychonic Model

The earth, sun, and planets are painted with fluorescent paints. The church made a backdrop with fluorescent stars and hooked up a couple of black lights. That was most effective at night when all that could be seen were the Sun, Mercury, Venus, Earth, Mars, and stars. Against the backdrop, which acted as stars placed at infinite distance, the audience had no trouble seeing the retrograde motion of Mars (an outer planet).

A color photo, with the background removed (because it was black on black,) graces the front cover of this issue. The next couple of figures show the model in various stages of its motion. For example, the first picture on the next page shows the position of the sun and earth about February. In this picture, also with background and base removed by photo editing, the sun is in the foreground with Mercury underneath it and silhouetted on the planetary gear-drive box. The rod leaving the photo to the lower right holds Venus. Earth is at the upper

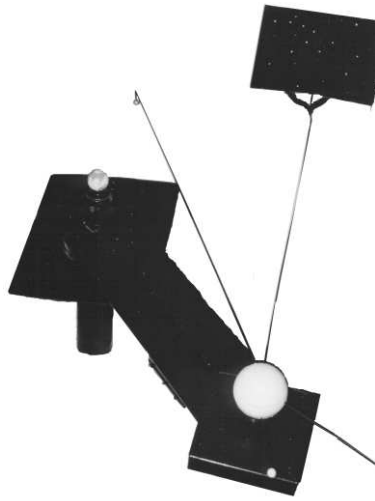
left, with Mars above it and to the right. The black rectangle at upper right represents the stars. As can be seen in the other photos, it maintains its orientation (here parallel to the edges of the platform holding the earth) throughout the year. The first day of winter was when the sun-arm, representing the firmament, was directly below the earth and parallel to the sides of the earth's platform. At that time the "star card" was directly behind the earth, as was Mars.

In the photo below, it is September 21st and Mars has moved to the lower left. Mercury is visible just to the left of the sun, left of the box, and Venus is to the right of the sun. Earth is at right, sticking out just above the platform. Note that the star card's arm is still parallel to the edges of the earth's platform.



up on videotape.

Besides showing the motion of the sun, moon, and planets, the geocentric orrery also shows the rotational motion of the heaven about the earth. In this case, the black shaft holding up the earth-platform, which is sticking up out of the sheet in the above photo, rotates clockwise. Each day in the orrery is more than five seconds, and each year is 90 days. The month is such that the moon turns fourteen times in a year. Compared with the real system, there are, of course, 365.25 days in a year and thirteen lunar months in a year. As it is, though, it takes



almost 9 minutes to see a year. Making the periods to scale would make a year last almost forty minutes. Nevertheless, the ratios of the planetary periods one to another and to the earth are correct.



Left to right: yours truly and Pastor Norwalt with the Tychonic orrery.

After using the orrery for videotaping geocentric phenomena such as the seasons, the orrery will be used for presentations, exhibits, and demonstrations.

“A work of art.”

That’s what one engineer said to the orrery, and it truly is. Rugged yet lightweight, and capable of demonstrating every observable phenomenon held up as proof falsely so called by the heliocentrists, the Tychonic orrery is a wonder to behold in full motion. People spend hours just watching it. “I never could visualize the motions of the geocentric system,” said several at the dedication, “but now I understand it clearly.”

Thank you, Pastor Norwalt; and thank you, Mrs. Norwalt, for the artwork, the painting of the earth in particular. Thank you, too, Merrimack Baptist Temple. Your efforts, labors, and sacrifices have indeed produced a work of art.

GOD, SPACE AND TIME

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**Reprinted from *The Biblical Astronomer*, 2(59):4, 1992.
 Fourth article in a series on the size of the universe.**

In a recent issue of this journal¹ Prof. Hanson argues that God created space, time, and matter and will do away with them. I take it that he considers time, space, and matter to have been created a finite time past, and that they will cease to exist at some future time.

He notes that it is impossible for man to conceive of the absence of time or space or matter, but that we must be content with the Scriptural givens. Now I agree that human knowledge is limited, particularly regarding the nature of God, yet I ask whether does Scripture indeed speak of such inconceivable matters.

I have no difficulty with the position that this physical universe was created a finite time ago. It is not clear to me, however, that time and space were necessarily created, or that matter will not survive into the everlasting future. While many orthodox theologians may agree with prof. Hanson's views, I wonder how much Biblical support it actually has. Thus, in this paper I would like to examine the alleged temporal boundaries of time, space and matter. It is hoped that the following remarks may serve to stimulate further discussion on this intriguing topic, even if their only function is that of serving as targets to sharpen the aim of our readers.

Is Time Eternal?

The most basic issue is that of the relation between time and eternity. All Christian theologians agree that God is without beginning and without end. But how is God's eternity related to time? Most theologians have taken God's eternity to mean existence *outside of* time. Only a few have taken God's eternity in the sense of everlasting *in* time. Thus Augustine, for example, held that the universe was not created *in* time, but *with* time. He contrasts changing, transitory time with

¹ Hanson, James, 1991. *Biblical Astronomer*, 1(57):19.

God's changeless eternity.² This distinction between changing time and a changeless eternity can be traced back to at least Plato's *Timaeus*.

Does the Bible warrant such a view of eternity? It is noteworthy that the Bible never portrays God as a passive timeless being, but always as an active agent in history. God is the living God. His eternity is invariably presented as time everlasting: without beginning or end, rather than as a non-temporal entity.

Consider, for example, Psalm 90:2 –

Before the mountains were brought forth, or ever thou hadst formed the earth and the world, from everlasting to everlasting thou art God.

The reference to “before” the foundation of the earth implies that time existed before the creation of physical things. In this view, creation *ex nihilo* makes sense: God existed before He created the physical universe.

If time was created along with the earth, then the earth has always existed, that is, at no time did the earth not exist. Then both God and the earth can be said to have always existed. In that case, creation *ex nihilo* cannot have a temporal meaning. Indeed, even the act of creating seems to imply an act in time.

Berkhof³ notes that the Biblical teaching implies that “prior to the beginning mentioned in Genesis 1:1, we must postulate a beginningless eternity, during which only God existed.” Yet, he seeks to interpret eternity not as an infinite extension of time “but something essentially different, of which we can form no conception.”⁴ The main difficulty he has with the infinite duration view of eternity is the question as to what God was doing before creation.

But why should God's actions prior to creation pose a problem for us? I find it much easier to conceive of God existing in an infinity of time before creation than to talk about God's changeless eternity “of which we can form no conception.”

A prime argument for a timeless God is the supposed immutability of God. For example: “I am the Lord, I change not.”⁵ Yet, when

² Augustine. *The City of God*, Book XII, Chapter 16.

³ Berkhof, Louis, 1939. *Systematic Theology*, (Grand Rapids: Eerdmans). P. 130.

⁴ *Ibid.*, p. 131.

⁵ Malachi 3:6.

read in its context, this text points more to God's fidelity rather than to any ontological immutability. Similarly, "But thou art the same, and thy years shall have no end"⁶ refers to God's everlasting existence and the unchangeableness of His character.

There are a few further texts that are sometimes cited to bolster the notion of a timeless eternity. These, too, are doubtful: "Before Abraham was, I am"⁷ seems to refer not to God's timelessness but to His "present" filling all of time; similarly, "One day is with the Lord as a thousand years"⁸ refers to God's perception of the passage of time, not to timeless existence. It would seem that God's eternity consists of God's existence through everlasting time and His ability to perceive all of time simultaneously: He knows the past and future as perfectly as He does the present.

It has been recently argued by Thomas Senor⁹ that the doctrines of timelessness and Christ's Incarnation are incompatible. Through the Incarnation God the Son assumed a human nature (see Philippians 2:5-7; John 1:14), thus undergoing a change. A timeless being cannot undergo change.

Nor does heaven, the abode of God, appear to be a non-temporal place. Events occur in a time sequence: angels are created, some rebel and are later rejected; angels present themselves before the Lord (Job 2:1); Christ and the souls of the departed enter heaven, etc. In fact, heavenly and earthly time appear to be closely correlated: they both appear to be synchronized to the same divine clock.

What about time in the future heaven, as the redeemed enter into God's eternity? It appears that also this future eternity is not non-temporal but everlasting:

⁴ And they shall see his face; and his name shall be in their foreheads.

⁵ And there shall be no night there; and they need no candle, neither light of the sun; for the Lord God giveth them light: and they shall reign for ever and ever.

The temporal nature of the new Jerusalem is evident from its description in Revelation 22: "And he shewed me a pure river of water of life

⁶ Psalm 102:27.

⁷ John 8:58.

⁸ 2 Peter 3:8.

⁹ Senor, Thomas D., 1990. "Incarnation and Timelessness," *Faith and Philosophy*, 7:149-164.

... proceeding out of the throne of God ... the tree of life, which bare twelve manner of fruits, and yielded her fruit every month.” It may be objected that there is much symbolism here. However, there is nowhere any contrary suggestion of our future eternity as being timeless rather than endless.

Arthur Custance contends that time is not within eternity but that time has a definite beginning (“In the beginning God created the heaven and the earth” Genesis 1:1) and end (“that there shall be time no longer” Revelation 10:6).¹⁰ It is not clear to me, however, that Genesis 1:1 necessarily refers to the beginning of time, rather than the beginning of the physical universe. As to Revelation 10:6, “time” here could be taken in the sense of “delay,” as it is translated in the *Revised Standard Version*. This would be more consistent with the subsequent temporal aspect of heaven, as noted above.

I conclude that the Biblical evidence favours that of the infinity of time, both past and future.

Is Space Eternal?

What about space, did it exist before the creation of the universe? Does God have a spatial aspect? Or does His spirituality imply spacelessness?

We note first that heaven and its inhabitants certainly appear to have a spatial aspect. The spiritual realm is not a mere abstraction. The Biblical description suggests that the spiritual heaven is a universe parallel to the physical universe, but invisible to man. A number of times we read of heaven being *opened* (Ezekiel 1:1, Mark 1:10), and man seeing into heaven. We are told of Michael and his angels fighting in heaven against Satan and his angels, who are defeated and “neither was their place found any more in heaven.”¹¹ Angels, even as spirits, occupy a place in heaven and can be displaced.

It therefore seems that heaven is not non-spatial but rather super-spatial. There is place but it transcends our physical space.

We note in passing that the application of the concepts of space and time not just to the physical universe, but also to the spiritual realm is of great significance for cosmology. There it is generally assumed that the initial Big Bang singularity involved the creation of space and time. It is evident, however, that physical space-time is intricately re-

¹⁰ Custance, Arthur C. 1981. *Journey Out of Time*, (Brockville: Doorway Publications). Pg. 47.

¹¹ Revelation 12:7-8.

lated to heavenly space-time and that spiritual entities can influence the physical realm.

As to the spatiality of God, we note that the Bible portrays God as being omnipresent. He transcends all spatial limitations and yet is present in every point in space:

That they should seek the Lord, if haply they might feel after him, and find him, though he be not far from every one of us: For in him we live, and move, and have our being.¹²

Can any hide himself in secret places that I shall not see him? saith the LORD. Do not I fill heaven and earth? saith the LORD.¹³

Yet God is not everywhere present in the same degree. He dwells particularly in heaven, a *place* designated as His habitation: "I dwell in the high and holy place."¹⁴ Christ's ascension up from Jerusalem into heaven is essentially a spatial concept. The heavenly visions of John picture God seated on a throne surrounded by angels, elders and saints. Again, a spatial image. Revelation 21 tells us of the New Jerusalem coming down from God's heaven to earth: in the future heaven, God's place and man's place will be one. Wilbur Smith sees the New Jerusalem as not a transformed earthly city but one that originates in heaven and will be suspended over the earth.¹⁵

How is God's place (heaven) related to man's place? This is a difficult topic and it must be stressed that our knowledge of God is very incomplete.

An interesting position has been developed by Luco van den Brom.¹⁶ He suggests that God exists spatially in his own more-dimensional universe. In his act of creation, God made room for the three-dimensional world in his higher-dimensional world. Van den Brom views the ascension of Christ as the withdrawal of Christ's body from the tree-dimensional created world into the higher-dimensional system of heaven.

¹² Acts 17:27-28.

¹³ Jeremiah 23:24.

¹⁴ Isaiah 57:15.

¹⁵ Smith, *op. cit.*, p. 258.

¹⁶ van den Brom, Luco J. 1982. *God Alteenwoordig*, (Kampen: Kok). The title translates as "God Omnipresent," -Ed.

In this way it is possible to speak of God's heaven as a place outside of our space without having to consider heaven as a place in an unreal sense. We could consider heaven as having more than 3 dimensions, or as being a 3-D world parallel to our own in a 4-D space, much like two 2-D planes embedded in a 3-D space.

In such a space, it is also natural that our world could be influenced by factors outside of it. The higher dimensional world of God could have its own laws, which would hold along side of the laws of our 3-D world. These higher laws and dimensions are not open to scientific research. This leaves room for miracles, which could be explained as the intrusion of higher dimensional factors into our 3-D world. This is, of course, very speculative. Yet, it seems to be consistent with the Biblical givens.

Is Matter Eternal?

Finally, we address the question of matter. The matter in our 3-dimensional physical universe was certainly created some finite time past. How about the future of matter? The Bible indicates that at the end of our era there will be a new heaven and a new earth (Revelation 21:1). Yet, it seems that this new earth will be a material one. Furthermore, it appears that the old earth will not be annihilated but renewed. Thus, I could conclude that, although matter may possibly be renewed or transformed, our future eternal destination has a material aspect. Therefore matter, although having a finite past, would have an eternal future.

Conclusion

In summary, then, I believe that one can make a strong case, on Biblical grounds, for the view that God has both temporal and spatial aspects. Hence, time and space would be co-eternal with God. I realize that we should refrain from unduly speculating on the nature of God, in recognition of our severe creaturely limitations, particularly after the Fall. Yet, I believe that we should not make God more inconceivable than the Bible presents Him to us.

THE LEONIDS

The richest and most anticipated, if not the most famous, of meteor showers is the Leonids. It is also the best documented of meteor showers, having been observed and recorded for nearly 1100 years. The *meteoroids*¹ are caused by the breakup of the nucleus of comet Tempel-Tuttle, a small comet orbiting the sun once every 33 years. The typical Leonid is the size of a grain of sand, though most range in size from a piece of dust to pea-size. It hits the atmosphere at about 44 miles (77 km) per second, fast enough to cross the United States in a minute.

Although meteor showers have been observed from time immemorial, and although the Leonids have meteor storm capability (where hundreds of thousands of meteors an hour may appear) man's imagination was not fired to find the origin of meteor showers until the great shower of 1833. After that storm, astronomers began to search historical records looking for previous appearances of the Leonids and other meteor showers.

Below is a list of observations of Leonid meteor showers spanning the last 1100 years. The reader will note a steady progression as the shower occurs later and later in the month. This is due to the rotation of Tempel-Tuttle's orbit about the sun. For comparison, the date of the Leonids this year was November 18.

901: October 26. Euty chius of Alexandria (877-940) wrote the following in his *Annals*: "In Egypt in the morning of Wednesday, 9 Dhu al-Qa'da, during the latter half of the night until the morning, the stars were very disturbed by what are called "shooting stars." The heaven was filled with shooting stars scattering east and west, south and north. No one was able to stare at heaven because of the great number of shooting stars."

902: No date. "In the month Dhu al-Qa'da of the year 289 died king Ibrahim ben Ahmet. That night great numbers of stars moved from one point as if they had been shot through the heaven and poured down on the right and left like rain. For this reason, the year was called "the year of stars."

931: October 15. The Chinese text *Ssu-Tien-Khao* reports that "Many stars flew, crossing each other." On October 16: "Many stars flew and fell."

¹ When drifting in space, these grains of material are called *meteoroids*. When they hit the atmosphere and we see them streaking through the sky, they are called *meteors*. If one survives the fall and hits the ground, it is called a *meteorite*.

934: October 13. The Chinese text *Liao-Chih-Pen-Chi* reports “Stars flew like a shower in the southwest.” Likewise, the *Ssu-Tien-Khao* records for the next night that, “Many stars flew, crossing each other”

967: October 14, the Japanese text *Nihon Kiryaku* reports: “Stars scattered from the northeast to the southwest all night.”

1002: October 12. The Chinese *Thien-Wen-Chih* reports: “Scores of small stars fell.” On October 14, the *Nihon Kiryaku* of Japan reported that “Meteors flew from the northeast to the southwest at midnight.” The next day, “Meteors flew early in the morning.”

1035: October 14. The Japanese text *Fuso Ryakki* says: “Meteors appeared in the morning.”

1037: No date. The *Fuso Ryakki*: “Meteors appeared at midnight.”

1101: October 17. The French *Chronicon Sancti Maxentii* reports that “stars were seen to fall from the sky.”

1237: October 19. The Japanese *Azuma Kagami*: “Meteors appeared in the morning.”

1238: October 18. The Japanese *Konendai Shiki*: “Countless large and small meteors appeared at midnight with white-red color.”

1366: October 23. The Portuguese text, *Cronicas dos reis de Portugal* (1600), says of that day that “the stars moved in heaven such as men never before saw or heard. Beginning at midnight, the stars moved from the east to the west; and originating from the same spot together, they moved, some in one direction, and others in another. And afterward, they fell from the sky in such numbers, and so thick together, that as they descended low in the air, they looked large and fiery, and the heaven and air appeared to be in flames, so that even the earth seemed ready to take fire. All who saw it were filled with such great fear and dismay, that they were astounded, thinking that they were all dead men and that the end of the world had come.”

1466: October 22. The Japanese *Gohokkoin Shokaki*: “Meteors flew from the southwest to the northeast.”

1532: October 24. The Korean *Yollsong Sillok*: “Stars flew like a shower.”

1533: October 24. The *Yollsong Sillok*: “Stars flew like a shower in all directions.” The Chinese *Thien-Wen-Chih* records: “Countless large and small meteors flew in all directions crossing each other till dawn.” The Japanese texts *Konendai Shiki* and *Taiseiki* record that on October 25 “Many stars flew in the hemisphere and fell on land and sea.”

1566: October 26. The Korean *Munhon-Piko*: “Meteors flew like a shower in all directions.”

1602: November 6. The Chinese *Thien-Wen-Chih*: “Hundreds of large and small stars flew, crossing each other.” There is also a reference in the Korean *Munhon-Piko* for activity on November 11.

1625: November 4. The Korean *Yollsong Sillok*: “Meteors appeared in the whole sky.” The Korean text *Munhon-Piko* records that “Many stars fought in the west” on November 5.

1666: November 8. The Chinese *Thien-Wen-Khao-Ku-Lu*: “A great star fell. A small star followed.”

1698: November 8. The Japanese *Shinzan-Shu*: “Meteors fell a-weaving.”

1799: November 12. Astronomer F. H. A. Humbolt wrote in Cumana, South America: “From half after two in the morning, the most extraordinary luminous meteors were seen in the direction of the east. M. Bonpland, who had risen to enjoy the freshness of the air, perceived them first. Thousands of bolides² and falling stars succeeded each other during the space of four hours. Their direction was very regular from north to south. They filled a space in the sky extending from due east 30° to north and south. In an amplitude of 60° the meteors were seen to rise above the horizon at E.N.E. and at E., to describe arcs more or less extended, and to fall towards the south, after having followed the direction of the meridian. Some of them attained a height of 40°, and all exceeded 25° or 30°. Mr. Bonpland states that, from the first appearance of the phenomenon, there was not in the firmament a space equal in extent to three diameters of the moon, which was not filled every instant with bolides and falling stars.

“Almost all the inhabitants of Cumana witnessed this phenomenon, because they had left their houses before four o’clock to attend the early morning mass. The Guaiqueris in the Indian suburb alleged ‘that the bolides began to appear at one o’clock; and that as they returned from fishing in the gulf, they had perceived very small falling stars towards the east.’ The phenomenon ceased by degrees after four o’clock, and the bolides and falling stars became less frequent; but we still distinguished some to northeast by their whitish light, and the rapidity of their movement, a quarter of an hour after sunrise.”

Many other accounts from around the world survive of the 1799 Leonid storm.

1833: The night of November 12-13, 1833 saw the most famous meteor storm of all. It not only marks the discovery of the Leonid shower, but it also heralded the birth of meteor astronomy. During the early morning hours of the 13th the people of eastern North America saw the early morning sky lit up by meteors.

Predictably, the 1833 display inspired thoughts of Judgement. Abraham Lincoln was spending the night at a friend’s home when the friend

² Bolides are meteors that suddenly brighten or explode in flight.

awoke him and pronounced Judgment Day was at hand. Lincoln is said to have dismissed the notion by observing that nothing had happened so far to think that. Estimates claimed a thousand meteors a minute emanated from the region of Leo. People were awakened by the flashes of the bolides. Others were awakened by the cries of their neighbors. The event had such religious impact that it sparked the birth of the Seventh Day Adventists.



In January 1834, Denison Olmsted correctly explained the storm. He noted the shower was of short duration, as it was not seen in Europe. He thought it also was not seen west of Ohio, but American Indians in the West and Midwest refer to the event as “the night the stars fell.” Olmsted noted that the meteors came from a point in Leo, which he estimated at right ascension 10 hours (150° west), and declination 20° north.

Figure: The 1833 shower over Niagara Falls, which appeared in an 1892 book, *Bilder-Atlas der Sternenwelt* by Edmund Weiss.

Noting that an abnormal display of meteors had also been observed in Europe and the Middle East during November 1832, Olmsted theorized that the meteors had originated from a cloud of particles in space. In November 1834, the Leonids reappeared. Though they were not as plenteous as in 1833, it was noted that they came from the same region of the sky, that is, from Leo. After several years of diminishing shower activity, in 1837 Heinrich Olbers combined all of the available data and concluded that the Leonids had a period of 33 or 34 years. He predicted their return in 1867.

1866: 2000 to 5000 meteors per hour were observed that year.

1867: Though hampered by moonlight, observers still reported rates as high as 1000 per hour.

1868: Activity reached an intensity of 1000 per hour in dark skies.

1869: November 14. Hourly rates ran as high as 200.

On December 19, 1865, Ernst Tempel at Marseilles, France discovered a 6th-magnitude, circular object near the star Beta *Ursae Ma-*

oris (Big Dipper). Independently at Harvard College Observatory, Horace Tuttle sighted the object on January 6, 1866. Thus, the comet took the moniker *Tempel-Tuttle*. The comet passed the sun on January 12, 1866, after which the comet faded so quickly that it by February 9 it had disappeared. But it was enough; its orbit could be determined. The comet was a short period comet with a period of 33.17 years. In 1867, the French astronomer Jean Le Verrier computed an accurate orbit for the Leonids, and astronomers Peters, Schiaparelli, and von Oppolzer independently noted the resemblance between the orbits of the comet and meteor stream.

1899: A disappointed world saw maximum rates peak on November 14-15 with only 40 meteors per hour. Later it was determined that the meteoroids had passed close to Saturn in 1870 and then Jupiter in 1898, and had been deflected by their gravity. Two years later, on the night of November 14-15, 1901, peak rates happened over the United States at 300-400 per hour.

1933: Rates in 1930 peaked on November 17 at 120 per hour. In 1931, there was a slight increase in the meteor rate over the 1930 shower ranging from 130 to 190 per hour. Expectations were high in 1932 despite interfering moonlight, and the peak of 240 per hour was reported by members of the British Astronomical Association. The Leonids declined slower than normal after 1932, maximum rates remaining between 30 and 40 meteors per hour through 1939.

1966: Expectations were high again, but the maximum was restricted to a limited area. On the night of November 17, 1966, Dennis Milon and a dozen other amateur astronomers watched under the clear skies of Arizona. Rates at 5:30 A.M. were estimated as several hundred a minute, and the peak rate of about 40 per second was attained at 5:54. By 6:40 the activity was down to 30 per minute.

The 1966 display was one of the greatest displays in history, with maximum rates being 2400 meteors per minute or 144,000 per hour. The major peak of the 1966 display was also seen by observers in New Mexico, Texas, and California. By 4:45 a.m. a group in California estimated rates had reached about 50 per second, with this count being maintained for about 10 minutes before a noticeable decline set in.

Observers in the eastern United States reported rates of several hundred per hour, whereas other countries reported rates generally less than 200 per hour. A Soviet polar station observed a maximum rate of 20,000 per hour. The actual rate, after correction for the low altitude of the radiant (the point from which the shower emanates), gave a count of 130,000 per hour, consistent with the Arizona and California observations.

In the years that followed it was discovered that there are multiple radiant. Six radiant were found, the most active of which was the original radiant at RA=10^h 6^m.8 and DEC=+22.9°.

1998: The display in 1998 had a maximum occurring over half a day earlier than predicted, with counts between 200 to 300 per hour. Numerous fireballs that flared and lit up the landscape were reported.

1999: Asher and McNaught of the Australian National University predicted a strong outburst of Leonids for November 18. Their time was 2:08 Universal Time (subtract 5 hours for Eastern Standard Time). They estimated an error of plus or minus ten minutes in their forecasted time. The meteor storm broke over Europe, right on schedule, at 2:05 U.T. According to the Asher-McNaught model of the Leonid dust streams, the 1999 outburst of 1500 meteors per hour occurred when the trail deposited by the 1899 passage of Tempel-Tuttle swept past the earth.

2000: The same model predicts two dust streams for 2000, both on the 18th of November. One of the streams is from the 1733 passage and the other from 1866. These will not be as close as the passage last year, and as we don't really know how wide the ribbons of dust are, we can't be sure of the rate. On November 17, the 1932 dust trail sweeps past the earth. Also, in 2000 the moon will shine brightly in the head of Leo, right near the radiant. Only the brightest of meteors are likely to be seen.

2001: The forecast for 2001 is better. At that time the dust ribbons of 1767, 1699, and 1866 will sweep past the earth. The most active time will be late on the 18th starting roughly at 18:00 U.T. until about 21:00 U.T., too early to be visible in North America.

Although meteors are not explicitly mentioned in the Holy Bible, some references probably refer to meteors in the form of falling stars. These are:

Matthew 24:29 Immediately after the tribulation of those days shall the sun be darkened, and the moon shall not give her light, and the stars shall fall from heaven, and the powers of the heavens shall be shaken

with

Mark 13:25 And the stars of heaven shall fall, and the powers that are in heaven shall be shaken

and

Revelation 6:13 And the stars of heaven fell unto the earth, even as a fig tree casteth her untimely figs, when she is shaken of a mighty wind.

All three scriptures refer to the same event, near the beginning of the great tribulation. All three could refer to meteors or, possibly, angels. Most likely, though, meteors are meant. The Holy Bible does not distinguish between stars and planets (wandering stars). The Bible associates the morning star, with Jesus (Revelation 22:16³). As can be seen from the above historical references, the meteors were universally known as shooting *stars* or falling *stars*. A star is any extraterrestrial or heavenly body, particularly an astronomical body. An angel is also referred to as a star in Scripture (Rev. 1:20).

Now some will object that Rev. 6:13 must refer to today's "stars," such as Polaris, the North Star, or Sirius the dog star, and the like. This argument is common among small-universe advocates, although the stars in their models are comparable in size to the earth. Besides, there are stars left to fall in Rev. 8:10, and there are still more stars left in heaven in Rev. 12. So these scriptures most likely refer to meteor showers. For those who wonder about whether or not the Leonids may be that shower, think on this: the next Leonid storm will likely be within a year either side of 2033, which year is 2000 years after the crucifixion, resurrection, and ascension of Jesus Christ. But, unless the three falling-star references in Revelation are each a year apart, it is unlikely that the Leonids are a direct fulfillment of Scripture.

Quotable Quote

Firearms stand next in importance to the Constitution itself. They are the American people's liberty teeth and keystone under independence. To secure peace, security and happiness, the rifle and the pistol are equally indispensable. The very atmosphere of firearms everywhere restrains evil interference—they deserve a place of honour with all that is good.

— George Washington

³ Most modern versions, particularly the NIV and the NASV, apply this title to Satan in Isaiah 14:12, effectively saying that Satan is the morning star and is, therefore Jesus, the Christ. This is blasphemy.

FLAT EARTH MYTHOLOGY AND FACT

The following article is derived from a series of email exchanges that transpired earlier this year over the Internet. The question arose:

It is not uncommon to read in pre-university student essays that people once believed that the earth is flat and even that people who suggested otherwise were burnt at the stake. Is it true that people in the Dark Ages actually believed such a thing?

Reference was made to a book by Jeffrey Russell called *Inventing the Flat Earth*. Here is a description of the book taken from the amazon.com site (where the book is reported as presently unavailable):

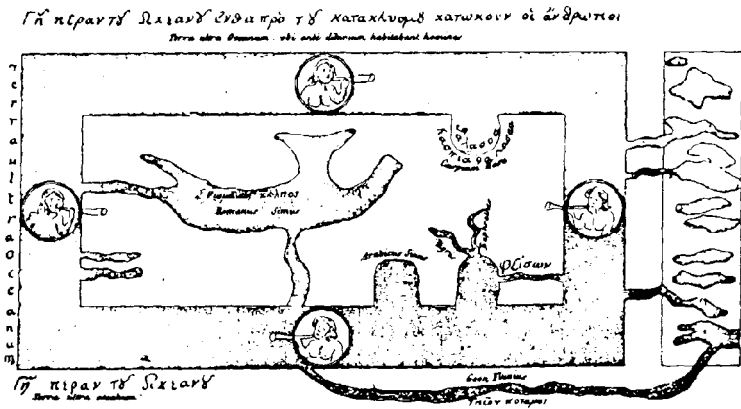
Neither Christopher Columbus nor his contemporaries thought the earth was flat. Yet this curious illusion persists today, firmly established with the help of the media, textbooks, and teachers, – even noted historians. *Inventing the Flat Earth* is Russell's attempt to set the record straight. He begins with a discussion of geographical knowledge in the Middle Ages, examining what Columbus and his contemporaries actually did believe, and then moves to a look at how the error was first propagated in the 1820s and 1830s and then "snowballed" to outrageous proportions by the late 19th century. But perhaps the most intriguing focus of the book is the reason why we allow this error to persist. Do we prefer to languish in a comfortable and familiar error rather than exert the effort necessary to discover the truth? This uncomfortable question is engagingly answered.

Apparently, the spherical-earth theory occupied a similar position to that of most geology and evolutionary biology today: that is, it was an accepted part of mainstream scientific thought and non-controversial among most of the learned, but a number of educated people (and probably a higher proportion of the non-learned who did not publish their views) felt compelled to reject it, some on theological grounds, but most on philosophical grounds. The main difference is that towards the end of the Dark Ages the learned men were right, whereas today they are wrong. In any case, the idea that Church or government authorities in the Renais-

sance would have quarreled with Columbus or Galileo for believing in a spherical earth is indefensible.

People who have looked into this matter conclude that this error originated in the USA from a work by the author Washington Irving (1783-1859). Apparently, the error was also propagated in France about the same time by Antoine-Jean Letronne (1787-1848).

Still, during the early era of the Dark Ages some did believe that the earth was flat. The main example in the Byzantine world is Cosmas Indicopleustis (the same Cosmas who sailed to India). He lived during the sixth century A.D. His book, *Christian Topography*, was widely read. In it, he claimed that the earth was flat, with a large mountain right in its middle. He explained nightfall by the Sun going behind this mountain.



Cosmas took the Tabernacle as a model for the earth, hence its rectangular shape. The four rivers run from Eden (at right) to water the earth (Gen. 2:10). (Courtesy, Library of Congress)

Cosmas’s view is similar to that of Anaximander and Anaximenes around the sixth or fifth century B.C. In their model, the sun and other planets circle above a flat earth and daily “set” behind a big mountain. Perhaps Cosmas’s claims linking Scripture with the flat earth was not entirely based on Scriptural considerations.

Interestingly, the cosmology of the Indian Puranas has the same sort of setup. Could it be a source or a derivation of Cosmas’ scheme?

Burning round-earth advocates at the stake?

There is no record of anyone being burned at the stake for adhering to a spherical earth. The only figure burnt at the stake for “scientific heresy” was Bruno, who was burned by the Roman Catholic church on 16 February, 1600, for promoting the idea that:

Innumerable suns exist; innumerable earths revolve around these suns in a manner similar to the way the seven planets revolve around our sun. Living beings inhabit these worlds.



Figure: Bruno.

Bruno further believed that the universe was infinite and that God was the soul of the universe. Thus, his philosophy was a blend of mystical Platonism and pantheism. He is considered a forerunner of modern philosophy because of his influence on the Dutch

philosopher Baruch Spinoza and his anticipation of the theories of monism,¹ later advocated by the German philosopher Gottfried Wilhelm Leibniz.

There is no record of anyone else being martyred for such “scientific” ideals. Although Socialists like to claim that Calvin had Servetus burnt at the stake for his “scientific” theories, the argument was not scientific but theological, with Calvin in the wrong.

In contrast, the Greek Orthodox church never burnt people. The highest punishment for an ordinary person’s gravely serious offence was

¹ Monism is the view in metaphysics that reality is a unified whole and that all existing things can be ascribed to or described by a single concept or system. The doctrine that mind and matter are formed, or reducible to, the same ultimate substance or principle of being.

excommunication. For priests the corresponding punishment was deordination and then excommunication. In any case, the procedure was to call the offender for an “apology.” This means a discussion, as in a court, of the matter. Never was this done under force or pain. The offender, if found guilty, was given the chance to sign a “regret,” in which case the matter was closed.

North American flat earth faith

The following email came from a man who grew up in Zion, Illinois during the closing years of Wilbur Voliva, probably the top flat-earth promoter of at least the first half of the twentieth century:

In response to your email today, I will tell you some details about the history of Zion, Illinois, and the leaders of the “Christian Catholic Apostolic Church of Zion, Illinois,” as it was legally named. This will be a thumbnail sketch so as not to get into the myriad of details that surrounds the histories of John Alexander Dowie, the founder of Zion City, and Wilbur Glenn Voliva, the Overseer and successor to Dowie.

Both of these men preached “divine healing” and both of these men died without “divine healing.” Dowie died at the age of 59 paralyzed, kicked out of the “church” by his successor, Voliva. Voliva’s death will be covered later in this paper. Dowie came from Scotland, and belonged to a Christian Catholic Apostolic Church in Scotland, had attended the University of Edinburgh, went to Australia, then to San Francisco, and then to Chicago where he started making big money from “divine healing” by claiming he had healed over 300,000 people. Like Oral Roberts, he found that he had struck gold. He then bought 100 square miles of land known as “Zion, Illinois.” The giant wooden temple in Zion was decorated with prosthetic devices, row upon row of crutches, and other devices for cripples, which Dowie apparently had purchased at a pawn shop, or even a crutch factory, to ostensibly show how many people he had “healed.”

To live in Zion, no one could own property, except the “church.” You had to sign an 1100-year lease, and pay the market price for your home. The lease bound you to all the dictates of the church leaders. But do not get me wrong, not every rule of the church was “bad” in the sense that truly Biblical rules were followed in many respects, by the faithful, as laid down by the church leaders. The utter moral filth of today’s world was not allowed in Zion. But there were some doctrinal, unbiblical things taught, such as the “flat earth” doctrine, and the “sun soaring 30 miles overhead,” and, as already mentioned, “divine healing,” which we know

from the Holy Scriptures, ended as the “gift” with the Apostle Paul. (“Trophimus have I left at Miletum sick” II Timothy 4:20), contrary to the Kathryn Kuhlman charismatics.

Paul “kept the faith” II Timothy 4:7. The ignorant charismatic always argues that “you don’t have enough faith,” (the Kuhlman excuse). My parents belonged to the “church,” worked in the “Zion Industries” owned by the “church” for very meager wages, and were very obedient to the rules and doctrines taught, which included “no doctors.” My mother died in March 2000, at 101 years of age! She was brought to Zion by her mother, who had heard of the “wonders” of Dowie, as my grandfather on my father’s side, brought my father to Zion, so that my father could be “healed” of his severe crippled condition that he was born with. My grandmother on my mother’s side, died of cancer at age 89. My grandfather died of palsy.

I am telling this history because I have spent many years studying the Holy Scriptures, and many texts on charismatics. Dowie is credited with founding the charismatic movement in the United States, which you will find in histories and encyclopedias of the charismatic movement. It is empirically proven, and a historical fact, that the greatest thing that history proves, is that people never learn from history. They make the same errors all over again that people learned before by the school of hard knocks. Why? Because the charlatan can always develop a following from those who do not doctrinally know one end of the Bible from the other! The charlatan, the multi-million dollar TV preachers can count on scriptural ignorance, as did Dowie and Voliva!

I have counted over 40 warnings against charlatans within the scriptures transcribed by the Apostle Paul alone. The four Gospels, and Acts, are major treatises on the same theme, yet the charismatic, ecumenical movement is a multi-billion dollar gold mine for the leaders of the charismatic movement! Dowie, and Voliva knew what a gold mine “divine healing” is, and as a consequence developed a great money making charade for those who did not understand, or study the Holy scriptures from cover to cover.

The gullible of Zion lived under old testament laws, and not under the grace that God gives in the doctrines of the Apostle Paul. We call them “Matthew Christians.” They never got as far as Acts chapter 9, Romans 15:8, & 16, Acts 15, Acts 20, or Galatians chapter 2 in understanding the differences in doctrine for the Gentiles. “But he answered and said, I am not sent but unto the lost sheep of the house of Israel” (Matthew 15:24). “Howbeit for this cause I obtained mercy, that in me first Jesus Christ might shew forth all longsuffering, for a pattern to them which should hereafter believe on him to life everlasting” (I Timothy 1:16).

The Matthew Christian, and the charismatic in their ignorance of the Holy Scriptures, have no concept of the differences between Paul's ministry to the Gentiles, and Christ's ministry to the "lost sheep of the house of Israel." I can write a book about the false teachings of Zion, Illinois, which in great respect are being mimicked by charlatans today. But most people will not sit down and carefully and prayerfully search the scriptures daily to see whether those things are so (Acts 17:11). As a consequence you have the Karol Wojtylas, the Billy Grahams, the Oral Roberts, to mention just a few of the charlatans and blasphemers of God's word.

While Paul teaches us: "Whatsoever is sold in the shambles, that eat, asking no question for conscience sake: For the earth is the Lord's, and the fulness thereof" (I Corinthians 10:25,26), the rules of salvation for the people of Zion included the Levitical law of not eating pork, or any animal with uncloven hoof, or that did not chew the cud, or any unscaly fish.

We were taught that we lived on a "flat saucer shaped earth," that you might fall off the edge of the saucer shaped earth, and that the sun sailed over the saucer shaped earth at an altitude of about 30 miles. Please do not think I believe this teaching.

Voliva was an attorney by profession. He knew how to snow people into thinking he knew what he was talking about. He had a vast following and a big money income, and literally had a great voice of authority. He would pray for about one hour, and then preach for another 3 to 4 hours! Not everything he said was wrong, for how else can a charlatan appear to be a sheep, instead of the wolf that he is? "For I know this, that after my departing shall grievous wolves enter in among you, not sparing the flock" (Acts 20:29).

In 1937, when I was 9 years old, and the huge old temple was still standing, there was a janitor by the name of Steiner who maintained the old temple with its capacity to seat thousands, and who's wife fell terminally ill. He begged Voliva to come and "heal" his wife, but to no avail. (Voliva knew he couldn't heal a hangnail, if he laid hands, poured oil, and prayed all night!) The janitor's wife died. (If an M.D. could have done anything, or even relieved her pain; yet the church law was NO DOCTORS.) The very distraught janitor's son, because of the loss of his mother, torched the huge temple, and went to prison for arson, but Voliva got away with his con game, and got the gullible faithful to put up the money to build a new auditorium!

My parents continued working in the Zion Industries, marching around the barrel on Sundays, to the oompah, oompah, of the Zion band, in church, in front of Voliva, to clean out the money in their pockets to support Voliva's winter trips to his estate in Miami. He would return in

the spring to his suite of rooms in the Zion hotel, with his liveried chauffeur, limousine, cooks, butlers, and maids, to preach to the faithful.

In 1942, Voliva returned to Zion, to preach his spring message. He had received bad news from his doctor in Miami. He was not long for this world! I was 14 years old as I watched and heard Voliva's confession before the faithful followers, and the orchestra, the band, the huge white robed choir, and the 12 black robed "apostles" who conducted the services during the winter months in Voliva's absence. Voliva confessed his hypocrisy, not only about "divine healing" and "NO DOCTORS," and furthermore, that he embezzled church money. He got away with it. No prison, no prosecution, he simply died that summer in his suite of rooms, while the Steiner boy languished in prison!

This scene virtually closed the "Christian Catholic Apostolic Church of Zion, Illinois." I watched as Mintern, Voliva's assistant, who sat directly behind the pulpit, yanked Voliva's robe and kept saying "SHUSH" to get Voliva to shut up, but to no avail. It suddenly got through Voliva's head that he was now going to stand before God, and that he could not con God as he did the gullible faithful he had conned for years, and who had supported him financially for all those years.

My father, as did many others, left the Zion church in disgust at having been conned for all these years! Voliva, in his confessions, because he was a con man, did not warn the faithful to start studying God's word, and not man's word. My father died a severe cripple a few years ago, a brother in Christ, even though he still had some problems in not discerning the teachings of men over God's Holy and eternally preserved word.

This brief history of Zion, Illinois, is painful to many people who lived under the "church" teachings of Voliva. I was recently "excommunicated" by an internet group of people from Zion, Illinois, because they did not want to hear about the history of Zion and the teachings of men, versus the Holy Scriptures, which need to be kept in mind as historical facts; about what God has to say versus what contemporary charlatans have to say, who claim to be "called to preach," and that they are "preaching God's word" when just the opposite is true!

They tell me, "Let bygones be bygones." Now that is true to God's word, we need to forgive one another, even as Christ also forgave you (Colossians 3:13). But the Apostle Paul, in transcribing God's word, wrote: "Walk circumspectly, not as fools" (Ephesians 5:15). The great whore has persecuted, tortured, and murdered millions of people, and says: "Let bygones be bygones." But in studying the Holy Scriptures we understand what the great whore is doing in the visible church today, and the ecumenical movement.

The old whore is now merging with Lutherans, and Anglicans, and the Assemblies of God, which came out of Dowie's organization in Zion. The charismatic movement is one of the great vehicles that the whore uses in bringing the gullible under its skirts.

Merging with the whore does not mean that the whore will change. Study Revelation chapters 13 to 19, and II Thessalonians chapter 2. The opposite is true. We need to study history with considerable discernment, and we need to study God's Holy word with a believing mind:

“Study to shew thyself approved unto God, a workman that needeth not to be ashamed, rightly dividing the word of truth.”

Holy Bible, II Timothy 2:15

Quotable Quotes

Do not pray for easy lives; pray to be stronger men. Do not pray for asks equal to your powers; pray for powers equal to your tasks. Then the doing of your work shall be no miracle, but you yourself shall be a miracle. Every day you shall wonder at yourself, at the richness of life which has come to you by the grace of God.

– Phillips Brooks, (1835-1893)

2000-year old ice 3 kilometers down?

The researchers extracted cores of ice from the Greenland ice sheet to a depth of 3,000 metres. Each contained perfectly-preserved layers of frozen ice representing snow falls from the past 1,500-2,000 years.

– <http://thescotsman.co.uk/uk.cfm?id=TS00137851&d=News&c=uk&s=7>

PANORAMA

Sterilizing Mars

When Viking landed on Mars in 1976, it conducted a search for biological activity by scooping dirt into a container. The dirt was then heated and a detector looked for organic molecules cooked off by the heat. No life was found. Indeed, the experiment continued by “fertilizing” the soil to see if any organics in the soil would grow. It was found that the soil apparently destroyed organic molecules.

In a paper that appeared in the 15 September issue of *Science*,¹ A. S. Yen et al. report the first experimental evidence showing how organic molecules can be destroyed on Mars. Yen and his fellow researchers exposed mineral grains resembling those in Martian soil to ultraviolet radiation in a gas similar to the Martian atmosphere. They observed that oxygen radicals form on the surfaces of the minerals. Indeed, the radicals even survive at Martian temperatures. They are reactive enough to decompose organic molecules, exactly as observed by the Viking lander.

Of course, Martian life advocates insist that the 1976 experimental results are flawed, or that the experiments were not sensitive enough to find the Martian life. Nevertheless, Yen’s results are simple and fit the data more convincingly than the interpretations of the life-on-Mars advocates.

Change the speed of light and charge

Among creationists, one of the most controversial ideas is the idea that the speed of light has not always been constant. Within the past year, several secular researchers have proposed that the speed of light was different in the past. Indeed, the inflationary model’s chief characteristic is that the speed of light has not been constant in the past.

Now, in a paper by H. Vucetich, S. Landau, and P. Sisterna of La Plata, Argentina,² the claim is made that if the speed of light is not constant, then charge conservation is violated. In effect, since a light wave is made of oscillating magnetic fields, an electric current moves back and forth along the path of the wave. If the speed of the wave decreases then the current will deposit a positive charge faster than it can pick it up to

¹ Yen, A.S., S.S. Kim, M.H. Hecht, M.S. Frant, and B. Murray, 2000. “Evidence that the Reactivity of the Martian Soil is Due to Superoxide Ions,” *Science*, **289**(5486):1909-1912.

² Astrophysics e-print 00017108, <http://xxx.lanl.gov>.

send it back in the opposite direction. The net result is that positive charges are created along the light path as the light wave moves forward. This presents a serious difficulty for theories which have the speed of light continually decreasing as the universe expands. It requires that the negative charge of an electron will decrease or else electrons must be changed into protons. So far, experiments have failed to show such.

Nevertheless, if the speed of light was higher at the start of the universe and then dropped suddenly to a constant value, then several puzzles *are* solved. Particularly, this explains why the universe is made up of matter (regular matter) instead of antimatter. (Regular matter and antimatter annihilate one another upon contact. Half a gram of antimatter reacting with half a gram [1/50th ounce] of matter would explode with the force of an atom bomb.)

Despite the difficulties noted by the Vucetich et al. paper, evidence keeps building for the theory that the speed of light was once higher than it now is. From a Biblical perspective, this follows from the Bible's statement that God stretched out the heaven. Such stretching is expected to change the speed of light, and that, in turn, would age stars and radioactive decay rates, making the universe look far older than it really is.

Evolution is dangerous to your health

Sixteen years ago, I presented a paper at a creationist conference in Cleveland. The paper was entitled "Evolution is Dangerous to Your Health" and presented a synopsis of human disasters caused by belief in the theory of evolution. Lately, another insidious example surfaced.

In a book entitled *Darkness in El Dorado*, by investigative journalist Patrick Tierney, James Neel, the geneticist who headed a long-term project to study the Yanomami people of Venezuela in the mid-60s, is accused of using a virulent measles vaccine to spark off an epidemic which killed hundreds, and probably thousands. Once the epidemic was under way, according to the book, the research team "refused to provide any medical assistance to the sick and dying Yanomami, on explicit order from Neel. He insisted to his colleagues that they were only there to observe and record the epidemic, and that they must stick strictly to their roles as scientists, not provide medical help."

One controversial aspect of the research, which allegedly culminated in the epidemic, is that it was funded by the U.S. Atomic Energy Commission. It was anxious to discover what might happen to communities when large numbers were wiped out by nuclear war. Apparently, Neel was testing controversial eugenic theories. Such theories were heavily promoted in the early part of this century by men such as Freud, Skinner, Dewey,

and Reich. Today, the same theories are promoted by organizations such as the Travistock and the Carnegie Institutes. These play an essential role in this nation's moral decline through the communization of American education.³

James Neel was well known for his research into the effects of radiation on human subjects and personally headed the team that investigated the effects of the Hiroshima and Nagasaki bombs on survivors and their children. According to Professor Terry Turner of Cornell University, who reviewed the proofs of the book, the same group also secretly carried out experiments on human subjects in the United States. This included injecting people with radioactive plutonium without their knowledge or permission.

What does this have to do with evolution? Well, Neel believed that a "natural" human society, as existed before the advent of large-scale agriculture, consisted of small, genetically isolated groups governed by possessors of dominant genes. Specifically, he believed in a gene for "leadership" which he supposed had a "selective" advantage. In such an environment, Neel supposed, male carriers of this gene breed more, reproducing their genes more frequently than less "innately able" males. The result would supposedly be a continual upgrading of the human genetic stock.

This is, of course, demonstrable nonsense. In Ohio and Michigan, where hunting restrictions have led to a gross overpopulation of deer, the deer are suffering from genetic defects caused by precisely the presence of such "leadership" characteristics. Because only bucks (male deer) are to be hunted during hunting season, certain males who are innately able to avoid hunters, sire most of the fawns and end up breeding with their offspring over successive generations.

Hints for the mass particle⁴

Researchers at the Large Electron Positron collider near Geneva, Switzerland, reported the possible detection of a Higgs boson. The Higgs boson is the only undetected particle left of the particle zoo. That is, its existence is predicted by the standard model of particle physics. The Higgs boson is thought to be the source of mass itself.

In the experiment, an electron and its antiparticle, a positron, annihilated each other and produced a particle that decayed into a bottom quark and its antiquark. The decaying particle is thought to be a Higgs boson because a certain amount of energy missed the detector. The missing en-

³ Eakman, B.K., 1998. *Cloning of the American Mind: Eradicating Morality through Education*. (Lafayette, Louisiana: Huntington House Publishers).

⁴ Weiss, P., 2000. "Sings of mass-giving particle get stronger," *Science News*, **158**:294.

ergy is consistent with the notion that a Z boson was created along with the Higgs boson by the annihilation of the electron and positron.

Theories that are hard to believe explain things we cannot see⁵

That “something” we cannot see is that astronomical fudge factor called “dark matter.” Astronomers are sure it exists because its presence, though unseen, explains two anomalies:

- (1) The high circular velocity of the stars and gas in the outer reaches of galaxies. Circular velocities should decrease with distance from the galactic center, just as planet velocities do so in the solar system. They don't, so some gravitational force from some unseen mass must be counterbalancing centrifugal force. (Mark that this is presumptuous! The “force” need not be gravity.)
- (2) Observations suggesting that galaxies formed when the universe was less than a billion years old. The gravitational pull of the visible mass is inadequate to cause this clumping so quickly in the history of the universe.

Many candidates have been proposed to play the dark-matter role. One of the more popular possibilities is that vast sea of neutrinos pervading the cosmos – *if* they really do display just a hint of mass. Two other candidates now on the table are so bizarre that we marvel at the ingenuity of the theorists. One involves exceedingly large particles, the other unbelievably tiny clumps of particles.

At the “giant” end of the size spectrum are *galaxy-size* particles weighing only 10^{-24} times as much as an electron, which is itself by no means large.⁶ It would be hard to experimentally distinguish such ethereal particles from a hard vacuum. A Princeton team, led by W. Hu, asserts that such particles would coalesce into giant globs of “fuzzy,” cold, dark matter. Now if only Hu would tell us how to detect them.

(Pease, Roland: “Globs in Space,” *New Scientist*, p. 5, August 26, 2000.)

⁵ Quoted from Wm. Corliss, 2000. *Science Frontiers*, no. 132, Nov-Dec. p. 2. P.O. Box 107, Glen Arm, MD 21057.

⁶ This comes from the Compton wavelength of a particle. Treating the universe as a particle gives it a particle mass of (and I'm doing this from memory so I may be off a few orders of magnitude) 10^{-63} gm. –*Ed.*

So-called “Q-balls” are also candidates for dark matter. Theorists claim that Q-balls were created during the Big Bang and may still be roaming the universe. Far from being ethereal,

Each one is like “a new universe in a nutshell” [A. Kusenko] says. Inside a Q-ball, the familiar forces that hold our world together don't exist. This has some startling consequences. It means that every Q-ball is on a mission to violate law and order in the universe by assimilating normal matter and compelling it to live by Q-ball rules.

Who can deny the exotic nature of Q-balls after that description? Q-balls are so tiny (about the size of an iron nucleus) and move so fast (about 100 kilometers or 60 miles per second) that they can zip through a planet with scarcely any observable effect. In this elusiveness they resemble neutrinos. As a matter of fact, Japan's Kamiokande neutrino detector, which contains 50,000 tons of water surrounded by a shell of detectors, has been “blinded” several times by the passage of entities that could well be Q-balls. If these bizarre entities do exist, they could be that dark matter that astronomers insist pervades the cosmos.

(Muir, Hazel: “Cosmic Anarchists,” *New Scientist*, p. 22, May 20, 2000.)

Mr. Corliss comments: Can astronomy call itself a science when it entertains theories like those above? Interestingly, in the 1920s, geology journals used almost identical words in connection with another too-bizarre theory: continental drift, which is now a dominant paradigm in geology!

Your editor's comments: From the description of the Q-balls they can be identified as large clusters of Planck particles, the basic particles making up the firmament. A ball of those the size of an iron nucleus would contain about as much mass as the entire universe.

Then, too, the missing mass could be that the forces acting on objects changes with scale. For example, the mass of an elementary particle, subject to quantum mechanics, is inversely proportional to its size ($1/\text{size}$). For every-day objects, planets, and stars, the mass is proportional to volume (size^3). For large objects, where quantum mechanics would again come into prominence, mass it would revert to inversely proportional to size. Assuming a standard, earth-based dependence of mass on volume for such large objects would cause the mass to be over-estimated. Thus,

the missing mass. Indeed, the larger the object, the greater the fraction of missing mass. For example, observed orbits of stars in the Milky Way and galaxies show about ten times more mass than can be seen by starlight. For a cluster of thousands of galaxies, this jumps to about 100 times as much mass when compared to the mass inferred by star light.

Geocentricity in the eighth grade⁷

This is from a guy on my email list who went to Dr. Ruckman's school and now teaches in a Christian school:

I have to give y'all some thanks. We started covering the solar system in my 8th grade science class today and my kids were their usual apathetic selves. This is the class that just doesn't care. They get good grades but they just don't seem to ever get excited about learning anything, especially in science.

Then on the spur of the moment I brought up the Helio vs. Geo debate. The Abeka *Matter in Motion* teaches the geocentric idea as the Pagan view (exact wording) and the helio as the Christian view. I explained a couple of points on either side.

The class lit up. They were actually excited by the discussion. They were so wound up I told them they could write a paper at least 500 words long defending either the geocentric or the heliocentric view and I would give them extra credit if the quality was outstanding.

The response has been unreal. I had the entire eight grade in the library researching the issue for their entire study hall. I found 8th grade boys searching through their Bibles and concordances for references to the sun and earth. These are the same boys you have to threaten death in order to get them to BRING their Bible to chapel half the time. The discussion had to be banned in other classes because the kids were writing notes and whispering about the issue. A bunch of them have made arrangements on their own to go to a local library together to research the issue.

I have NEVER seen 8th graders go full bore on an topic like this. I couldn't believe this was MY class. I am so grateful to God, it's the kind of day teachers live for.

Anyway, if the discussion had not come up here, I wouldn't know enough to bring it up anyway. I'm still nowhere near geocentric, but if it gets my kids into their Bibles and into science I will sure teach both points of view in my class, and teach them how to discern the truth for themselves.

⁷ Quoted from an email sent to our editor.

So, Brother Teno and the rest of you, you may irritate the dickens out of me, and I might be awfully “gripey” at times, but I am sure glad you bring this stuff up. Thank you.

Evidence that the Milky Way's core is indeed a black hole

For the past five years a group of astronomers have been observing the motions of several stars around an invisible radio source called Sagittarius A* which is the presumed of the black hole. In the 21 September issue of Nature, a group from the University of California at Los Angeles (UCLA) reports measuring the acceleration of three stars towards Sag. A*.

The stars reportedly move at about 840 miles per second (1,350 km/sec) around the mysterious body of some 2.6 solar masses. Although scientists have increasingly viewed the object as a black hole, there is still the possibility that it is a compact star cluster. So far, no definite proof of a black hole has emerged.

The acceleration, however, offers the first item of evidence that the object at the center of the Milky Way is a black hole and not a cluster of dim stars. The evidence suggests that the unseen mass at the galaxy's nucleus is ten times denser than previous observations revealed. As one of the tree stars may have an orbit as short as fifteen years, the team could eventually track the star for an entire revolution about the galactic core.

High-tension power lines and cancer connection identified?

For decades now a debate has raged about whether or not living near high-tension power lines can cause cancer. Last September, a research team from Bristol University found evidence not only for a cause, but evidence that also explained why previous research gave mixed results.

The team's data showed that car exhaust particles become electrically charged by overhead power lines. The charge makes the exhaust particles “sticky,” giving people living close to such lines two to three times the average dose of potentially harmful pollutants in their lungs. Combined with the work of Dr. Alan Preece of the Bristol Medical School, which showed that people living downwind within a quarter mile (500 m) of the lines have a 29% greater chance of contracting lung cancer.

Measurements taken all over Europe showed that all power lines were surrounded by a corona of ions (electrically charged atoms). Ions were carried downwind of the lines, attaching themselves to as many as 500 particles per cubic foot (15,000 per cubic meter) of pollution floating past in the air. When the particles were breathed in, they stuck to the surface of capillaries in the lung.

“We found an excess, particularly lung cancer, in that group of people, who had been living within 400 meters of a line at the time of diagnosis,” said Dr. Preece of his research. He also said that the most surprising result was that the cancers only occurred downwind.

There was no correlation with underground power lines.

The ten major problems with the big bang

The following list was presented in the *Meta Research Bulletin*, produced by Thomas van Flandern, founder of Meta Research.⁸

1. Static universe models fit the data better than expanding universe models.
2. The microwave “background” makes more sense as the limiting temperature of space heated by starlight than as the remnant of a fireball.
3. Element abundance predictions using the big bang require too many adjustable parameters to make them work.
4. The universe has too much large scale structure (interspersed “walls” and voids) to form in a time as short as 10-20 billion years.
5. The average luminosity of quasars must decrease with time in just the right way so that their mean apparent brightness is the same at all redshifts, which is exceedingly unlikely.
6. The ages of globular clusters appear older than the universe.
7. The local streaming motions of galaxies are too high for a finite universe that is supposed to be everywhere uniform.
8. Invisible dark matter of an unknown but non-baryonic nature must be the dominant ingredient of the entire universe.
9. The most distant galaxies in the Hubble Deep Field show insufficient evidence of evolution, with some of them apparently having higher redshifts ($z = 6-7$) than the faintest quasars.
10. If the open universe we see today is extrapolated back near the beginning, the ratio of the actual density of matter in the universe to the critical density must differ from unity by just a part in 10^{59} . Any larger deviation would result in a universe already collapsed on itself or already dissipated.

The speed of gravity

⁸ Van Flandern, Thomas, 1997. "Top ten problems with the big bang," *Meta Research Bulletin*, 6(4), Dec. 15. Meta Research can be reached at: PO Box 15186, Chevy Chase, MD 20825-5186. Phone: 202/362-9176 (Washington, DC), Fax: 202/362-8279, E-mail: metares@mindspring.com, Web: <http://metaresearch.org/>.

Tom van Flandern, who compiled the ten problems listed above, has been quite a gadfly to physics and astronomy. He was an early advocate of an exploding planet, from which the asteroids originated. More recently, though, he's been advocating the instantaneous transmission of gravity.

In 1998, Dr. van Flandern made world news when his article "The speed of gravity – What the experiments say" was published in the prestigious physics journal, *Physics Letters A*.⁹ In his abstract he wrote:

Laboratory, solar system, and astrophysical experiments for the "speed of gravity" yield a lower limit of $2 \times 10^{10}c$ Apparently, Lorentzian relativity better describes nature than special relativity.

In other words, the speed of gravity appears to be at least twenty billion times the speed of light.

In his paper Dr. Van Flandern asks questions such as: "Why do photons from the Sun travel at the speed of light in directions that are not parallel to the direction of the Earth's gravitational acceleration toward the Sun? Why do total eclipses of the Sun by the Moon reach mid-visible-eclipse about 40 seconds before the Sun and Moon's gravitational forces align? How do binary pulsars anticipate each other's future position, velocity, and acceleration faster than the light time between them would allow? How can black holes have gravity when nothing can get out because escape speed is greater than the speed of light, and how can they continue to update their external gravity fields?"

Tom Van Flandern continues the paper to report that gravity has no aberration (aberration is akin to leaning an umbrella into the direction one is walking to keep the raindrops from hitting one's legs). About this, he reports that the effect of aberration on orbits is not seen, and gravity and light do not act in parallel directions. The US Naval Observatory's ephemeris (a table of sun, moon, planet, and star positions) data show that the "Earth accelerates toward a point 20 arc seconds in front of the visible Sun, where the sun will appear to be in 8.3 minutes."

From the analysis of binary pulsar¹⁰ changes in orbit, Van Flandern places a lower limit to the speed of gravity some 20 billion times the

⁹ Van Flandern, Tom, 1998. "The speed of gravity – What the experiments say," *Physics Letters A*, **250**:1-11.

¹⁰ It is possible that stars can collapse under their gravitational fields so much that their protons and electrons can no longer exist as separate entities but must coalesce into neutrons. Even the neutrons can be squeezed into larger and larger neutron configurations. A star made up of neutrons is called a neutron star. These stars, roughly ten miles in diameter with as much mass as the sun, can spin tens to hundreds of times per second. If seen nearly pole-

speed of light. From solar system considerations, it is a bit lower, namely more than a billion times the speed of light (10^9c).

More material relating to Pioneer 10 and pulsar

The following is quoted from the abstract of an article which identified two 25.3-day periods found in Doppler data from Pioneer 10 and timing data of pulsar PSR B1257+12 to be of solar origin.

Doppler data generated with the Pioneer 10 spacecraft's radio carrier wave between 1987 and 1995 show a 25.3-day periodicity which is related to solar rotation. The timing data of the pulsar PSR B1257+12 also show a periodicity of 25.34 days, which has been explained as a signature of the pulsar's barycentric motion in response to the existence of a small moon-like object. However, because PDS B1257+12 is located close the ecliptic and because the timing variations are in the range of microseconds, it is likely that the pulsar signal is affected by the same mechanism acting on the Pioneer 10 Doppler data. Hence, the hypothesized inner planet around PSR B1257+12 is probably an artifact of the heliosphere.¹¹

In other words, as the sun turns on its axis with a period of about 25.3 days, its magnetic field affects the solar wind by different amounts at different times. This causes the changes in Doppler shift of Pioneer 10 and now, apparently, changes in the pulsar's Doppler shift; both reflect the rotation of the sun.

This phenomenon exhibited in Pioneer 10's Doppler data is not the same as mentioned in previous issues, where Pioneer 10 seems to be slowing down more than expected from gravitational theory.

on, they seem to flash in the radio spectrum. Such neutron stars are called pulsars. Two pulsars in orbit about one another are called a binary pulsar.

¹¹ Schere, K., H. Fichtner, J.D. Anderson, & E.L. Lau, 1997. "A pulsar, the heliosphere, and Pioneer 10: probable minicking of a planet of PSR B1257+12 by solar rotation," *Science*, **278**:1919.

CREDO

The Biblical Astronomer was founded in 1971 as the Tychonian Society. It is based on the premise that the only absolutely trustworthy information about the origin and purpose of all that exists and happens is given by God, our Creator and Redeemer, in his infallible, preserved word, the Holy Bible commonly called the King James Bible. All scientific endeavor which does not accept this revelation from on high without any reservations, literary, philosophical or whatever, we reject as already condemned in its unfounded first assumptions.

We believe that the creation was completed in six twenty-four hour days and that the world is not older than about six thousand years. We maintain that the Bible teaches us of an earth that neither rotates daily nor revolves yearly about the sun; that it is at rest with respect to the throne of him who called it into existence; and that hence it is absolutely at rest in the universe.

We affirm that no man is righteous and so all are in need of salvation, which is the free gift of God, given by the grace of God, and not to be obtained through any merit or works of our own. We affirm that salvation is available only through faith in the shed blood and finished work of our risen LORD and saviour, Jesus Christ.

Lastly, the reason why we deem a return to a geocentric astronomy a first apologetic necessity is that its rejection at the beginning of our Modern Age constitutes one very important, if not the most important, cause of the historical development of Bible criticism, now resulting in an increasingly anti-Christian world in which atheistic existentialism preaches a life that is really meaningless.

If you agree with the above, please consider becoming a member. Membership dues are \$20 per year. Members receive a 20% discount on all items offered for sale by the *Biblical Astronomer*.

To the law and to the testimony: if they speak not according to this word, it is because there is no light in them.

- Isaiah 8:20

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