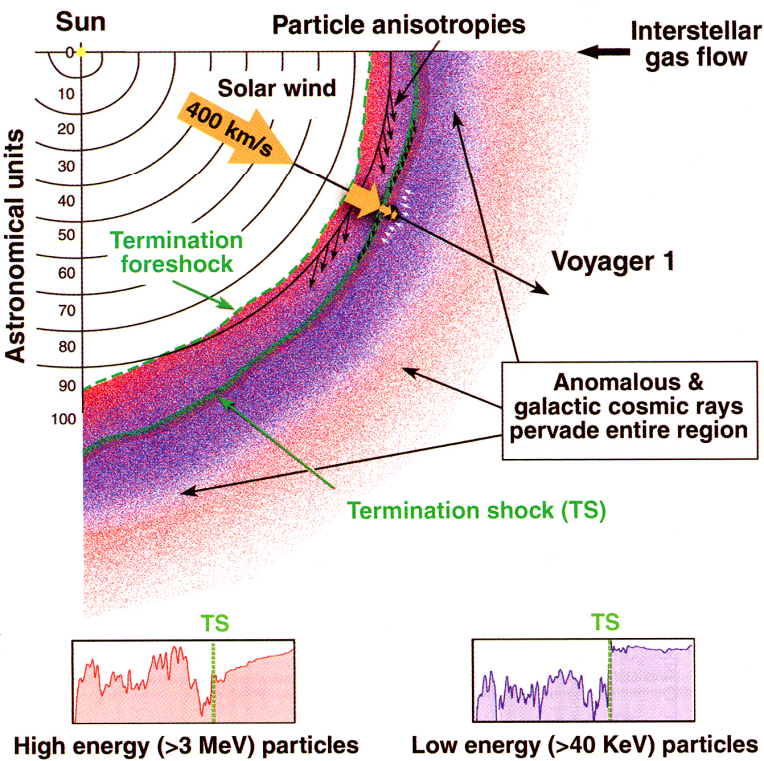


THE  
BIBLICAL  
ASTRONOMER

FALL 2005



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**Front Cover:** In December 2004, Voyager 1 crossed the termination shock front; where the wind from the sun abruptly slows down to begin its merger into the gas between the stars. At the time, Voyager 1 was 95 times as far from the sun as is earth (astronomical units). For comparison, Pluto orbits 40 a.u. from the sun.

# THE BIBLICAL ASTRONOMER

Volume 15, Number 114  
FALL 2005

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## EDITORIAL

In this issue, we publish another article by Dr. Strouse, this time on the astronomy in the book of James. Some surprising things about Scripture are revealed in this article.

Next, we have an article by a Filipino, Periander Esplana. Entitled "What is the Formula of all Things," the article looks at man's attempt to discover a philosophy that would unify all disciplines. It presents a layman's view of the attempt to derive the Grand Unified Theory, the thing Einstein spent most of his life after relativity pursuing (besides women, that is).

We also include a report on the discovery that the "remnant of the big-bang" has in it a temperature irregularity that puts the solar system, if not the earth, at the central point of creation. Few scientists think it literally is geocentric; most think it either a coincidence or some previously undetected and unknown phenomenon in the solar system itself. Of course, we conclude that the geocentric interpretation is the correct one. Why? Because it alone, of all the alternative solutions, supplies the cosmos's musical chord with its tonic.

Another report of special interest is the failure to detect dark matter in the Milky Way. This is a serious setback to modern cosmology's attempts to preserve the law of gravity by postulating that most of the mass in the universe is unseen in the form of "dark matter."

Finally, we have another article on the debate about whether man went to the moon or not. Many Christians, including some geocentrists, have been deceived into believing that NASA perpetrated an elaborate hoax on the world by faking a trip to the moon. Relying on emotion rather than reason, it is easy to be deceived. But what would be gained? Does the USA really want to go down in history as the greatest liar in the world? After all, the truth will out once someone "really" goes to the moon. The problem is that he hoax advocates became millionaires by their hoax. Do they believe there is no God in heaven who will hold them responsible? This article deals with the camera used by the astronauts and with the van Allen Belts. In the process, we also unlearn some of the myths associated with radioactivity.

## NO DARK MATTER IN THE GALAXY

A paper by Cr    , Chereul, Bienaym  , and Pichon, found no “dark matter” in the disk of Milky Way.<sup>1</sup> The study analyzed the distribution of nearby stars in phase space<sup>2</sup> mapped by Hipparcos, and was published in *Astronomy and Astrophysics* in 1998. If there is no dark matter inside the disk of the Milky Way, then it is likely that there is no dark matter anywhere else in the universe.

When astronomers first looked at the orbital speeds of stars about the center of the Milky Way, they found that the mass derived from those orbits did not match the mass indicated by the light radiating from the stars inside the orbit. The former exceeded the latter up to ten times or more. What the Hipparcos result shows is that this “missing mass,” as the dark matter used to be called, is not due to the presence of dark matter. “Dark matter” is a mysterious form of matter imagined to be inherent in the fabric of space but undetectable only from orbital dynamics.

If dark matter does not exist, another explanation for the missing mass must be found. One proposal is that matter may shade gravity. In that scenario, the gravitational force felt would be less than expected because the matter inside the disk of the galaxy would shield the orbiting star from the gravitational effect of stars further in to the center of the galaxy. But in that case, the orbital speed would be slower than expected, instead of the observed faster than expected.

A more likely explanation rests on the observation that quantum mechanics not only dominates in the realm of the small, i.e., the atomic realm, but it also dominates at the opposite end of the size spectrum, in the realm of the very large. Thus a proton, though more massive than an electron, is smaller than the electron. This is the opposite of what we see in our everyday world, where the larger object is usually more massive than the smaller. In the quantum realm, mass depends on the inverse of size, that is, on  $1/r$ , where  $r$  is the size of the object. If gravity is of the form:

$$F = - Gm_1m_2/r^2 + Kf(r)$$

where  $f(R)$  dominates for small and large values of  $r$ , and is negligible in between, then the observations are explained without invoking mysterious matter.

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<sup>1</sup> It may be found at: [http://xxx.lanl.gov/PS\\_cache/astro-ph/pdf/9709/9709022.pdf](http://xxx.lanl.gov/PS_cache/astro-ph/pdf/9709/9709022.pdf).

<sup>2</sup> Phase space is a 7-dimensional space. It has the three normal x, y, z dimensions as well as the momentum in each of those three directions plus time as the seventh dimension.

# JAMES AND ASTRONOMY

(James 1:13-18): All the Christian Needs to Know  
about Solar Parallax

**Dr. Thomas M. Strouse**

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The Bible is the self-revelation of God. It reveals the absolute truth about the Lord and His creation. The Scriptures give special revelation about the Lord Jesus Christ as Creator and Savior. The Bible writers build their teaching of the great redemptive truths upon the physical realities of the created heavens and earth (e.g., Ps. 19:1-14; Mal. 4:2).<sup>1</sup> James<sup>2</sup> is no exception as he based several truths about God and sin's temptation upon the physical objects and movements within the created heavens. This simple believer and member of the holy family of Joseph and Mary had a thorough understanding of the workings of the cosmos and illustrated the Lord's perfections in contrast to sin. Using several technical terms historically associated with astronomy, James revealed a biblical cosmogony upon which he taught redemptive analogies. He used at least four terms that relate to astronomy, including "*do* [not] *err*" (*planasthe planaſqe*), "*lights*" (*ton photon twh fw̄twn*), "*variableness*" (*parallage paral lagh*), and "*shadow of turning*" (*tropes aposkiasma trophj aposkiasma*). The terms, when used biblically, give the absolute cosmological foundation upon which redemptive truths are understood. Since the Apostle John assured his audience of local church members that "*ye know (oida [oida] = absolutely) all things*" (I Jn. 2:20), it follows that Christians, with the Scriptures and the Holy Spirit (I Jn. 2:27), may have absolute knowledge not only about redemptive truths but also about His creation.<sup>3</sup> This essay will show exegetically that James used several analogies from creation to teach that the Lord does not tempt men to sin. The primary import of this passage teaches that God is unchanging in His goodness toward

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<sup>1</sup>For instance, the Lord Jesus Christ taught many truths from parables, building a spiritual truth upon a physical truth. In Mt. 13 he assumed the physical reality of seeds, tares, leaven, treasure, pearls, and nets, and taught spiritual realities built upon these items from the natural realm.

<sup>2</sup>Of the four men named James in the New Testament (NT), only the half-brother of the Lord Jesus Christ (Mt. 13:55) is the plausible explanation. James believed in Jesus as Savior only after His resurrection (Jn. 7:5; I Cor. 15:7), was counted among the apostles (Gal. 1:19), and became a leader in Jerusalem (Acts 15:13).

<sup>3</sup>The Lord's *ekklesia* (*ekklesia*), the visible assembly of immersed believers with pastors and deacons is "*the pillar and ground of the truth*" (Mt. 28:19-20; I Tim. 3:15), needs only the authoritative and sufficient Scriptures to understand all truth (II Tim. 3:16-17).

man. The secondary emphases relate to biblical revelation about planets, stellar lights, solar parallax and tropic movements. James revealed under inspiration all the absolute knowledge the Christian needs to know, and for that matter can possibly know, about these astronomical phenomena.

## Context

James wrote his epistle to Christian Jews who were scattered about, although meeting in synagogues and organized as local churches (cf. Jam. 1:1; 2:2; 5:14). These early churches were undergoing severe persecution (cf. Acts 8:1-4; 11:19; 12:1 ff.) and needed the divine perspective concerning trials and temptations. In the aforementioned *pericope* (1:13-18), James lists five reasons why God is not the source for the temptation to sin. Having declared that trials (*peirasmois*) are to be endured (1:2-12), James now asserted that temptations are to be resisted. He needed to instruct his audience as to the source for the enticement to evil.

The writer's first argument dealt with the nature of God (v. 13). God's holy nature perfectly resists sin (cf. Lev. 11:44-45). He has no fallen nature to submit to the appeal of evil (literally "evils"). He "*cannot be tempted with evil, neither tempteth (peirazomenos) he any man,*" James declared. The nature of the Godhead is separated absolutely from all moral wickedness. Why would a Christian Jew think that the holy God of Abraham, Isaac and Jacob would tempt a believer to ungodliness?

The second argument James established was that temptation comes from within man.<sup>4</sup> Using the present passive verb "*is tempted*" and the two present passive participles "*is drawn away*" and "*enticed*," the writer focused on the culprit--"*his own lust*." Man's Adamic nature (cf. Isa. 51:5; 58:3; Rom. 3:23) lures and snares its victim, the man himself. Following the genealogical motif, James expressed the origin and destination of sin. When temptation comes to man's lust, his old nature conceives and gives birth to sin. When the sin is mature, it bears offspring in terms of death. Man is the culpable one, and not God, with regard to the enticement to sin.

Next, James warned his audience about being deceived (I Cor. 6:9; 15:33; Gal. 6:7). The present passive imperative "*err*" (*planasthe*) with the negation (*me mh*) suggests that his audience was actively engaged in thinking of God as the author of temptation. The verb *planao* is translated twenty-four times in the AV as "*deceive*," six times as

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<sup>4</sup>This statement does not ignore that Satan is the great tempter and who knows how to appeal to the lusts of Adam's sons (Mt. 4:1, 3).



“err,” five times as “go astray,” twice as “seduce,” once as “wander,” and once as “be out of the way.” It is the root from which the noun “planet” comes, and a planet is an astral object which “wanders” around the sun. James’ audience was allowing itself to go astray in deception about God’s role in temptation. James used an apt illustration for Christians whose theological perspective strays from the Scriptures (cf. also Jam. 5:19). They were like “wandering stars” that go astray (cf. Jude 1:13).

In contrast to the deceived perspective some held, James asserted that the fourth reason God was not the author of temptation is His nature of goodness (v. 17). Only good comes from the Lord (Ps. 34:8) as His act of giving (*dosis*)<sup>5</sup> is good and His gift (*dorema*) is perfect. His benefits are from above, rather than “earthly, sensual, devilish” (cf. Jam. 3:15), descending from the loving Heavenly Father. To illustrate the magnitude of the Lord’s beneficence, James affirmed that God, as “the Father of lights” (*patros ton photon patroj twh fw̄twn*),<sup>6</sup> created the astral lights known as the sun, moon, and stars for man’s continued blessing (cf. Gen. 1:14-18). But the Lord God, unlike the sun, has no variableness (*parallage*)<sup>7</sup> or shadow of turning (*tropes aposkiasma*).<sup>8</sup> The sun’s apparent movement from the perspective of observers on earth at two different points simultaneously or its “parallax,” and its movement above and below the equator (cf. Rom. 8:39) or its “tropic,” are observationally indiscernible. Nevertheless, the Lord never changes (cf. Mal. 3:6) in contrast to the indiscernible parallactic angle and tropical movement of the sun.

James concluded with his fifth argument that God does not entice to temptation. The Lord is the God of creation not destruction.<sup>9</sup> His will includes begetting (cf. v. 15) man through the instrumentality of the word of truth (cf. II Cor. 6:7; Eph. 1:13) for regeneration (cf. Jn. 3:3, 5). James assured his audience that God’s purpose was to give them eternal life through the new birth so that these Christian Jews would become firstfruits (cf. Ex. 34:22; Lev. 23:10) of the anticipated greater harvest of mankind (cf. Rom. 11:25). James effectively repudiated any notion from his audience that God tempts man to sin. He

<sup>5</sup>Cf. Phil. 4:15.

<sup>6</sup>Cf. Ps. 84:11; Mal. 4:2; Eccl. 12:2. God is likened to the sun and He created the lights.

<sup>7</sup>This biblical *hapax legomena* (word used only once, although compare II Kings 9:20 [LXX]) refers to change or variation. Lexicographers such as Arndt and Gingrich cite ancient usage of *parallage* in Aeschylus and Plato. William F. Arndt and F. Wilbur Gingrich, *A Greek-English Lexicon of the New Testament and Other Early Christian Literature* (Chicago: The University of Chicago Press, 1957), p. 625.

<sup>8</sup>These two nouns are *hapax legomena* and form the genitive construction. In this case the genitive is one of cause, “a shadow because of change.”

<sup>9</sup>Cf. Lk. 9:56: “For the Son of man is not come to destroy men’s lives, but to save them.”

based his arguments on the biblical nature of God, man, and the cosmos. As his audience was deeply inculcated in biblical knowledge based on the OT Scriptures, they would have understood James explicit and implicit teaching, including his cosmological analogies. The remainder of this essay will address the implications of James' biblical model for his cosmological analogies and will repudiate evolutionary theories that contradict this model.

### **James' Cosmology**

Because of James' early childhood education from his godly parents Joseph and Mary, he would have learned and understood the biblical teaching concerning the Old Testament (OT) cosmology. His epistle is replete with references to twenty-two OT books and numerous analogies from the natural realm, including vegetation, procreation, astronomy, animal husbandry, anatomy, hydrology, etc. He built his spiritual truths on the reality of the natural realm, in which he had a solid biblical education. James assumed his audience would have a basic understanding of the cosmological terms and expressions he employed in his analogies. Concerning the origin and structure of the created heavens and earth, James understood the following Scriptural truths.

1. James knew that God created the heavens and earth from no existing material during the creation week (cf. Gen. 1:1; Heb. 11:3).
2. On the first day He created a darkened sphere (cf. Isa. 40:22; Prov. 8:27) of water called earth, and put His Spirit in motion over the surface of the earth, illuminating the sphere as He moved over it as the light source (cf. Gen. 1:2; Ps. 104:2).
3. On the second day God created the firmament (= Heavens [dual ending on Heavens means this refers to only the atmosphere and stellar "outer space"]) and placed it between the waters under (i.e., the earth) and the waters above the firmament, the outer limit of His physical creation (cf. Gen. 1:6-8; Ps. 148:4).
4. By the end of the third day the cosmos was clearly geocentric, with the light source in the heavens moving around the stationary earth (cf. Gen. 1:2-13).
5. On the fourth day, God created and put the greater light, the lesser light and stars in the firmament for the benefit of the earth. The earth was distinct from the revolving heavens with its various component parts, such as sun, moon, and stars. These moving lights became the basis for the daily, seasonal and yearly light sources for the stationary earth (cf. Gen. 1:14-18).

6. The remainder of the OT Scripture builds upon the revelatory truth of the creation week, consistently teaching that the earth is stationary and the heavens, including the sun and stars, move around it.
7. James knew that from Joshua's perspective the sun and moon moved phenomenologically around the earth (cf. Josh. 10:12), but he also knew that from God's perspective, Who is outside of His creation and Who declared absolutely that the sun and moon moved, and He caused them to stop (cf. Josh. 10:13; Hab. 3:11).
8. James knew that the author of Judges taught absolutely that the stars moved through their respective courses in the heavens (cf. Judg. 5:20).
9. James knew that King David taught absolutely that the sun moved through its circuit as a racer around the track (cf. Ps. 19:4-6).
10. James knew that wise Solomon taught absolutely several natural phenomena moved relative to the stationary earth, including the sun, wind, and rivers (cf. Eccl. 1:5-7).
11. James knew that the prophet Isaiah recorded absolutely that the shadow of the sun moved ten degrees backward as a cosmological sign (cf. Isa. 38:8).
12. James knew that the psalmist Asaph revealed absolutely that the sun rose and went down relative to the stationary earth (cf. Ps. 50:1).
13. James knew that Eliphaz declared absolutely that God walked in "the circuit of heaven" (cf. Job 22:14).
14. James knew that the OT Scriptures taught absolutely and consistently that the sun, moon, and heavens moved relative to the stationary earth, with the exception of the Lord's shaking the earth, along with the heavens, during the Tribulation (cf. Job 38:14; Isa. 13:13; and 24:19-20).
15. James knew that God affirmed absolutely that the heavens could not be measured accurately and absolutely (cf. Jer. 31:37).<sup>10</sup>

### **The Problem of the Parallax**

Since the Lord's stepbrother used the Greek noun *parallele* from which "parallax" comes, it behooves the Christian to know what the biblical writer meant to be able to refute false theories. James compared God's absolute lack of variation with the indiscernible "parallax" of the sun from the observer's perspective. Man, who cannot physically measure the real parallax angle of the sun, should believe by faith

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<sup>10</sup>Thomas M. Strouse, "Biblical Geocentricity," *The Biblical Astronomer* 109 (2004): 69-89.

that the Lord is absolutely immovable with regard to fulfilling His promises.

## History of Parallax

The Greek word James employed means “variation, change, alteration or vicissitude.”<sup>11</sup> In the context it seems he contrasted God’s lack of parallax with that of the sun’s change, whether apparent or real. It may refer only to the sun’s diurnal, annual and tropical movements in the heavens. Mayor asserts, “We may therefore take the word to express the contrast between the natural sun, which varies its position in the sky from hour to hour and month to month, and the eternal Source of all light.”<sup>12</sup> However, the writer may have referred to the *vox technica* of astronomy, acknowledging the angle of parallax for the simple triangulation calculations necessary for distances. Solar parallax refers the sun’s apparent shift when viewed simultaneously from two different vantage points.<sup>13</sup> An astronomical definition of parallax is the “apparent displacement of an object due to a motion of the observer.”<sup>14</sup> The simple experience of parallax would occur when one puts his thumb over an object viewed from a distance and attempts to view the object with one eye closed and then the other. The thumb seems to “move” back and forth, first blocking the view of the object and then moving off of the object when viewed by the other eye. Parallax produces angles from which distances may be determined through trigonometry. The trigonometric parallax method, or triangulation, is the foundation for astrometry, the measurement of star distances.

The sun’s parallax is of utmost importance to evolutionary astronomers since it would give not only the alleged distance from earth to sun, but also would establish the Astronomical Unit (AU).<sup>15</sup> The

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<sup>11</sup>H. G. Liddell, *An Intermediate Greek-English Lexicon* (NY: Harper & Brothers, Publ., 1899), p. 599.

<sup>12</sup>Joseph B. Mayor, *The Epistle of St. James* (Grand Rapids: Zondervan Publ. House, 1954), p. 60.

<sup>13</sup>The sun’s parallactic movement is apparent and not real since the observation points are in two different locations. The attempt to measure the sun’s parallax is only for the purpose to determine angles and distances. In order to determine the height of an isosceles triangle, one would have to know any two consecutive sides or angles: side, angle, side (SAS) or angle, side, angle (ASA). The sun does have real motion against its background (i.e., the constellations), although heliocentric astronomers term this “apparent motion.”

<sup>14</sup>George O. Abell, *Exploration of the Universe*, (Chicago: Holt, Rinehart and Winston, 1974), p. 688.

<sup>15</sup>The distance from the earth to the sun has been estimated to be about 93,000,000 miles and has become the “absolute” basis for astrometry as 1 AU. Backhaus lists five reasons astronomers want to know the sun’s parallax. 1) The sun’s distance from earth would help determine the magnitude of the solar system. 2) Solar system distances help determine astrophysical properties of the sun and planets. 3) Gravitation factored into these

ancient Greek astronomers attempted to understand the phenomena of the heavens. For instance, Aristarchus of Samos (310-230 BC) tried to determine the sun's distance through somewhat accurate calculations of the moon's phases, concluding that the sun was about twenty times as distant from the earth as the moon. Furthermore, he determined the relative sizes of the earth, moon and sun, postulating that the earth must rotate upon its axis and revolve around the stationary sun.

Other ancient Greek astronomers such as Hipparchus (c. 160-127 BC) and Ptolemy (2<sup>nd</sup> century BC) made further calculations to determine the relative distance of the moon from the earth through the use of eclipses. Although these astronomers made refined advances based on previous work, they rejected the hypothesis that the earth rotated and revolved around the sun. The major problem the ancients had in determining absolutely the distances of astral objects was the severe limitations placed on geometric triangulation. The base for their triangle was the diameter of the earth at about 8,000 miles. Because of the far distance even to the moon, the triangle was "long and skinny." Two of the angles of the triangle were almost 90 degrees each, producing near parallel sides for the triangle. The truth of Jeremiah's prophecy that the heavens could not be measured absolutely held firm (cf. Jer. 31:37). Until the time of the Reformation, (16<sup>th</sup> century,) astronomers were complacent with their mathematical limitations and Christians were satisfied with their biblical geocentricity.

### The Need and Result of Solar Parallax

Through the influence of the notion of *Sol Invictus* the Roman Empire prepared the way for incipient heliocentricity,<sup>16</sup> which finally blossomed by the work of Copernicus (AD 1473-1543), Kepler (1571-1630), and Galileo (1564-1642). Copernicus, greatly influenced by Greek philosophy and astronomy, rejected the geocentrism of the Bible and posited the heliocentric theory that his book *De Revolutionibus Orbium Coelestium* (1543) declared. Kepler attempted to calculate the parallax of Mars, which planet is far closer than the sun, to measure the sun's distance (1600). Galileo, of course, popularized Copernicanism in his *Dialogo dei Due Massimi Sistemi* in 1632. Later astronomers attempted to refine the sun's parallax by observing the transits of the planets Mercury and Venus across the sun's disc.

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distances help determine planet's positions more accurately. 4) This leads to better astronomical navigating. 5) Stellar parallax helps determine the size of the universe. U. Backhaus, "Astronomy On-Line Project: Measuring the Sun's Parallax" <http://didaktik.physik.uni-essen.de, 7-4-05>, pp. 2-4.

<sup>16</sup>Gerardus D. Bouw, *Geocentricity*, (Cleveland: Association for Biblical Astronomy, 1992), pp. 153-155.

The theory of heliocentricity postulates that the earth revolves around the sun yearly in an orbit having a diameter of 186,000,000 miles. This anti-biblical and unproved assumption now gave new momentum to triangulation for distances because the base line was no longer the earth's diameter of 8,000 miles but its orbit of 186,000,000 ( $2 \times 93,000,000$ ) miles. This change based on the unproved assumption of heliocentricity, immediately expanded the distances of the stars by the factor of 23,500 times.<sup>17</sup> Friedrich W. Bessel employed this new perspective and measured the parallax of the star 61 Cygni, concluding that it was more than 10 light years from the earth (1838).<sup>18</sup> His work became foundational for measuring the heavens and fostering other speculative alternatives of astrometrics.<sup>19</sup> Although evolutionary astronomers considered Bessel's detection of stellar parallax the *coup de grace* for geocentricity, the biblical writer James implied the reality of solar parallax about eighteen centuries earlier (cf. Jam. 1:17). The simple and biblical fact of the matter is that the stars move diurnally with the sun within the revolving firmament relative to the stationary earth.

The erroneous distances based on heliocentric assumptions, exacerbated by the factor of 23,500 times, go hand in glove with the near infinite age of the heavens at fifteen billion years. Evolutionary science, in rejecting biblical revelation, can neither measure the vastness of the heavens, nor comprehend the newness of the Lord's creation. In contrast, the Bible teaches that the immeasurable heavens are confined within the water above the firmament (cf. Gen. 1:1-18; Ps. 148:4) were created a mere 6,000 years ago (cf. Gen. 5, 10-11; Mt. 1:17; Jude 1:14). For instance, Eliphaz made the inspired observation, stating "*Is not God in the height of heaven? And behold the height of the stars, how high they are!*" (Job 22:12). Again, David asserted the truth about vast distances within the heavens, stating, "*for as the heaven is high above*

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<sup>17</sup>186,000,000 miles/8,000 miles = 23,500.

<sup>18</sup>Abell, p. 120.

<sup>19</sup>Wright lists 25 methods additional to that of trigonometric parallax to help refine the measurement of the sun's parallax, all of which are based on speculative evolutionary assumptions: Moving Cluster, Secular Parallax, Statistical Parallax, Kinematic Distance, Expansion Parallax, Light Echo Distance, Spectroscopic Visual Binaries, Baade-Wesselink Method, Spectroscopic Eclipsing Binaries, Expanding Photosphere Method, Main Sequence Fitting, Spectroscopic Parallax, RR Lyrae Distance, Cepheid Distance, Planetary Nebula Luminosity Function, Brightest Stars, Largest H II Region Diameters, Surface Brightness Fluctuations, Type I-a Supernovae, Tully-Fisher Relation, Faber-Jackson Relation, Brightest Cluster Galaxies, Gravitation Lens Time Delay, Sunyaev-Zeldovich Effect, and Hubble Law. Edward L. Wright, "The ABC's of Distances," <http://astro.ucla.edu>. July 7, 2005, pp. 1-8. This large number of various techniques shows the impossibility to measure the sun's distance accurately or absolutely.

*the earth, so great is his mercy toward them that fear him*" (Ps. 103:11).<sup>20</sup>

### The Exegesis of Jeremiah 31:37

Atheistic evolutionists have completely rejected the Scriptures and consequently built a system of "*science falsely so called*" (I Tim. 6:20). However, creationists who have accepted the heliocentric model have capitulated to some of the myths of evolutionists. For instance, creationist Steidl in describing stellar parallax, asseverates,

By measuring the amount the star appears to shift, and knowing the size of the earth's orbit, one can use trigonometry to find the distance to that star. The distance of stars out to about 300 light years is measurable in this way. This is only a fraction of the size of our galaxy, the Milky way, let alone the rest of the universe...It is easy to see that with all the assumptions which must be made, and the statistical manipulations which must be carried out, there will be large uncertainties in the distances of extremely distant objects. In fact, the cosmic distance scale is admittedly unreliable.<sup>21</sup>

Steidl, following the assumptions of evolutionists, bases the "local" stellar distances on the earth having an 186,000,000-mile diameter orbit around the sun. He admits that beyond the possible trigonometric calculations of close stars, other methods, based on heliocentric and evolutionary assumptions, produce greater, albeit unreliable, distances. However, to the Christian who believes in biblical geocentricity and rejects the notion that the earth has an orbit, triangulation cannot accurately and absolutely be calculated for the sun's parallax, and consequently stellar distances cannot be measured with reasonable accuracy or biblical authority. Of course, the Lord Jesus Christ created the heavens and earth with these physical and mathematical constraints, allowing Him to make the challenge to mankind:

Thus saith the LORD, which giveth the sun for a light by day, and the ordinances of the moon and of the stars for a light by night, which divideth the sea when the waves thereof roar; The LORD of host is his name: If those ordinances depart from before me,

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<sup>20</sup>Cf. "*For as the heavens are higher than the earth, so are my ways higher than your ways, and my thoughts than your thoughts*" (Isa. 55:9).

<sup>21</sup>Paul M. Steidl, *The Earth, the Stars, and the Bible* (Phillipsburg, NJ: Presbyterian and Reformed Publishing Co., 1979), pp. 130, 187.

saith the LORD, then the seed of Israel also shall cease from being a nation before me for ever. Thus saith the LORD; If heaven above can be measured, and the foundations of the earth searched out beneath, I will also cast off all the seed of Israel for all that they have done, saith the LORD (Jer. 31:35-37).

During the creation week the Lord Jesus Christ (Col. 1:16) placed the sun, moon and stars in the firmament for lights and established the regulation of the sea waves. These natural constants are part of His divine ordinances which will not change, the Lord declared. Using the conditional particle (*'im* אם) (Jer. 31:36-37), Jehovah asserted His immutability of purpose with regard to fulfilling the New Covenant promises to Israel (vv. 31-34), challenging mankind with the impossible task of measuring the heavens or the foundations of the earth.

The Lord's challenging statement "*If heaven above can be measured...I will also cast off*" reveals several truths. 1) The expression represents the classic construction for a contingency, with *'im* in the protasis and the imperfect verb (*'eme'as* אֵמַעַס) in the apodosis. 2) Heaven (*shamayim* שָׁמַיִם) is an anarthrous dual noun referring to both the atmosphere and the stellar outer space. 3) The verb "*can be measured*" (*yimmadu* יִמְדוּ) is the *Niphal* imperfect, third person, masculine, plural form of *madad* (מָדַד). The Authorized Version translates this verb as "measure," "mete out," "mete," or "stretched" fifty-one times in the OT. The *Niphal* verb stem is passive, forcing the reader to determine the subject of the verb, which in this case is mankind. The verb *madad* refers to the actual physical measuring of an object. For instance, Boaz "*measured (madad) six measures of barley*" for Ruth to carry to Naomi (Ruth 3:15). His measurement was no doubt accurate and based on a human standard for barley measurements. Likewise, Ezekiel predicted that the construction of the Millennial Temple would be based on accurate measurements, utilizing the verb *madad* thirty-three times for measuring various dimensions for the building of the Temple (cf. Ezk. 40-47). 4) Since man does not have the mathematical or physical wherewithal to measure stellar distances accurately and authoritatively, the Lord assured the immutable promise of the New Covenant. God has determined that man never has, cannot now, and never will measure the heavens accurately and absolutely. 5) Christians are left with the divine revelation of the Scriptures (II Tim. 3:16-17) that reveals absolutely both the vastness of God's creation and its immeasurableableness. James hinted at the reality of solar parallax and Jeremiah declared that man cannot measure the heavens. 6) Evolutionary schemes and theories cannot satisfy the Christian because they are based on the Satanic lies of the Garden and result in myths (cf. Gen.



3:4-5).<sup>22</sup> Christians must rejoice in the full extent of truth that the Lord God has determined to give through His Scriptures.

## The Planets

The noun “planet,” although not found in the Bible, astronomically refers to an astral object that wanders through its orbit. Planets as such have orbits around the sun that is in the heavens. The Lord placed the sun with its wandering planets in the firmament. The earth, however, is distinct from the heavens (i.e., firmament) and was never placed in the heavens (cf. Gen. 1:1-19).<sup>23</sup> Therefore, the earth is **not** a planet, although evolutionists have inculcated their anti-biblical teaching upon the terminology of the western world.<sup>24</sup> The closest the Bible comes to referring to a planet is Jude’s reference (1:13) to likening apostates to “*wandering stars*” (*asteras planetai*). Since the noun planet is not mentioned in Scripture, the Lord surely does not place any importance on this part of His creation other than to give a spiritual warning for mankind to avoid apostasy by straying from the revealed truth.<sup>25</sup> Professed Christians should give no thought to whether planets will give further knowledge about the origin and purpose of the heavens.<sup>26</sup> When a man contemplates planets, his concern should be if he would become a “wandering star.”

## The Lights

James asserted that God was the Father of lights, corroborating other Scripture (cf. Isa. 45:7). As the Father, He created light by giving the divine fiat “*Let there be light*” (*yehiy ‘or* יהי אור) on Day One (Gen. 1:2). As He had spoken His creation into existence (Heb. 11:3) He spoke the creation of light into existence. His vocalized consonants “*Let there be light*” produced the vibrations which manifested “*light*”

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<sup>22</sup>Satan taught (cf. I Tim. 4:1-3) basic Gnostic Pantheism, postulating the deification and deathlessness of man. Corollaries to these tenets included evolution and “the flesh is evil” doctrine.

<sup>23</sup>The Bible writers utilize the expression “*heaven and earth*” at least thirty-one times, always distinguishing between these two realms (cf. e.g., Mt. 24:35).

<sup>24</sup>Even many Christians have been brainwashed by evolutionary philosophy in using un-Scriptural terminology. The Bible never once calls the earth a *planet*.

<sup>25</sup>How ironic it is that evolutionists are “wandering stars.”

<sup>26</sup>The Christian already knows that the Lord’s purpose on earth is to meet the spiritual needs of lost mankind. John summarized this truth, saying, “*For God so loved the world, that he gave his only begotten Son, that whosoever believeth in him should not perish, but have everlasting life*” (Jn. 3:16).

(‘or אור).<sup>27</sup> The psalmist revealed that Jehovah initially covered Himself “*with light as with a garment*” (Ps. 104:2) and moved upon the face of the earth as the original light source (Gen. 1:2), dispelling darkness with light. This apparently was the morning light (cf. I Sam. 14:36; 25:22, 34, 36; 29:10; II Sam. 17:22; 23:4; II Kings 7:9; Isa. 58:8; Mi. 2:1) of the first day and the first of the four created lights. Solomon referred to “*the sun, or the light, or the moon, or the stars*” (Eccl. 12:2),<sup>28</sup> all of which have separate glories (cf. I Cor. 15:41). Later, on the fourth day, the sun, moon, and stars also contributed as moving light sources for the heavens.

## The Tropics

James used the term *trope* (“turning”) in his expression “*shadow of turning*” referring to a shadow caused by turning. As he utilized other astronomical terms to teach spiritual realities about God, it seems he was referring to the seasonal shadows cast by the sun in its annual orbit around the earth. Since the axis of the stationary earth is absolutely north and south (Job 26:7),<sup>29</sup> the sun’s plane is not coincident with the earth’s but is oblique by 23 1/2 degrees, causing shadows to be cast on the different hemispheres from the region of the Poles to the Tropics. Only the area between the two Tropics,<sup>30</sup> including the equator, receives direct sunlight, and especially twice a year when the sun is directly overhead on the equator. On the summer solstice (June 22), the sun passes the zenith at its highest point on the Northern Hemisphere on the first day of summer, shining directly and causing summer, while at the same time shining obliquely on the Southern Hemisphere causing winter. This is reversed six months later at the winter solstice (Dec. 22). The region from the equator to 23 1/2 degrees North

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<sup>27</sup>The Scripture gives the Lord’s quote, revealing these actual words, which were His breath (II Tim. 3:16), and consequently His words vibrated light into existence (this would suggest that light is a wave rather than a particle). Could it be that Quantum Physics, with its ten-dimensional superstring theory of vibrating strings as the ultimate fundament, is catching up with the Bible?

<sup>28</sup>All four nouns are articular and the last three are separated with the *waw* conjunction, distinguishing four distinct lights.

<sup>29</sup>The Lord created the earth’s axis north and south with reference to the heavens. The psalmist Ethan stated, “*The heavens are thine, the earth also is thine: as for the world and the fulness thereof, thou hast founded them. The north and the south thou hast created them...*” (Ps. 89:11-12). Even the New Jerusalem will be located absolutely with respect to the directions of north, south, east and west in the New Heavens and Earth (cf. Rev. 21:1; 13).

<sup>30</sup>The Tropic of Cancer and Tropic of Capricorn were so named because the sun’s relationship with these two sectors or signs of the zodiac.

latitude and from the equator to  $23\frac{1}{2}$  degrees South latitude receives direct sunlight and is warm year around (i.e., tropical).

The point that James seemed to make was that on a daily basis it is nearly impossible to detect the sun's tropical movement as it moves around the earth and causes the various seasons. He compares the Lord's absolute immovability in relationship to His redemptive purposes with this almost indiscernible solar movement.

## Conclusion

The stepbrother of the Lord Jesus Christ, under inspiration, wrote to Christian Jews scattered throughout the Mediterranean basin. As they underwent trials in the form of persecution, some of them concluded that God was tempting them to sin. James effectively dispatched of that false notion by giving at least five reasons that God does not tempt man to sin. These reasons centered on the holy nature of God, the old nature of man, the tendency for man to be deceived, the good nature of God, and the creative nature of God. In developing his arguments, James assumed the truths of biblical cosmology to advance his defense of the Lord's nature and person. These realities in nature include truth about the planets, lights, parallax, and tropics. 1) The planets, as wandering stars, depict apostates who deviate from the truth. 2) The good Lord created the heavenly lights, as great and brilliant as they may be. 3) James implied that the sun's apparent parallax is almost imperceptible, contrasting the absolute immovability of the Lord God with this slight parallactic angle. 4) Finally, to emphasize the Lord's absolute immutability with regard to His promises, James declared that Jehovah did not move or turn, unlike the imperceptible but real seasonal movement of the sun relative to the Tropics. The Lord Jesus Christ created the heavens and earth and then revealed within His Scriptures the full extent that man may know absolutely about the physical phenomena. The creation has built in limitations so that man, neither evolutionist nor creationist can measure accurately and absolutely the heavens, as Jeremiah predicted. All the Christian can know or needs to know is that planets revolve around the sun, the lights are in subjection to God the Father, and the sun has parallax, and it has tropical movement around the earth. The evolutionist can only speculate about the heavens and posit anti-biblical myths. The Christian knows absolutely, "*The heavens declare the glory of God; and the firmament sheweth his handywork*" (Ps. 19:1).

## WHAT IS THE FORMULA OF ALL THINGS?

**Periander A. Esplana**

Throughout the history, man has tried to seek the Absolute from the finite, temporal world in which he lived. Instead of searching the Absolute beyond the universe, he turned to know himself by knowing the cursed earth. Philosophy and science were formed not only because of human curiosity to the things that surround him but also because of his need to structure the correlation of order between his mind and the world.

The first question of man that beset most of the ancient philosophers was “What is the source of all things?” The question, which was plainly answered in the very first verse of the Bible, conceived and begat thousands of complicated answers which sadly result to idolatry by absolutizing the things of created reality. Ideas, concepts and opinions have been provided to solve this problem of man as to his origin with the world around him. The intellectual history of distant past without any absolute standard but man’s imperfect mind was groped at the darkness of speculations. This simple question as it may seem with its implications embraced the whole spectrum of philosophical enigma: metaphysics, epistemology and ethics. It asks the origin, substance, principles, destiny, master-context, and essence of the universe, life and man.

Thales of Miletus (640-550 B.C.), considered to be the “Father of philosophy, tackled the question face to face by posing a clear picture of earth’s unique nature and activity. In accordance with the accepted idea on the origin of the world during his time, the Babylonian mythological cosmology, he observed that WATER must be the origin of all things because from liquid it can be transformed into gas (air, atmosphere) and it can be converted into solid (ice, earth). The importance of water to both living and non-living things leads him to the conclusion that it is the material cause of all things. This idea of Thales has found support from modern theory of biochemical evolution in a primordial soup in which it is said that first life form arose.

Anaximander of Miletus (610-545 B.C.), the pupil of Thales who was sometimes called the founder of astronomy, varies admirably with his mentor for he believed that all things do not arise out of water but from a CLOUD-like, indefinite and undifferentiated mass due to the separation of opposing forces of matter. He concluded that the ground of all things must be without form and boundless. This is similar to the

modern theory of luminiferous ether of pre-Einstein era, dust-cloud theory of Laplace, and hydrogen dense-cloud of Big Bang theory and inflationary theory.

After a few years, another Milesian philosopher gave his opinion on this issue. His name is Anaximenes (560-524 B.C.), he considered the ever moving air, WIND, as the primary material through which all things were formed. According to him, its condensation produces cloud, water and earth while its rarefaction produces fire. He concluded that the principle of the universe must be the unlimited, all embracing, and ever-moving air.

Xenophanes of Colophon (570-480 B.C.) with a leap of faith changed the course of material speculations before him by introducing the concept of SPIRITS in the thread of philosophical thought. He believed that no one could have a complete knowledge of anything for all of our concepts are always bounded by our finite experiences. This skepticism served as the catalyst for the exchanges which occurred between Descartes, Hume, Kant, Hegel and Kierkegaard in modern philosophy. He believed that there is one god supreme among gods and men, resembling mortals neither in form nor in mind. This idea corresponds to the New Age belief of pantheistic emanation as the origin of all things.

Heraclitus of Ephesus (535-475 B.C.), on the other hand, continued the physical reflection of the natural world by explaining that FIRE is the change-agent which formed the present external things. He believed in the oppositional character of all things in the world with no beginning and no end which constantly flow and change in cycle through fire. He firmly believed that in stated periods, the world resolves itself into primal fire in order to re-create itself out of fire again. His studies of knowledge, logos, soul, language, and self-exploration can be seen in Stoicism and in the philosophies of Nietzsche and Buber.

From this almost confusing and frustrating quagmire of opinionated opinions, Empedocles (490-430 B.C.) derived his basic elements of all things. He took the abundant water of Thales, the moving air of Anaximenes, the changing fire of Heraclitus and added his familiar earth to form his four basic elemental atoms. Like the New agers of today he claimed to be one of the gods and, like Socrates, nihilists and hopeless non-Christians, he committed suicide by jumping into the crater of Etna volcano.

All in all, there are six entities which were offered by the ancient philosophers as the source of all things: waters, clouds, wind, spirits, fire, and earth. The rest were merely combination of two or more of these so-called sources of everything. For instance, Aristotle approved the four basic elements of Empedocles but he added a fifth element

which he called “quintessence”, a fusion of cloud-like, boundless mass of Anaximander and the pervading spirits of Xenophanes, which he believed the spiritual element that change the four elements into different substances unlike Empedocles who believed this to be the principles of love and hate. These series of ancient philosophers can be found in all the history of science and philosophy. Their ideas studded the quest of an inquisitive mind in all textbooks, dictionaries and encyclopedias.

It is so amazing to know that this sequence of ideas brought forth by the minds of different philosophers in their own time were clearly anticipated in the prophetic structure of Psalms 104:1-6. The six entities can be seen chronologically appearing from verse 3 to verse 5.

Psalm 104:1 Blessed the LORD, O my soul, O LORD my God, Thou art very great; Thou art clothed *with honor and majesty*.

A / b / 2-. *Who coverest Thyself with LIGHT as with a garment:*

c / . *Who stretchest out the heavens like a curtain:*

B / 3-. *Who layeth the beams of chambers in the WATERS:*

C / d / -. *Who maketh the CLOUDS His chariot:*

e / . *Who walketh upon the wings of the WIND:*

C / d / 4-. *Who maketh His angels SPIRITS;*

e / . *His ministers a flaming FIRE:*

B / 5. *Who laid the foundations of the EARTH, that it should not be removed for ever.*

A / b / 6- *Thou coveredst it with the DEEP as with a garment:*

c / . *the waters stood above the mountains.*

The study of light (verse 2a) in recent time is somewhat nearer to the truth with the discovery of its nature as paradoxical complementarity which produced two disciplines of modern physics: quantum mechanics and wave mechanics. These studies were developed by Einstein, Planck, Bohr, Heisenberg, Born, Rutherford, Germer, Davisson, Pauli, Schrodinger, de Broglie and other quantum scientists. They are almost in the right track if they only continue to pursue the next verse above (verse 1) but instead they go down below (verse 2b) and found the stretching of heavens as a viable option for a good lifetime research. It was started by Friedman, Hubble, Eddington, Opik and Narlikar by deriving theories about the origin of this expansion from Einstein's general theory of relativity. An expanding and contracting universe either by Big Bang theory or by Steady-state theory have been advocated by Lemaître, Gamow, Tolman, Hoyle, Bondi, Gold, Wilson, Penzias, Dirac and other astronomers.

It seems that the postmodern scientists have taken the figurative words “garment” and “curtain” (verse 2 and verse 6) too literally when they introduced a mathematical theory which tells us that a fabric of multi-dimensional strings called Branes are the fundamental objects of all things. This theory known as Superstring theory has been proposed to solve the conflict which exists between quantum mechanics and general relativity. There are now five supersymmetric string theories which are said to be approximate expressions of an underlying theory called by Witten as the M theory.

All these theories were just the offshoots of Einstein’s obsession in his later years to produce a unified theory that will unite the forces of gravity and electromagnetism and will explain every element of the physical reality. It has been shown by Weinberg, Glashow, Salam and other physicists the relationship of electromagnetic force and weak nuclear force so that they can be combined to form a composite force called electroweak force. If this is true, what is left to be done is to combine the theory of the strong nuclear force with the theory of electroweak force in a theory known as Grand Unified Theory (GUT). The Quantum Chromodynamics (QCD), modelled after the Quantum Electrodynamics (QED), may served as the key for this is used to explain the interaction of quarks and gluons of the strong nuclear force. A gluon is just one of the gauge bosons of the four fundamental forces in the universe which help to relate the gravity to other three forces in one framework called Theory of Everything (ToE). This is Einstein’s sought-for unified field theory.

This is now being accomplished through various approaches under the general heading of Supersymmetry (SUSY) which relates the two classes of elementary particles: (1) the fermions which can be classified as either leptons (such as electron, muon, neutrino, and their antiparticles) or baryons (such as proton, neutron, hyperons and their antiparticles) and (2) the bosons which can be classified as either gauge bosons (such as gravitons, photons, weakons, and gluons) or mesons (such as pion, kaon, psi particles and their antiparticles). This theory, as we have seen, has now been incorporated into the superstring theory which extends Einstein’s concept of gravity into supergravity and considers all forces as mere manifestations of an underlying Superforce.

Theories after theories will come which might include the Flood geology of verse 6 and an extensive study of the ocean and other bodies of water but still philosophers, scientists and other intellectuals will never find out the only answer to the profound question which summed up the problems of ancient philosophy and postmodern science: What is the Formula of all things? From a theory of liquid and water they will just repeat the failures of speculative history unless they stopped

absolutizing the created factualities of verses 2-6 and let the verse 1 speak with its sober but powerful words: "Blessed the LORD, O my soul, O LORD my God, Thou art very great; Thou art clothed with honour and majesty."

The problem of ancient philosophers in uniting the interaction between the four basic elements is repeated in the problem of postmodern scientists in the uniting the four fundamental forces. In the past, Aristotle suggested a spiritual entity called quintessence. Today, Witten suggested a mathematical theory called M theory. Both of these are untrue and unreal, it is time for us to take some rest from this long journey of human speculation, we must now turn to the Holy One Who is the Truth of truths and Reality of realities. He is the Lord and Saviour Jesus Christ. Absolute certainty can be found only in Him. This is supreme subject of the A.V. 1611 Formula.

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## COSMIC RADIATION HAS A NEWLY-DISCOVERED GEOCENTRIC COMPONENT<sup>1</sup>

A new analysis of the “echo” of the Big Bang has confounded evolutionist efforts to understand how the universe began. You see, researchers analyzing the distribution of “hot” and “cold” regions in the radiation that fills all of space now places the solar system, if not the earth, in a special place. What they found was a correlation between those hot and cold spots and the orientation and the drift of the starry heaven past our solar system.

The study, by Case Western scientists and the European Center for Nuclear Research in Geneva, is based on data from the WMAP satellite, the NASA spacecraft that began mapping the cosmic microwave background (CMB) radiation in fine detail in 2001. The observed correlation troubles the researchers on several fronts.

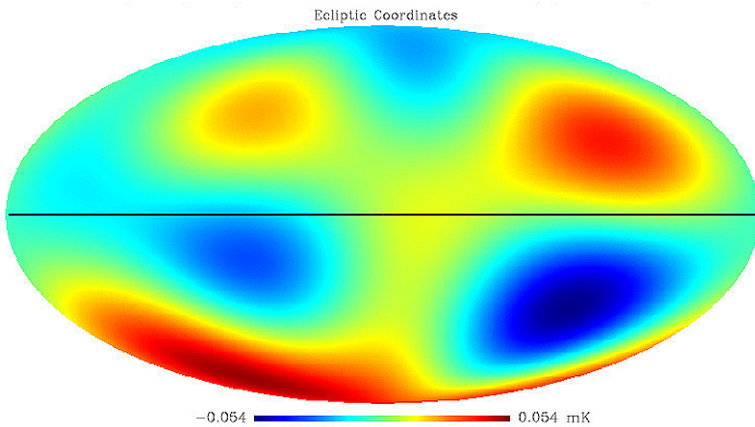
Of course, the researchers do not believe that the result really puts the earth in a special place. “None of us believe that the universe knows about the solar system, or that the solar system knows about the universe,” said Glenn D. Starkman, one of the research team. Far more plausible, he says, is that something within our solar system is producing or absorbing microwaves.

The correlation involves the largest-scale structures of the cosmic radiation. If even some of those fluctuations, let alone all are a local rather than a cosmological phenomenon, it means that the truly cosmological large-scale fluctuations are even less intense than previously thought. On the other hand, if the correlation is real, it could cast doubt on the popular “inflation” model of the early universe. That model says the universe underwent a period of incredibly rapid, exponential growth in the first split-second of its existence. One of its predictions is that the universe should be nearly perfectly “smooth,” that the CMB fluctuations should be equally intense at all scales.

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<sup>1</sup> Schwarz, D.J., G.D. Starkman, D. Huterer, and C.J. Copi, 2004. “Is the low- $\ell$  microwave background cosmic?” arXiv:astro-ph/0403353 v3 24 Nov 2004. The abstract says:

The large-angle (low- $\ell$ ) correlations of the Cosmic Microwave Background exhibit several statistically significant anomalies compared to the standard inflationary cosmology. We show that the quadrupole plane and the three octopole planes are far more aligned than previously thought (99.9% C.L.). Three of these planes are orthogonal to the ecliptic at 99.1% C.L., and the normals to these planes are aligned at 99.6% C.L. with the direction of the cosmological dipole and with the equinoxes. The remaining octopole plane is orthogonal to the supergalactic plane at 99.6% C.L.



The figure pictures the celestial sphere with the ecliptic (the path the sun traces in the sky during the year, i.e., the zodiac) as its equator. The graphic shows hot spots (red and yellow) and cold spots (green and blue) in the glow of the universe. The placement of the spots puts the earth in a special place, at the center of the universe.

An analogy with a musical instrument can be helpful: If you hit a drum, you hear many tones at the same time—a primary tone as well as many overtones, or “harmonics.” The inflation model predicts that all the overtones in the CMB should be equally intense, but instead “we’re missing the bass,” Dr. Starkman said. “And what bass there is seems to be not generated by the universe, but by something local.”

Now here is a strange thing, why should the truly fundamental note be sounded by the solar system? Is that not fantastically coincidental, that it should sound the “bass note”? That fits right in with geocentricity, of course, since the expansion of the universe or the “stretching,” as God calls it, was centered on the earth. So the “base note” should be centered on the earth; and that is to what Starkman referred.

The Lord’s stretching of heaven is not to be confused with the inflationary model of the universe mentioned above. That stretching was likely of longer duration. An “inflation” that was slower and lasted a longer time can give a universe the same size as ours appears to be, but will look a lot “older.” Such a universe might look 10 billion years old even though it is actually one day old.

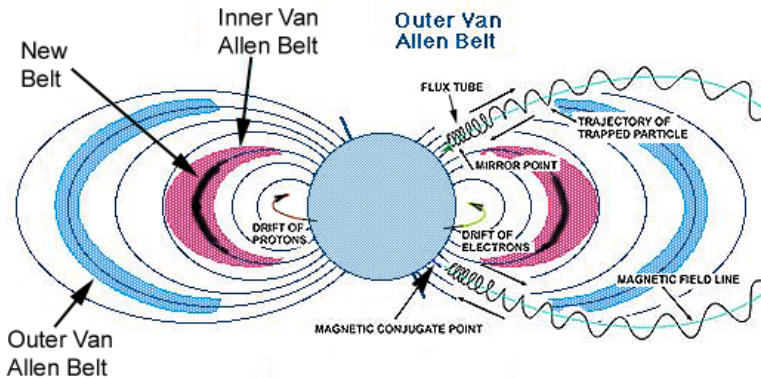
There is, however, another possibility: The patterns seen by Starkman and his colleagues might simply be a fluke—an accidental alignment between the solar system and patterns in the CMB radiation. But whether accident or not, the appearance is that the earth is in a special place in creation, even as the Bible teaches.

# VAN ALLEN BELTS AND HASSELBLADS

Gerardus D. Bouw, Ph.D.

In Christian circles, the only time one hears about the Van Allen belts is when someone wants to argue that we did not go to the moon. The article we wrote several years ago, defending the reality of the moon landings, still stands.<sup>1</sup> Indeed, there has been no serious criticism of the article. We thought, however, that our readers might like to partake of what we have learned in the meantime.

## Radiation in the Van Allen Belts



The Van Allen belts are doughnut-shaped regions about the earth where charged particles, are trapped in the earth's magnetic field. There are three main belts. The outer belt consists mostly of electrons, the inner mostly of protons, both coming from the sun, and the New Belt is made up of ions (mostly oxygen, nitrogen, and neon), which zipped in from the interstellar medium (the gas and dust between the stars) only to be captured by the earth's magnetic field. Each particle follows a flux tube, a spiral path running from one magnetic pole to the other only to be reflected back to the original pole at the mirror points (right side of figure). The geographic north pole is the line coming out of the upper-left of the earth, the south rotational pole at lower-right. The south magnetic pole is up, with the north magnetic pole is at the bottom (straight up and down the page).

<sup>1</sup> Bouw, G. D., 1999. "Did we go to the Moon?" B.A. 9(90):10-22.

The number of particles encountered (*flux* is the technical term) depends on the energy of the particles; in general, the flux of high-energy particles is less, and the flux of low-energy particles is greater. When it comes to survival of a spacecraft, or human being, in the Van Allen belts, very low energy particles cannot penetrate the skin of a spacecraft, nor even the skin of an astronaut. Very roughly speaking, electrons below about 1 million electron volts (MeV) are unlikely to be dangerous, and protons below 10 MeV are not sufficiently penetrating to be a concern. The actual fluxes encountered in the Van Allen belts is a matter of great commercial importance, as communications satellites operate in the outer region, and their electronics, and hence their lifetimes, are strongly affected by the radiation found in the Van Allen belts. Forget the moon landings: billions of dollars are at stake here.

The National Space Sciences Data Center at NASA's Goddard Spaceflight Center keeps a database of particles in the Van Allen Belts. Electrons with energies over 1 MeV (million electron volts, which is the energy one electron receives in one second when accelerated by a million volts for one second) have a flux above a million per square centimeter per second in the region ranging from 1 to 6 earth radii (about 4,000 to 24,000 miles or 6,300 to 38,000 km), and protons over 10 MeV have a flux above one hundred thousand per square centimeter per second from about 1.5-2.5 earth radii (6,000 to 10,000 miles or 9,500 km - 16,000 km).

What would be the radiation dose due to such fluxes, for the amount of time an astronaut crew would be exposed? This was in fact a serious concern at the time that the Apollo program was first proposed. There are two factors needed to compute that dosage, the flux of radiation, and the length of time the astronauts were exposed to that radiation.

The time the astronauts were exposed is fairly easy to calculate from basic orbital mechanics, though probably not something most students below college level could easily verify. The reader has, perhaps, heard that to escape from earth requires a speed of about 7 miles per second, which is about 11.2 km per sec. At that speed, it would require less than an hour to pass beyond the main part of the belts at around 24,000 miles (38,000 km) altitude. However it is a little more complicated than that, because as soon as the rocket motor stops burning, the spacecraft immediately begins to slow down due to the attraction of gravity. At 24,000 miles (38,000 km), it would actually be moving only about 2.9 miles per second (4.6 km per second), not 7 miles per second (11.2 km per second). If we just take the geometric average of these two, 4.5 mi/sec (7.2 km/sec), we will not be too far off, and get about 1.5 hours for the time to pass beyond 24,000 miles.

Unfortunately calculating the average radiation dose received by an astronaut in the belts is quite intricate in practice, though not too hard in principle. One must add up the effects of all kinds of particles, of all energies. For each kind of particle (electrons and protons in this situation) you have to take account of the shielding due to the Apollo spacecraft and the astronaut space suits. Here are some approximate values for the ranges of protons and electrons in aluminum:

Range in Aluminum [cm]		
Energy [Me V]	electrons	protons
1	0.15	~ nil
3	0.56	~ nil
10	1.85	0.06
30	no flux	0.37
100	no flux	3.7

For electrons, the data show negligible flux (less than 1 electron per square centimeter per sec) above an energy of 7 MeV at any altitude. The proton flux data indicates negligible flux under 10 MeV, and peak fluxes outside the spacecraft up to about 20,000 protons per square cm per sec above 100 MeV, in a region around 1.7 earth radii. But because the region is narrow, passage takes only about five minutes. Nevertheless, these appear to be the principal hazard.

These numbers seem generally consistent with a dose of about two rem. If every gram of a person's body absorbed 600,000 protons with energy 100 MeV, completely stopping them, the dose would be about 50 mSv. Assuming a typical thickness of 10 cm for a human and no shielding by the spacecraft gives a dose of something like 50 mSv in five minutes due to protons in the most intense part of the belt. 50 mSv is 5 rem.

For comparison, the US recommended limit of exposure for radiation workers is 5 rem per year, based on the fear of the danger of causing cancer. The corresponding recommended limits in Britain and Europe are 1.5 rem per year. Actual observations based on nuclear accidents in labs, especially in the early days of the A-bomb research, and from Hiroshima and Nagasaki data, as well as Chernobyl, reveals that up to a certain dosage, radiation is actually beneficial to one's health, but beyond that it gets dangerous, but not nearly as dangerous as the US and European standards suggest. Illness sets in for some people

at 100 rem, though those will recover with negligible risk of cancer. For acute doses, the whole-body exposure lethal within 30 days to 50% of untreated cases is about 2.5-3.0 Gy (Gray) or 250-300 rem. The astronauts could stay two hours in that narrow high-energy proton region, and maybe one would get sick (nauseous), yet all would be expected to recover. Since they spent only five minutes in that region, they would not get sick.

By now you have probably learned more than you really wanted to know about the Van Allen belts and the Apollo radiation problem, yet we have only scratched the surface. You can believe me or not. In the end you either have to research it all yourself, or trust a stranger, or find some path in between, which means learning a little science, so you can judge for yourself if my arguments make any sense at all. The only alternative is to trust no one and do everything, which is simply impossible for anyone. I know, because that is what I try to do. Over the years I've found kindred souls, who do the same. I've learned to trust them, though occasionally they (and yours truly) either make a mistake or are misled: usually not for long. I was misled into modern Bible versions for a while, but before my mind was totally destroyed by them, one of those I had learned to trust asked me where the Bible is today. It took a while for the dryness and rottenness to leave, but leave it did. But it took hard work—study—to do that. The hardest work I've ever done is mental, even though I worked on a farm at hard labor. One has to pick and choose what one will research for one's self and by overlap, find who can be trusted. Otherwise you surrender all your judgments to other people, who may be saints or crooks, wise or insane.

### **The clear zone**

A mystery about the Van Allen belts was solved recently. In the Van Allen belts are regions that are safe for spacecraft and man. The safe regions are created by mysterious radio waves that knock charged particles, which would otherwise be trapped in the belts, into the atmosphere. That leaves a charge-depleted zone within the belt where sensitive satellites can safely orbit, but until recently no one was certain whence the radio waves originated.

A team of NASA researchers has now solved the mystery. Looking at the intensity of the radio waves sweeping through the safe zone, J. L. Green of the Goddard Space Center in Greenbelt, Maryland, and his coworkers noted that the intensity of the waves matched the amount of lightning activity on earth. Lightning flashes generate bursts of radio waves that leak into space and sweep the belts. It is lightning that creates the safe zone.

### The hoaxer's camera

One objection raised by advocates of the claim that no one ever went to the moon involves the cameras used by NASA on the moon. It is claimed that without a viewfinder, it is impossible to have perfectly-framed pictures and properly exposed pictures. This section is an exposé on NASA's camera. Just how incompetent is that 1960s-vintage camera, anyhow.

First, let us note that the camera NASA used, a Hasselblad 500EL, was so "incompetent" that you can still buy them, used, for \$200-\$800 or more. The Hasselblad is not a 35-mm reflex camera. It produces a negative two and a quarter inches square. The camera was the penultimate camera of its time, the envy of all professional photographers, whence its demand today.



**Hasselblad 500 EL with white body.**

The bellows on the lens in the photo above is to shield the lens from sidelight and glare. The units used for the moon landings were similar to this, except they were black and, as far as I know, without the bellows. The unit is equipped with electric drive that winds the film automatically. The circle in the back allows the picture number to be seen on the paper backing of the film. The bulging protrusion on the

top of the camera is the viewfinder that critics insist is not on the camera. One critic, who claims that the camera had no viewfinder, also claims he worked with the camera for years. Release the catch, and the unit opens up into a square box surrounding a ground glass screen on which the image is projected. The square cylinder surrounding the screen shades it so the photographer can see it; otherwise the image would be lost to the glare of the ambient light, leastwise, it would make it hard to focus. A non-motorized unit with the cover/square light-shield removed is shown below.



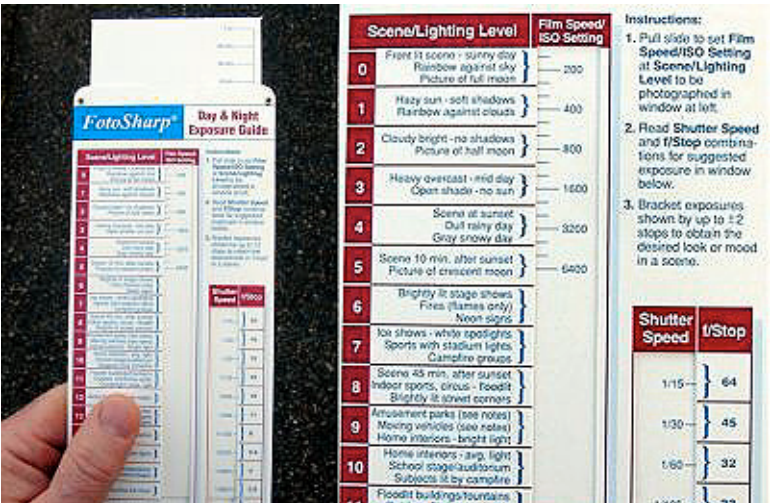
**Camera top with cover removed, exposing the focusing screen**

To take a photo, the astronaut would bend forward a bit, look down, focus on the screen if needed, compose the picture and take the picture. NASA selected the camera for its high quality, motorized film drive (I assume they would use it; I recall it was available at the time), large negative format, ruggedness, and ease of use on the moon. If, at the time, NASA had asked me for a camera recommendation, this is the very camera I would have recommended. Cameras that need to be brought up to the eye would be worthless. This unit is basically a high quality box camera when it comes to holding it and composing a pic-



ture. (Yes, my first camera was a box camera using 120 film.) My composition was always perfect; leastwise, it was never tilted or tipped the wrong way.

Finally, what about the exposure settings? How could astronauts get correct exposures each time when the camera did not come with a light meter? Well, it did come with a light meter of sorts. I suppose the astronauts could have taken a light meter with them and gotten the settings from it, but that was not necessary. The Hasselblads came with intricate tables giving a wide range of exposure settings. Using small f-stops (high numbers like f/32 or even f/64) would eliminate the need for an exact focus. Exposing the film for the shadows and developing for the highlights is a good way to increase the dynamic range (showing details in shadows and bright areas at the same time) of the film.



cameras that can go 100% manual; and yes, when it comes to astronomical pictures in particular, there is no other option than 100% manual.

In conclusion, we did go to the moon. There are too many witnesses at too many stages of the launch and landing to fake it. And there is no conclusive evidence that we did not go to the moon.

## QUOTE

[AP: Michael McDonough] Prince Charles' tirade against people who aspire to lofty goals beyond their natural talent earned him a rare public rebuke from a senior government minister on Thursday [18 Nov. 2004]—and gasps of disbelief from the British media.

Education Secretary Charles Clarke branded the heir to the throne “old fashioned” after details emerged of a royal memo written in response to an employee's inquiry about promotion prospects.

“People think they can all be pop stars, high court judges, brilliant TV personalities or infinitely more competent heads of state without ever putting in the necessary work or having natural ability,” Charles wrote in the memo, which was read out Wednesday at an employment tribunal.

“Not like you, eh, Charles?” countered *The Sun*, a popular daily that is normally highly supportive of the Monarchy. The prince is next in line to the throne by virtue of heredity.

“Don't try to rise above your station,” was how *The Daily Telegraph* newspaper, a pillar of the British establishment, summarized the prince's memo. Another conservative paper, the *Daily Mail*, devoted its first two pages to the story under the headline: “Don't get above yourself.”

In his handwritten note, Charles attacked Britain's education system for encouraging young people to nurture ambitions they are unlikely to fulfill.

“What is wrong with everyone nowadays?” the prince wrote. “Why do they all seem to think they are qualified far beyond their technical capabilities?”

“This is to do with the learning culture in schools as a consequence of a child-centered system which admits no failure,” Charles said.

“This is the result of social utopianism which believes humanity can be genetically and socially engineered to contradict the lesson of history.”

Clarke said he thought Charles should “think carefully” before intervening in any debate about education.

“To be quite frank, I think he is very old-fashioned and out of time and he doesn't understand what is going on in the British education system at the moment,” the minister told British Broadcasting Corp. radio.

[Considering the prince correctly identifies social and genetic engineering as prime factors, I think the prince has excellent understanding of what is going on in current educational system in the West. —Ed.]

## 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 15% 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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