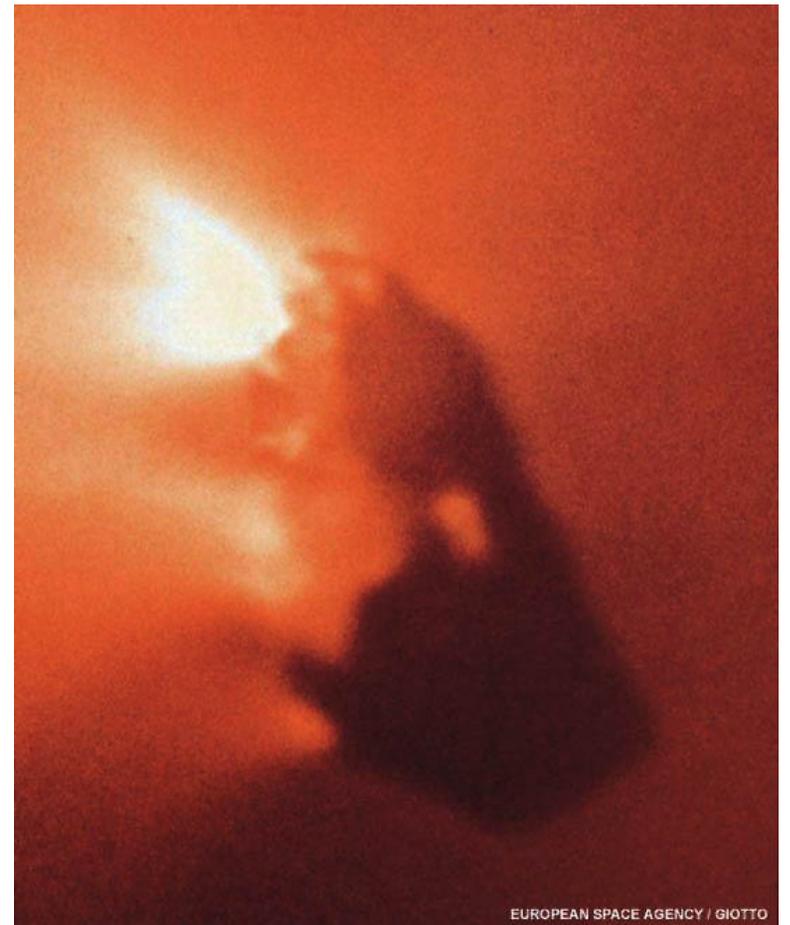


VOLUME 14

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**THE
BIBLICAL
ASTRONOMER**

WINTER 2004



EUROPEAN SPACE AGENCY / GIOTTO

(Publications list continued from the back cover.)

The Earth: Our Home by Philip Stott. The wise men, philosophers, and scientists of the world have repeatedly changed their minds about such things as space and our position in it. This book provides and historical look at the topic of geocentricity and offers evidence for it. 32 pp. \$3.50

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Geocentricity: the Scriptural Cosmology narrated by Dr. Bouw explains the seasons, retrograde motion and other phenomena using the Norwalt Tychonic Orrery. \$15

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Cover: In 1986, the European space probe, Giotto, took this close-up photo of the nucleus of Halley's Comet. Strong outgassing from a vent is seen at upper left, as well as a couple of fainter vents on the dayside. See Panorama for more.

THE BIBLICAL ASTRONOMER

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WINTER 2004

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EDITORIAL

In the last issue, readers may recall an exchange of ideas about why the Italian mystic, Giordano Bruno was burnt at the stake. The latest word at that point was that Bruno was executed for practicing black magic, by invoking the heliocentric to draw down the power of the sun for his own purposes.

After reading the note, Mr. Claude Eon, of France, sent a most intriguing note about Bruno's execution. It seems the history books are mistaken in using Bruno's death to accuse Christianity, or even the Catholic Church of intolerance.... But I shall defer to Mr. Eon to tell you the tale. Be sure to check out this issue's "Panorama" to see why the Bruno affair keeps getting "curiouser and curiouser."

Also in this issue, Prof. James Hanson continues our coverage of the Hebrew units of measure, in particular, the cubit.¹ In this issue's lead-off article he ties together the cubit, the foot, and Sir Isaac Newton, too. If that doesn't seem like a hodge-podge, what does?

A forwarded email led to the article entitled "Too funny for words." Sometimes well-meaning Christians will place science over the Bible even more than atheists. When they do, geocentrists become, well, "to' funny for words," leastwise, to them. Find out why geocentrists are trying to make Christians look stupid and making fools of ourselves by our pretending that there is no physical difference between the modern acentric system and the geocentric system. It's news to me. No, not the part about being fools, we know that because 1 Cor. 4:10 tells us that; and not the part of us making Christians look "stupid," either (Luke 16:8). Most Christians don't need geocentrists for that, leastwise not these Laodicean days when Christians would rather be amused (the word literally means "without thought") than hear a deep sermon. We're not compared to sheep for nothing. No, what's news to geocentrists is that the physics is different between the two models. But you can read all about that for yourself.

In this issue, we also take a close-up look at three comets visited by spacecraft. I wish to point out, in passing, that NASA used the same fundamental equations to send these probes to the comets as the ones derived from a universe in which the earth stands still at the dynamic center while the universe rotates about it once a day. By the way, these are the very same equations that NASA derived from the modern acentric (i.e., heliocentric) model. But in order to obtain all of the necessary terms to make it work, NASA had to add a couple of assumptions, not

¹ See: Byl, J., 1995. "On Biblical units of measurements," *B. A.* 5(73):6, and J. N. Hanson, 2002. "Hebrew units of measure," *B. A.* 12(101):85.

to mention that NASA had to pretend that the universe can safely be ignored in their derivation.²

Anyhow, the comets are starting to look younger than the billions of years once postulated. Indeed, it only takes one visit to the inner solar system to get them to look as “old” as they do.

In “Panorama,” we find out the truth behind Miller’s creation of life in a bottle in 1953. We also hear about the submarine paradox in the theory of relativity, and how it is solved in an absolute, not relative, framework. Read about the man who came home to find a hole that extended from the roof of his house to the crawl space under the house and into the ground. And if you were thinking of moving to the moon’s south pole and tap the water trapped in those eternally dark craters, you may want to look elsewhere. Oh, and we take another look at global warming, too. Or is it global cooling? Read “Panorama” and find out which disaster really plagues us.

Then, too, is the redshift, which is the crowning evidence for the expanding universe, due to tired light? Then, maybe not.

Next, find out about a new method for finding distances to star clusters and how it uncovered a ten to twenty percent error in the Hipparchos satellite’s distance measurements to stars. That’s ten to twenty percent closer to us than what the new technique gives and what the old earth-based parallax gives, too. At least there’s a pretty picture of the Pleiades there.

Finally a couple of notes of geocentric import. We have taken it upon ourselves to sponsor a weekly radio broadcast in the Philippines. The main topic is Scripture and the gospel, with geocentric and creationist emphasis where appropriate. In the U. S. radio time is too expensive for us right now. Maybe in the future?

Our readers may also be interested to learn that Mr. Gordon Bane sent out more than 20,000 copies of the book *A Geocentricity Primer*, which was combined with his book, *The Geocentric Bible*. These went to Baptist churches around the U. S. The *Primer* is a condensed version of *Geocentricity*, which is still out of print. Lord willing, a revised version will be ready in a year or so. Gordon’s book is available on the web at his web site, www.geocentricbible.com. Printed copies of the combined books are available from him without charge at:

Gordon Bane
911 S. van Buren
Hugoton, KS 67951.

² See Barbour, J. B., & Bertotti, B., 1977. *Il Nuovo Cimento B*, **38**, 1.

THE CUBIT REVISITED

Prof. James N. Hanson

In a previous issue of the *Biblical Astronomer*,³ I used three different sources to establish the Temple cubit at 21 inches. It seems that Isaac Newton had much the same idea, for on page 333 of his *Chronology of Ancient Kingdoms Amended*,⁴ Newton gives this measure as 21½ to 22 inches using the standard foot then in use. He worked on the “Chronology” his whole life and it was published by his young friend, John Conduit, in 1728, the year after Newton’s died. It was yet unfinished, especially the mathematical parts such as the timing of Jason’s Argonautical expedition by equinoctial precession of the place on the horizon of helical risings, and their synchronization to the Biblical chronology, from which he adduced that the expedition was 43 years after Solomon’s death.

From reading the *Chronology*, it appears that Newton’s temple calculations were before 1689. He must have had available actual on-the-ground measurements of the Temple Mount, and that someone knew the outline of the 500-by-500 cubit wall. Newton also analyzed the Great Pyramid to determine the cubit. It is quite possible that the foot in Newton’s time was about 97% of the present foot (i.e., 25.4 cm = 1 foot), this being the Royal Egyptian, Roman, and Greek foot. During Newton’s time the preferred method of defining a foot was by the length of the pendulum whose period was one second. For small displacements this was given by:

$$T = 2\pi(L/g)^{1/2}$$

or

$$L = g(T/2\pi)^2.$$

Unfortunately, g , the acceleration due to gravity, was not accurately known at the time. The standard value at 45° north latitude at sea level is 32.1744 ft/sec², but this varies significantly by place in the third figure. Furthermore, friction would effect the result as would the initial angular displacement, a ,

³ Hanson, J. N., 2002. “Hebrew Units of Measure: the Molten Sea and n-
nium Temple,” *Biblical Astronomer*, **12**(101):85.

⁴ The book was reprinted in the U.K. in 1988 by Histories and Mysteries of Man, Ltd., and has ISBN 1-85417-000-7. Your editor recently purchased a copy through Amazon.com.

$$T = 2\pi(L/g)^{1/2}[1 + (1/4) \sin^2(a/2) + (9/64) \sin^4(a/2) + \dots].$$

Also, this method begs the question of establishing a repeatable timing standard. It was not until the 19th century that weights and measures were standardized. Note that the result of a large a would be to reduce L . An interested party may enquire further on the World-Wide Web by entering "Metrology English foot" as a query.

In conclusion, we may, with fair confidence, assume the temple cubit to be 21 of our present-day inches.

TEMPLE of Solomon. 333

the People, ^d which was an hundred cubits broad on every side; for there were but two Courts built by *Solomon*: and the outward Court was about four cubits lower than the inward, and was compassed on the west with a wall, and on the other three sides ^e with a pavement fifty cubits broad, upon which stood the buildings for the People. All this was the ^f *Sanctuary*, and made a square area 500 cubits long, and 500 broad, and was ^f compassed with a walk, called the *Mountain of the House*: and this walk being 50 cubits broad, was compassed with a wall six cubits broad, and six high, and six hundred long on every side: and the cubit was about 21 $\frac{1}{2}$, or almost 22 inches of the *English* foot, being the sacred cubit of the *Jews*, which was an hand-breadth, or the sixth part of its length bigger than the common cubit.

^d Ezek. xl.
19, 23, 27.
^e 2 King. xvi.
^f 2 Chron.
iv. 9.

^e Ezek. xl.
15, 17, 21.
^f 1 Chron.
xxviii. 12.
^f Ezek. xl 5.
xlii. 20, &
xlv. 2.

Above: excerpt from Newton's *Chronology*.

VISIT TO A WILD COMET

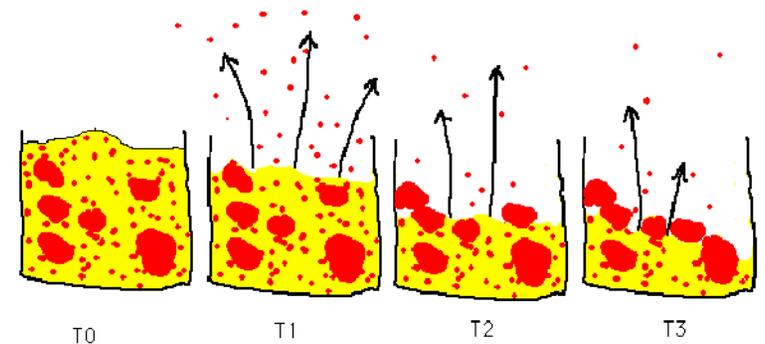
The second of January 2004 witnessed the third fly-by of a comet on its journey around the sun. The first to be so visited was Halley's Comet, which was photographed by Giotto space probe. The next was Borrelly, by the Deep Space 1 probe, and now, Wild by Stardust. Here we take a close-up look at these celestial bodies and some of the results thus far reported for each. At the very least we can stand in awe when beholding the intricate wonder of God's creation, made for us his creatures. We start with the first, Halley's Comet.

Halley's comet

In 1986, the European space probe, Giotto, took the close-up of Halley's comet (shown at right, see front cover for a larger version). The dust and the lighting made it difficult to see surface details beyond a few vents and the black, night-side of the nucleus itself. Most of the nucleus seems to be inactive, suggesting a non-volatile layer.



The non-volatile layer is probably made of rocks and dust that was once trapped in the ice making up the comet's nucleus. As the ice sublimated (from time T0 to T3 in the figure below), the rocks were left behind, on the surface of the ice, and eventually covering the entire nucleus shielding the ice under it and trapping the water vapor released by sublimation. From time to time, the trapped vapor may burst through the rubble and form a vent such as the one seen at left on the



cover of this issue. The time to produce such a layer is likely very short, perhaps occurring in one pass by the sun, that is, in one orbit of the comet.

Comet Borrelly

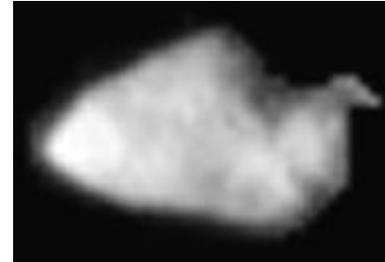


The second comet to have its picture taken close-up was Comet Borrelly. The photo above was taken about 2,000 miles (3400 km) above the surface of the comet. It was visited by the Deep Space 1 spacecraft on 22 September 2001. Borrelly turned out to be the darkest object yet observed in the solar system. It reflects less than three percent of the light that hits it. Before it, Halley's Comet was the darkest object known. It reflected four percent of the light it received from the sun. By comparison, the moon is as dark as granite. Asphalt reflects twice as much light as does Borrelly. This time the surface features were far, far clearer. Other, overexposed photos showed jets emanating from crater-like surface features. The jets were the main features seen in Halley's Comet's Giotto photo.

Comet Wild

The cometary probe, Stardust, was launched on February 7, 1999. Its mission was to capture a sample of the dust from the gas surrounding the coma surrounding the nucleus of comet Wild 2 (pronounced “Vilt 2”). On January 2, 2004, Stardust passed about 143 miles (230 km) of the comet’s nucleus. At the time, it was about 22 light-minutes away from earth, somewhat less than three times the distance between the

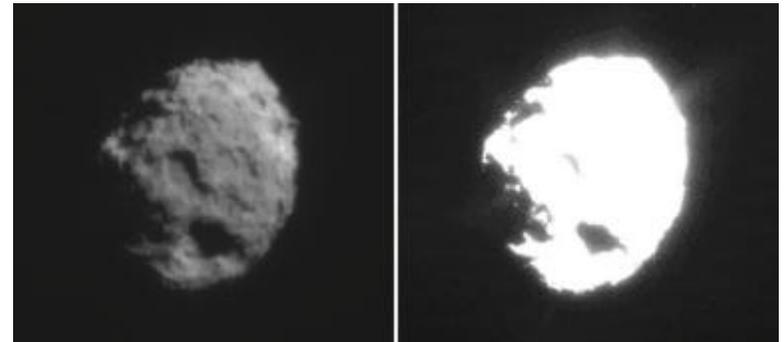
earth and the sun. On November 4, 2002, Stardust has flown by the asteroid Annefrank, providing a closeup photo of it, as shown at left.



To protect Stardust against the blast of expected cometary particles and rocks, the spacecraft turned so its “Whipple Shields” took the brunt of the impact. The

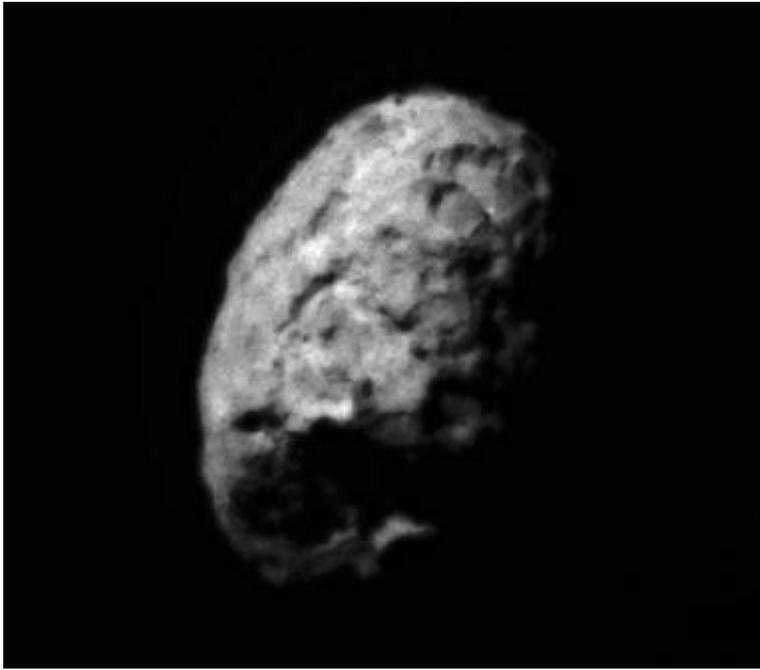
shields are named for American astronomer Dr. Fred L. Whipple, who, in the 1950s, came up with the idea of shielding spacecraft from high-speed collisions with the ejecta of comets. The shields consist of a set of composite panels, designed to disperse particles on impact, followed by layers of Nextel (a ceramic cloth), which further dissipate and spread debris.

The immediate fruit of the flyby was the best photos yet of the surface of a comet (below). The left image shows craters, some of



which, at upper left, seem to be associated with gas and dust streams seen emanating from the upper right of the body in the overexposed image at right. The comet’s nucleus is 3.1 miles (5 km) in diameter.

The photo below was one of the last to be released in January.
(All Stardust pictures courtesy of NASA/JPL.)



Mission scientists reported that Stardust entered Wild 2's coma on December 31, 2003. They expected a steady increase in the number of particles the comet encountered, but that is not what happened. Instead, Stardust flew through a swarm of particles, then almost nothing, and then another swarm. Four or five swarms were encountered. The swarm-particles hit the detectors at 3.8 miles per second (6.1 km/sec). During the flyby, the navigation camera, performing its secondary function, took 72 pictures, including the three presented above.

Six hours after the encounter, Stardust retracted the cometary particle collector grid. The sample will be kept in a special lander which is to return to earth in January 2006.

In conclusion, it is clear that nothing in the evidence requires any of these comets to be billions of years old. The comets show crater-like depressions, as do all other solid bodies in the solar system. This supports the creation scenario first presented by Gerardus Bouw in 1992 where craters are due to rapid cooling of the body.

“TO” FUNNY FOR WORDS

Every now and then we receive an email or letter that confidently pronounces that geocentrists are the penultimate ignoramuses, or words to that effect. Characteristically, these epistles exude complete confidence in science, philosophy, and theology – human disciplines all. They generally avoid Scripture. If the scriptures are mentioned at all, none are quoted; the author usually provides us with a reason why we should *not* take the Bible literally. Sometimes the presentation is well reasoned, but most often, the writer is exemplified by the following.

The title of this article is taken from the charge twice laid against us in the letter. It is here presented as “The premise,” with no editing whatsoever. Our reply is labeled “The evidence.”

The premise

To those who have no foundation in Physics, celestial and orbital mechanics, believing Geocentricity is an easy thing, They are suspicious of science, even true science, like physics and math. They want to be contrary to things like evolution, which we should be, so they jump on the band wagon without having a clue about what is done on a regular basis by Nasa and their private contractors, including Boeing, North American, Grumman, Western Union, Philco, and to many others to mention. The plain simple truth is that Bouw's Idea that the Geostationary Satellites just float above the stationary earth without falling is just to funny for words. The moon is falling around the earth and is in the earth's gravitational field, if it was not moving it would be pulled straight down like a rock into the earth. To suggest that the geostationary satellites would not fall at only 22,500 miles is just to funny for words. The moon is our satellite in full capture of the earth's gravitational field at apx. 250,000 miles. He (Bouw) pretends, that the mechanics work in either model.??? He doesnt know what he's talking about! I am no friend of Nasa's evolutionary views on origins, but Nasa most certainly knows what they are doing from the nuts and bolts stand point of satellite and rocket navigation, Bouw has no experience in these fields and is making a complete fool out of himself and helping many other well meaning christians look just as stupid. Again we are not fighting theories, we are fighting applied technology. Like Henry Ford building a flat head V8 and we saying that is not possible. [All sic – *Ed.*]

The evidence

1. At least one long-time, active NASA orbit-computation specialist is a geocentrist.
2. There are at least two retired engineers from the aerospace industry who were contracted to NASA and worked on the Pioneer and Voyager craft as well as the Gemini, Apollo, and Shuttle programs who are geocentrists.
3. At least two men with an earned Ph.D. in Astronomy are geocentrists.
4. The following papers, which except for two books (Møller and Rosser) were published in refereed physics journals, all demonstrated that “the mechanics work in either model,” and there’s not a, to summarize the accuser, “stupid-looking Christian” geocentrist in the bunch:
 - a. Barbour, J. B., & Bertotti, B., 1977. *Il Nuovo Cimento B*, **38**, 1.
 - b. Brown, G. B., 1955. *Proceedings of the Phys. Soc. B*, **68**:672.
 - c. Thirring, H., 1916. *Phys. Zeitschr.* **19**:33.
 - d. Lense, J. & Thirring, H., 1921, *Ibid.* **22**:29.
 - e. Gerber, P., 1898. *Zeitschr. f. Math. u. Physik*, **43**:93.
 - f. Møller, C., 1952. *The Theory of Relativity*, (Oxford: Clarendon Press), pp. 318-321.
 - g. Moon, P. & Spencer, D. E., 1959. *Philos. of Science*, **26**:125.
 - h. Rosser, W. G. V., 1964. *An Introduction to the Theory of Relativity*, (London: Butterworths), p. 460.
 - i. Lynden-Bell, D., Katz, J., & Bilak, J., 1995. “Mach’s Principle from the Relativistic Constraint Equations,” *Monthly Notices of the Royal Astronomical Society*, **272**:150.

More could be cited.
5. The point that the “mechanics works in either model” having been demonstrated, what are the opinions of some scientists? The first “f” letters are quoted from the fall, 1975 issue of *The Brahenian Debater*, a short-lived California publication.
 - a. “The whole question is one of philosophic view point, or attitude towards the world. It is not a question of fact, as the word fact is ordinarily understood.” (David Park, Prof. of Physics, Williams College.) Of course, modern geocentrists would say theological viewpoint, not philosophic.
 - b. “I teach a General Education Science course for non-science majors on the Copernican Revolution. In the first lecture of the course, I jump off the lectern table to “prove” that the earth is at rest. One of the major points I have made in re-

cent years is that, given a choice between Tycho and Copernicus after the observations of the phases of Venus by Galileo, the smart money was on Tycho.” (Donald J. Weinschank, Assoc. Prof., Dept. of Natural Science, Michigan State University, East Lansing.)

- c. “I think that physicists who have thought much about the implications of general relativity are likely to generally agree that there is no presently known way to determine absolute motion. In any case, that is the truth to the best of my understanding, and I tell my classes that had Galileo confronted the Church in Einstein’s day he would have lost the argument for better reasons.” (Carl E. Wulfman, Dept. of Physics, Univ. of the Pacific, Stockton.)
- d. “To call...a geosynchronous body a satellite, is simply to use ‘satellite’ to connote dependency, as in ‘Hungary is a Russian satellite.’ But, in this sense a ‘geosynchronous satellite’ is a satellite also of all other bodies in the universe, insofar as they all have a gravitational effect on the body. The expression, ‘geosynchronous orbit,’ would thus make sense only if it is understood to be a misnomer for *gravitational equilibration*. “The difficulty of placing a body in ‘geosynchronous orbit’ is merely that of finding the area of relative gravitational equilibration between earth and the other bodies of the universe. Since *synchronous* is a symmetrical, transitive and reflexive relation, a ‘geosynchronous’ is synchronous with all and only ‘geosynchronous’ bodies. [sic] And since the other stellar bodies, of which a ‘geosynchronous’ body is also a satellite are not themselves ‘geosynchronous,’ the area of relative gravitational equilibrium wanders away from the position occupied by a ‘geosynchronous’ body. Being no longer gravitationally equilibrated, the body loses its ‘geosynchronicity;’ and the non-geocentrist says, ‘Aha! Orbital decay!’ (Anonymous by request.)
- e. “In the usual Newtonian treatment of rotating reference systems, one must introduce ‘fictitious forces,’ such as the centrifugal (not to be confused with centripetal) force and the Coriolis force, in addition to ‘real’ forces such as gravitation. In the case of the geosynchronous satellite orbit as viewed from a reference frame rotating with the earth, the centrifugal and gravitational forces just cancel one another, so the satellite is unaccelerated in that frame and can remain motionless. (Note that this balance of centrifugal and gravitational forces is valid only here – it is *not* the correct way of explaining or-

bital motion in general.) Again, this only shows that it is possible to use a co-ordinate system in which the earth does not rotate, not that this is in some sense the correct or only system.” (George L. Murphy, Dept. of Physics, University of Western Australia.)

- f. “I think that your theory has some merit – this comment is made as a philosopher with some insight into the scientific method.” (Greg Kohlback, Grad. Student in philosophy, Univ. of N. Carolina.)
- g. “They’re going to realize that they can’t prove you wrong. (Joe Kelleher, Dept. of Philosophy, University of Utah.)
- h. “A twentieth century answer to the question, ‘Could the earth stand still?’ was given in *The Science of Mechanics*, by Ernst Mach in 1912. (Heard of airplanes going ‘Mach 2’? Same gentleman.) Here’s the story. Some Astronomy texts discuss several ‘proofs’ that Earth spins. A few are: (1) The Earth is bulged at its equator, squashed at the poles. This proves that the earth turns. (2) A pendulum swinging at the North Pole, slowly changes its direction of swing, making one complete rotation of its swings once each 24 hours. Standard interpretation: the Earth is turning under the pendulum.

“Mach took another look. All objects have inertia, the property of matter that makes it sluggish, hard to put in motion, hard to stop. What causes this inertia? Mach figured that it was the cumulative effect of all of those stars way out there. The stars in the Universe are very far away but there are very many of them. Therefore Mach proposed Mach’s Principle: An object has inertia due to the presence of stars. An object is hard put to stop (hard to accelerate) because you are trying to change its motion with respect to the stars.

“The outcome of this giant leap of imagination is thrilling. Suppose you assume that the Earth is at rest. Then the stars must be whirling around us once each 24 hours. But what then of the proofs that the Earth turns? The effects in those proofs are due to the whirling stars! The stars would cause an outward pull on the Earth’s equator (above which the whirling is fastest.) The pendulum would be whirling around with the whirling stars (roughly like a leaf in a whirlpool.) Every single observation that has been advanced to ‘prove’ that the Earth spins can also be explained by a fixed Earth and whirling stars.

“In the middle of 1913, a young man named Albert Einstein wrote to Mach expressing his appreciation for Mach’s

otion was the single point in which orthodoxy came into real contact with science. Many students of physics were suspected of magic, many of atheism: but, stupid as the mistake may have been, it was *bona fide* the magic or the atheism, not the physics which was assailed. In the astronomical case it was the very doctrine, as doctrine, independently of consequences, which was the *corpus delicti*: and this because it contradicted the Bible. And so it did; for the stability of the earth is as clearly assumed from one end of the Old Testament to the other as the solidity of iron. Those who take the Bible to be *totidem verbis* dictated by the God of Truth can refuse to believe it; and they make strange reasons. They undertake, *a priori*, to settle Divine intentions. The Holy Spirit did not *mean* to teach natural philosophy: this they know beforehand; or else they infer it from finding out that the earth does move, and the Bible says it does not. Of course, ignorance apart, every word is truth, or the writer did not mean truth. But this puts the whole book on its trial: for we can never find out what the writer meant, unless we otherwise find out what is true. Those who like may, of course, declare for an inspiration over which they are the viceroys; but common sense will either accept the verbal meaning or deny verbal inspiration.” (*Budget of Paradoxes*, 1:36.)

7. Fundamental experiments fail to show the earth to be moving.
 - a. Airy’s failure.
 - b. The Michelson-Morley experiments.

PANORAMA

Miller's primordial soup is spoiled⁵

Back in 1953, Chicago biologist Stanley Miller placed some gasses in a flask, subjected the gasses to an electric arc to simulate lightning, and reported that in the sludge buildup at the bottom of the flask he found the building blocks of life. It now seems, however, that his story of the gas coming to life was greatly exaggerated.

The difficulties...become clear when we look to see what building blocks were actually formed in the course of the simulation experiments of Miller and others. Robert Shapiro, professor of chemistry at New York University, pointed out in his 1988 book, *Origins*, that, contrary to what is sometimes stated, there was no synthesis of nucleotides and, indeed, only two of the component bases (adenine and guanine) were produced to any significant extent. Also, only two of the required 20 amino acids were formed in appreciable amounts, which was reduced to one when the experiment was repeated later with a less reducing atmosphere, reflecting changed views about the primeval Earth.⁶

At the time it was assumed that hydrogen, the most abundant element in the universe, would predominate on the "early earth." An atmosphere rich with hydrogen is called a *reducing atmosphere*. Subsequent analysis of rocks and "early" fossils show little, if any, hydrogen in the atmosphere when they were laid down. Today, scientists doubt that the "primitive" terrestrial atmosphere had the highly reducing factor used by Miller, a point favoring the recent creation of earth.

The Miller results led to the "primordial soup" theory, which assumes life arose in such a mixture of gasses and chemicals as Miller used, called a "primordial soup," but now called a "prebiotic soup." The alternative is the "unthinkable:" God created life.

But as long as atheistic scientists can find a way to get out from under that conclusion, they will, no matter how extreme. For instance, if life can't form on the surface of the earth because the temperature was too high, or too wet, or too oxidizing, why not suppose that life arose in hot springs and undersea thermal vents, where the temperature is above boiling? After all, certain bacteria do live there. Closest to the earth, and in the oceans whence evolutionists presume life began, these obviously "must" be the ancestors of man, even though they eat sulphur

⁵ Bada & Lazcano, 2003. "Prebiotic Soup," *Science*, pp. 745-746.

⁶ Palmer, 1999. *Controversy – Catastrophism & Evolution*, (Kluwer), p. 266.

and hydrogen sulphide. Evolutionists have dubbed those bacteria a new biological domain called *Archaea*. Is there any intelligent life left on earth? (Psa. 14:1 & 53:1.)

Relativity's submarine paradox

Imagine a submarine at rest that's exactly the same density as water, neither floating nor sinking. No paradox there, until the submarine begins to move very fast. Objects moving close to the speed of light get more massive and shrink in length (not width) according to relativity, so from the perspective of an observer at rest, a relativistic submarine will pack more mass into a smaller package; the sub will become denser than water and sink. On the other hand, Captain Nemo aboard the submarine feels that the sub is at rest while the water rushes by at near light speed. Because the water is moving so fast, the individual molecules gain mass and squeeze into a tighter spot; the density of the water increases, so the sub should float. Obviously, the sub can't sink and float at the same time. Either Captain Nemo or the stationary observer must be mistaken.

In the July 2003 issue of *Physics Review D*, George Matsas, a physicist at São Paulo State University in Brazil, reported he has solved the paradox. He did so by using the equations of general relativity. He found that the sub sinks.

The reason is because buoyancy is a function of gravity. Gravity is affected by rapid motion through space, or water in this case. As the sub speeds through the water, the gravitational pull between it and the earth increases, compensating for any increase in the water's density. Whereas the stationary observer thinks the sub sinks because of its increased density, Nemo thinks the sub sinks because of the earth's increased gravity.

In effect, Matsas extended Archimedes' description of buoyancy to high-gravity or high-velocity conditions. Note that the conclusion is equivalent to holding the earth (in this case, not universally) as the preferred frame of reference, even as other relativity paradoxes, such as the twin paradox, are solved by holding the universe as the preferred frame of reference.

So, is this conclusion practical, at all? Yes, say some. Matsas thinks that the equation might shed insight into the fluid flows around neutron stars or black holes. Yale's John Wettlaufer, who studies the thermodynamics of crystallizing materials, derived a similar equation that describes the buoyancy of forces along interfaces between solids, liquids, and gasses under different types of fields. This hints of something more profound, an as-yet not understood deeper principle.

Meteor hits a house in New Orleans

When Roy Fausset walked into his Joseph Street home after work Tuesday evening, September 23, 2003, he knew immediately that something was very wrong.

“The powder room door was open,” he said, “and it looked like an artillery shell had hit the room. ... We had just renovated the powder room and now there was plaster everywhere. I looked up at the ceiling and saw this big hole.” A quick check in the adjoining utility



room revealed another hole in the ceiling and a broken ceiling joist.

“I went outside and looked up and about midway down the front of the roof, there was a hole about the size of a basketball,” he said. [The picture above shows the roof the next morning, after the hole was patched (light area).]

Something had fallen with enough force to punch a hole through the roof, destroyed an antique wooden desk, penetrated the upstairs room floor, then fell through the downstairs bathroom, narrowly missing the toilet. It then punctured a hole through the bathroom floor of

the house, fell through the crawl space, and cratered the ground beneath the home where it shattered into many pieces. The estimated total weight of the stone fragments is about forty pounds (twenty kilograms). The largest piece, pictured here, weighs in at two pounds (891 grams).



No one saw or heard the meteorite as it fell. The only report of any sound was made by the neighbor, who heard

what she thought was a car accident at about 4:00 p.m. She rushed outside and saw nothing, then forgot about the sound until her neighbor arrived home that evening and came over asking her about why his

home was severely damaged. At first, they thought that perhaps an airplane part had fallen off and hit the house. When Faussett sorted through the debris, he noticed small pieces of burned stone, and then realized that it was a meteorite.

Preliminary tests by scientists at Tulane University confirm that this particular rock came from outer space. That makes it an exceedingly rare phenomenon. Meteorites often enter the earth's gravitational field; all but a tiny percent of them burn up during their passage through the atmosphere—what are commonly called “shooting stars.” “We found olivine, pyroxene, plagioclase and troilite,” a combination of minerals often found in meteorites, said Stephen Nelson, chairman of Tulane's earth and environmental sciences department. Nelson used X-ray diffraction Friday afternoon to double-check the type of individual minerals that make up the rock. He had first identified the rock as rhyolite, a form of volcanic rock found in Mexico and south Texas. The minerals Nelson found don't automatically mean it's a meteorite, he said, because they're also found in the earth's mantle, deep underneath the crust.

“But we don't commonly see pieces of mantle falling out of the sky,” he said. “And the black crust, which I thought was a weathering line at first, perhaps it's a fusion crust material that melted as it passed through the atmosphere.” Thus the rock was identified as a eorite,” a type more common than the black, iron-like rocks that have become the typical meteorites in the public imagination.

Ice on the moon: all gone...

Data gathered by the lunar orbiter Clementine in 1994 suggested that ice might lie in lunar craters near the moon's south pole, at least. Another satellite showed that the polar regions are rich in hydrogen. These regions fall in the shadows of their crater walls and never see sunlight.⁷ Now, earth-based observations fail to find a trace of water.

Using the 1000-foot (305 m) radio telescope at Arecibo, Puerto Rico, Donald Campbell of Cornell and his colleagues beamed radar signals at the moon's polar regions. The lunar soil absorbs most of the radar signals, but ice would strongly reflect the signals. The Arecibo team reported in the 13 November issue of *Nature* that they saw no such signals.

Paul Spudis of Johns Hopkins Applied Physics Lab, who analyzed the Clementine data, said that it is still possible that the amount of ice is too small to provide a clear radar reflection. He thinks the only way to know for certain is to send a lunar lander to the region where the ice is

⁷ Panorama, 1998. “Ice on the moon,” *B.A.* 8(85):23.

suspected to be. Since the deliberate crashing of Lunar Prospector into the region failed to kick up any water, it appears there is no ice near the lunar poles.⁸

Should creationists expect water on the moon? After all, water was present at the start of creation. But the water was separated by the firmament on the second day, and the moon was formed on the fourth day, so there is no *a priori* reason to expect water on the moon.

Global cooling? Global warming? Make up your mind

These days we hear a lot about global warming. If we don't give up our cars and our heated homes, and if we don't give hundreds of billions of dollars to environmentalists or our governments, the earth will encounter a run-away greenhouse effect, and our grandchildren will bask in 800-degree temperatures, just as happened to the surface of Venus.⁹ Almost every year the National Oceanic and Atmospheric Administration (NOAA) announces that the previous year was the warmest or second-warmest on record. With so many records being broken, one would think that something unusual is happening to the earth's weather; that would be reasonable to think: but other reasonable questions will lead one to skepticism.

Historical temperature records are available back to 1860. Between that year until 1900, reliable temperature records are available for about fifty percent of the earth. But even these records are inconsistent.

Temperatures in the Southern Hemisphere, for instance, are hard to come by. That hemisphere is 80% ocean. Oceans cover 71% of the globe, but accurate measurements of ocean surface temperatures vary widely. Originally, the measurements were made by collecting a canvas bucket of water and taking its temperature. However, we all know that water cools by evaporation and that happens all around the canvas bucket. Precise temperature measurements by this technique will give too low a temperature reading. Since the 1940s, temperature measurements are taken in the pipes that draw in water to cool a ship's engines. Temperatures by the two methods routinely differ by 0.5°F to 1.3°F. The canvas bucket always gives a cooler temperature. Meteorologists apply a correction for this effect, but the uncertainty in the correction is as large as the alleged global warming.

⁸ Panorama, 1999. "No water ice on the moon?" *B.A.* 9(90):24

⁹ For a review of whence came the "runaway greenhouse effect" and a brief summary review of global warming theories, in particular regarding Venus, see Bouw, G. D., 2001. "The Morning Stars," *B.A.*, 11(97):73-76.

Before 1860 the data are so sparse that no meaningful climatic trend can be inferred from it. Yet, such data are necessary to determine whether global warming is happening.

In the last decade boreholes and wells have been used to measure past temperatures. This method relies on the assumption (apparently borne out by some observations) that changes in surface temperature are captured in the subsurface and are preserved there. These are used to infer climatic conditions back several thousand years. To do this, a hole is drilled into the earth and allowed several months to allow the drilling heat to dissipate. Then a thermometer is lowered into it and temperatures are measured as a function of depth. In 1997, in the *Geophysical Research Letters*, Prof. Henry Pollack published the results of 6,000 borehole measurements taken from around the world. His conclusion was that the 1°F rise observed since 1860 is real, but that it is a normal recovery from the colder-than-usual nineteenth century and, indeed, that the current climate is still 1°F cooler than the average temperature drawn from the data.

In 1998, a Danish team confirmed Pollack's data by measurements of ice core samples from Greenland. Significantly, the temperatures determined by the Danish team are claimed to be the most accurate ever conducted, but they are not necessarily representative of global conditions. The results were published in the October 1998 issue of *Science*.

Mankind tends to overreact to situations. It seems to be in his nature. Consider, for example, the reaction when a sports team wins. After all, there is no significant, everlasting consequence to the game. Likewise the adoration of movie and TV stars, most of whom are so reprobate that one would not invite any of them into one's house, were it not for their press "agency." Their lasting results are debauchery and idolatry, the damnation of their fans. Likewise, between 1945 and 1975 the average land-based temperatures in the northern hemisphere fell less than half a degree. As a result, by 1975 the press was abuzz with stories of global cooling. Dire warnings were sounded about massive famines and the onset of a new ice age and wholesale death and misery for mankind. The pundits demanded that fighting the oncoming ice age be a national priority, funded to the utmost. So now it is global warming that demands that same, with its dire predictions of massive famines and the onset of a runaway greenhouse effect that will spell wholesale death and misery for mankind. Actually, sin is what keeps a man focused on the trivial. It is rebellion against God – the rejection of the free offer of pardon from sin through the sacrifice of the Lord Jesus Christ – that makes a man unstable in all his ways (James 1:8). Do not allow yourself to be buffeted about by every wind of doctrine (Eph. 4:15). In particular, do not let yourself be misled by the pundits of

global warming. They will only making merchandise of you, if you let them.

Tired light theory retired

In 1929 Edwin Hubble announced that the galaxies all seemed to be racing away from us, and the fainter they are, the faster they go. From this he concluded that the universe is expanding. A few months later, astrophysicist Fritz Zwicky proposed that the red shift was not because of the expansion of the universe but was an inherent property of light moving through space, namely, that something, be it resistance by the æther, or gravity, caused the light to loose energy and so increase in wavelength towards the red area of the spectrum.

In the sixties, when observers first detected that the universe was filled with photons characteristic of a temperature of 3 kelvins (-454 °F or -270 °C), they found that the radiation was too dim to be explained by Zwicky's "tired light" hypothesis. That was the first hint of problems for tired light as an explanation for redshift.

In the last three years two more problems have arisen. The first is based on relativity. Most supernovae (exploding stars that for several days can emit as much light as an entire galaxy) fade in one of two classic ways. The decay rate over the course of, say, a day is roughly the same when near maximum brightness. Given that each type of supernova peaks at the same brightness, cosmologists can use supernovae as distance indicators. In 2001, however, researchers from Lawrence Berkeley National Laboratory showed that at higher redshifts the supernovae fade more slowly than at lower redshifts. The difference in the rate would be explained by the time dilation of the Special Theory of Relativity if the redshifts measured were truly Doppler shifts, that is, if the galaxies were actually moving, instead of standing still as Zwicky postulated.

The second problem arose from a study of the surface brightness of galaxies. Both Zwicky and Hubble's postulates predict a dimming of the surface brightness of a galaxy, but the relativistic effects will add to the dimming, making the surface brightness of galaxies fainter in an expanding universe. This is what Sandage and Lori Lubin of Johns Hopkins observed.

Does this mean that the tired light theory is dead? Not necessarily. It is always possible that some explanation or observation will resurrect the theory. After all, a theory can always be rescued by adding some more postulates or hypotheses; as has often been done for evolution. But it does mean that professional astronomers will be harder to convince.

A new way to measure distances to the stars¹⁰

In the January 22, 2004 issue of the journal *Nature* (427:326), astronomers from the California Institute of Technology and NASA's Jet Propulsion Laboratory, both in Pasadena, Calif., report the best-ever measurement of distance to the double star Atlas. Atlas is one of the "seven stars" mentioned in Scripture. They are commonly called the *Pleiades*.¹¹ The introduction of Atlas and Pleione, their father and mother according to Greek mythology, plus the seven daughters, sums to nine stars. The Pleiades are visible as a lovely little dipper-shaped group of stars in Taurus the bull. They are best seen in the evening sky in the winter (summer in the southern hemisphere). The Pleiades are what astronomers classify as an *open cluster*, meaning that the stars are grouped in a form that has no regular shape, unlike globular clusters, for instance. Along with the seven stars visible to the naked eye, there are hundreds of fainter stars in the cluster. The binary star, Atlas, according to the team's decade-long interferometric measurements, lies somewhere in the range of 434 to 446 light-years from earth.

The range of distance to the Pleiades cluster may seem somewhat imprecise, but in fact is accurate by astronomical standards. Heretofore, the preferred method of determining stellar distances is to measure its precise position relative to background stars, and then measuring its slight change in position when the yearly motion of the universe carries the star with the sun to the opposite side of the earth. The resulting shift is called the star's *parallax*. However, this procedure gives only a rough distance estimate to even the nearest stars, due to the gigantic distances involved and the subtle changes in stellar position that must be measured. This method gives the distance to the Pleiades as about 430 light years (l.y.).

When the European Hipparcos satellite was launched in 1997, it was expected to yield more accurate results than the aforementioned ground-based technique. But when it came to open clusters such as the Pleiades, the Hipparcos satellite consistently gave a shorter distance. For the Pleiades it gave a distance of 385 l.y. Its precision was stated as one milliarcsecond, (0."001, where one second, i.e., 1", is 1/3600th of a degree). As a parallax this corresponds to a distance of 3,258 l.y. In other words, one could expect reasonable distance measurements out to roughly a thousand light years with that kind of precision. But Hipparcos's distance to the Pleiades differed from the standard measurement

¹⁰ Clavin, Whitney, D. Savage, & R. Tindol. 2004. "Astronomers measure distance to well-known star," NASA/JPL News Release 2004-026, January 21.

¹¹ For a historic view of the Pleiades, see Bouw, G. D., 1999. "The Bible and the B.A. 9(87):4.

by ten percent. In other open clusters that went as high as twenty percent.

The new technique uses interferometry to measure the separation between two binaries. Using data from the Mount Wilson stellar interferometer, next to the historic Mt. Wilson Observatory in Pasadena, and the Palomar Testbed Interferometer at Mt. Palomar Observatory near San Diego, the team determined a precise orbit for the binary. Next, the team used the mass-luminosity function to give approximate mass for each of the two stars. This allowed the theoretical separation of the two stars to be refined, giving a distance between 434 and 446 l.y., in line with the old technique. The team's new measurement seems to settle the matter in favor of the traditional parallax measurement.



The Pleiades Atlas is the brighter of the two stars at the left, under Pleione. The seven stars actually seen by most eyes include those two, plus the four in the dipper, plus the one off the end of the dipper at upper right. The two other named stars are the one in front of the dipper at right, and the upper of the pair at the top of the photo. The blue haze around the stars is due to dust in the cluster.

Astronomer Bohdan Paczynski, of Princeton, said the error might be due to an unusual orbit caused by failure of some of the Hipparcos booster rockets shortly after launch. A pending study that will confirm the Caltech measurements is expected to resolve the controversy. "The

new results show that the Hipparcos data was in error,” claim the researchers.

“For many months I had a hard time believing our distance estimate was 10 percent larger than that published by the Hipparcos team,” said the lead author, Xiao Pei Pan of JPL. “Finally, after intensive re-checking, I became confident of our result.”

Coauthor Shrinivas Kulkarni, a Caltech astronomy and planetary science professor, said, “Our distance estimate shows that all is well in the heavens. Stellar models used by astronomers are vindicated by our value.” These are grandiose claims for the theory of stellar structure and ageing. What is actually demonstrated is that the mass-luminosity function appears valid. The M-L function is determined from open clusters (also called “galactic clusters” because they are found in the plane of the Milky Way), coupled to observations of eclipsing binary stars (where two stars alternately pass in front of and then behind each other), and founded on the orbital behavior and parallaxes of nearby binaries. The theory was based on those observations, so confirming the observations does not validate the theory.

The resurrection of Giordano Bruno

In last issue’s “Readers’ Forum,”¹² we printed a series of emails debating the reasons for the fate of Giordano Bruno. The history books tell us that Bruno was burnt at the stake by the Church of Rome for various reasons, among which heresy and black magic. Now comes this news from Claude Eon, in France:

G. Bruno was *never* executed! The whole story is based on an alleged letter from Gaspard Schopp to his friend Conrad Rittenshausen, dated Rome, Feb.17, 1600. The trouble is that this “letter” was “found” by a Lutheran pastor, Jean-Henri Ursin¹³ (1608-1667), in a book printed in Germany, a very rare book with a false name of author, a false date and place of publication!¹⁴ Nobody has ever seen the original letter, which appears to be just a fake. And, according to Brucker, a Protestant pastor, this Schopp was a very unreliable person, too.

Now, the strange thing is that absolutely no contemporary of Bruno’s supposed execution in Rome in 1600 ever mentioned the

¹² Reader’s Forum, 2003. “The execution of Giordano Brun B.A., 13(106):119.

¹³ Ursin, Jean-Henri, *Machiavellizatio*.

¹⁴ Cf. Johann Brucker (1696-1770), the famous author of a *Historia critica philosophiae...* published in 1742/1744. Brucker says that in 1726 an Italian bibliophile, Haymius or Hagmius, maintained that G. Bruno had been executed...in effigy only. But Brucker himself wondered on what evidence Haymius relied to affirm such a thing.

fact! Bruno was very famous all through Europe, and his death, especially at the stake, in Rome, would not go unnoticed, particular by Protestant authors who would certainly have been all too happy to denounce catholic intolerance.

Moreover, there is absolutely no record of a trial nor of any sentence. All we know is that after spending six years (1592-1598) in Venetian jails, Bruno came back to Rome. He might have been put under house arrest in some monastery, but frankly, nobody knows how he died. Strangely enough, it is only from 1701 onwards that the story of Giordano Bruno hit the headlines, without any new evidence about his fate. It was just a “good” argument in the war then prevailing against the Catholic Church!

Pierre Bayle (1647-1706) the famous author of the *Dictionnaire historique et critique*, who knew just about everything and had a very critical mind, in his article on Bruno says he does not believe in his execution as the only source is Schopp’s letter, which he considers to be a fake. Moreri (1643-1680), a French erudite who wrote a *Grand Dictionnaire Historique*, does not believe either in Bruno’s execution. Finally, and in my opinion this is the irrefutable argument: the Venetian ambassadors in their diplomatic dispatches to their government *never mentioned* any execution of Bruno! Remember, Bruno had spent six years in Venetian jails and we may suppose that Bruno’s fate was of some interest to the Venetian authorities.

Best regards,
Claude Eon

So there you have it. Not only is there no agreement about why Bruno was executed, but we cannot even be certain that he was executed in the first place. It appears that there is about as much truth in the popular story of Bruno as there is in the popular story of poor Galileo, who, it is said, was persecuted by that mean, nasty Church of Rome for his valiant and heroic stand for the truth of heliocentrism. His persecutors gave him a nice villa, a generous pension for life, able to conduct his affairs unrestricted except to say that heliocentrism is a *proven fact* (which it was not then, and it is still not proven). On top of that, he received an apology for his “mistreatment” from Pope John-Paul II. As the late dissident Bulgarian physicist, Stefan Marinov said about Galileo’s persecution, “I should be so persecuted!”

READERS' FORUM

From a reader in the U.K.

I greatly appreciated the Fall 2003 issue of the BA. Your editorial was excellent and I copy below ICR's *Days of Praise* extract as an example of their "shooting themselves in the foot" in their defence of the heliocentric view. I like ICR's anti-evolutionary stance but remain bewildered by their lack of faith in the totality of the Word! Also, to be frank, I get put off by their nationalistic myopia on "special" days such as Labour Day etc. However...

Philip Stott's article was truly illuminating for me as I confess that I had totally missed the point regarding the irrelevance of the solar system.

I sense a broader range of articles in the BA. This is to be welcomed as we need to somehow focus minds on the core evil of the Copernican Rebellion and its fuelling of Darwinianism.

With every blessing in The Lord,
Brian

Celestial Mechanic

Celestial Mechanic wrote:

Curvature of spacetime means that spacetime is endowed with a metric (a means of measuring spacetime intervals between events) that possesses a curvature tensor (also called the Riemann tensor) that is non-zero. If the curvature tensor is zero everywhere then the spacetime is said to be flat.

When we invoke the sphere on a rubber sheet model, it is the earth's gravity that makes it work. The curvature of the sheet merely steers the ball. I've never seen any explanation of how curved space could "cause" gravity, let alone a lucid explanation.¹⁵

I responded with:

¹⁵ For a mathematical analysis of the rubber sheet model, see James Hanson, "The gravitational analog of a rolling ball on an elastic membrane," *B. A. Technical Paper*, no. 1, available from the Biblical Astronomer for \$5 postpaid in North America, \$10 elsewhere. For a physical explanation of gravity, geocentricity offers Le Sage's theory, gravitational shadowing, and so forth.

Is space curved? With respect to what? Why, Euclidean space, of course.

Celestial mechanic responded:

There is no need of something to “make it work.” An object just follows a geodesic through spacetime. The way that general relativity works is best summed up this way, courtesy of Misner, Thorne, and Wheeler: “Spacetime tells matter how to move, matter tells spacetime how to curve.”

To which I say:

Geodesics are geometry, and geometry is conceptual, not physical. That was Mach's point in formulating his principle. It may well work, I do not deny that, but is it a real, physical thing? LeSage's theory is much for satisfying physically. Even gravitational and electro-magnetic fields are more physical provided there is a medium to conduct or hold the field.

QUOTABLE QUOTE

He wondered, as he had many times wondered before, whether he himself was a lunatic. Perhaps a lunatic was simply a minority of one. At one time it had been a sign of madness to believe that the earth goes round the sun; today, to believe that the past is unalterable. He might be alone in holding that belief, and if alone, then a lunatic. But the thought of being a lunatic did not greatly trouble him; the horror was that he might also be wrong.

—Winston Smith in George Orwell's *1984*, p. 68 paperback edn.

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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