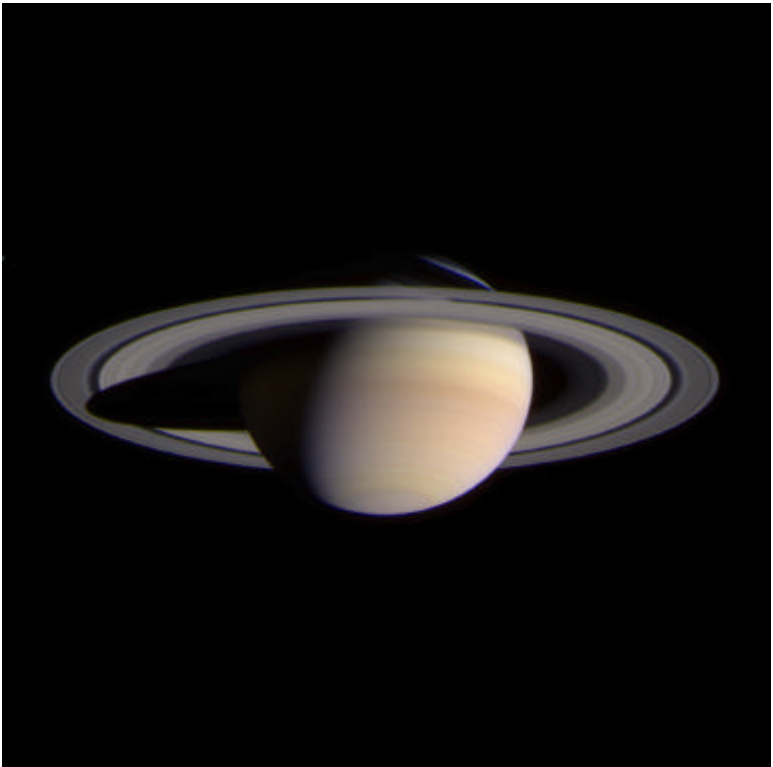


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Front Cover: Photo of Saturn taken by the Cassini spacecraft, December 2004.
Back Cover: A plate from *Urania's Mirror*, 1832. The package was reprinted in 2004 by Barnes and Noble under the title *The Night Sky: A view of the Heavens*, ISBN 0-7607-6168-X. Note the non-standard constellations named Tarandus and Quadrans Muralis on the edges of Draco. This reflects the propensity of eighteenth century astronomers to fill any vacant area with constellations of their own imaginings. A commission to stop the practice was not formed until about 1840.

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EDITORIAL

It was issue number 38, in September of 1984, that marked the first issue of *The Bulletin of the Tychonian Society* of which yours truly was the editor. That was twenty years ago. The previous editor, Walter van der Kamp, started the modern geocentric movement in 1967. It has been an adventurous 37 years for that movement. There were ups and downs, of course; especially in the first few years of each of our editorships, but we weathered the storms and the publication, now called *The Biblical Astronomer*, is still around. And it is still the only Creationist publication devoted entirely to astronomy and its subordinate sciences.

“Subordinate sciences?” you ask. “Isn’t astronomy a branch of physics?” Not unless you are a physicist. Historically, astronomy existed before physics. Modern physics came out of astronomy as certainly as modern evolution came out of mythology. From a scriptural perspective, astronomy is the oldest of the sciences, dating back to the creation week. But we shall argue the point no further.

All that was to introduce the revised and greatly expanded version of the geocentricity.com web site. The site has been reorganized so that anything about the Tychonian Society and the Association for Biblical Astronomy is all under one link. That includes biographies, projects, such as the Orrery development, expeditions, software, and translations undertaken by the organization. Articles and copies of past issues of the *Bulletin of the Tychonian Society* and *The Biblical Astronomer* are under the “Biblical Astronomer” link, while things pertaining to geocentricity as a subject are under the “Geocentricity” link, and so forth. The shopping web page has been renamed to the “Tycho Brahe Shop,” and visitors have the option of ordering books and videos or just reading about the astronomer Tycho Brahe. There is more coming to the web site over the next several months.

Travel notes

Dr. Bouw will travel in March, May, and July. The biggest expedition will involve speaking engagements in the Philippines, New Zealand, and the United Arab Emirates in late April through May. European engagements are possible but not yet settled.

In this issue

In this issue we continue our look at the witness of the stars, examining the constellations of the Big and Little Bears. Things are not

always what they seem to be, we learn. We also present another article by Dr. Strouse, this time about Yahweh, a topic we have touched on before. Dr. Strouse definitely shows that Yahweh is a modern invention (i.e., about 250 years old). That article is followed by a look at comets. Though not directly related to geocentricity, comets provide some key evidences pointing to a recent, that is, 6000-year old creation.

Three new books

Herewith I would also like to refer to two books that may be of interest to the reader. The first book reads like a murder mystery, and, indeed, that is its intent. The title of the book is *Heavenly Intrigue*, and it was written by a husband and wife pair, Joshua and Anne-Lee Gilder. (2004, Doubleday, ISBN 0-385-50844-1, about \$25). The Gilders make a convincing case for the charge that Tycho Brahe was murdered, and they show that the only man with motive and opportunity was Johannes Kepler. Personally, I found it convincing; but would it hold up in a court of law? With all the witnesses dead, probably not; but the evidence is as strong as the charge that the Arctic explorer Frazier was murdered by arsenic poisoning, and it is certainly stronger than that Johansson's Lucy fossil walked upright.

The other book is a recent exposé of Relativity by statistician Hans Zweig, Ph.D. Entitled *Relativity Unraveled*, Dr. Zweig raises some interesting, common-sense objections using the analogy of a train traveling past an observer on the ground, and an observer on the train. I hope, D.V., to have more about that in a future article. The ISBN is 3-9807378-4-5; cost is either \$13 or \$20 depending on where you buy it. See <http://www.aquestionoftime.com/book.htm> for more. Dr. Zweig concludes that the redshift gives a size for the cosmos that is too large; that the universe is 40% the currently-estimated size. I have not yet had time to analyze the claim.

The third book is entitled *The Bible and Geocentricity* by James Hanson. It is in proof right now, but will shortly be available. The web site will give other information such as pricing when it becomes available. Otherwise, the Spring issue of the *Biblical Astronomer* will give further information. The price is expected to be about \$10.

THE URSAS

by

Gerardus D. Bouw, Ph.D.

We continue our series of articles about the witness of the stars to the gospel of our Lord Jesus Christ. Our last article, “Cetus,” appeared in issue number 104. In this issue we look at the two bears, Ursa Major and Ursa Minor. As usual, we look beyond the Greek forms to ancient times and find that these two constellations also originate from the Fertile Crescent, consistent with the belief that the constellations date from the time of creation.

The Bears that never were

For centuries our skies have included the constellations of Ursa Major and Ursa Minor; the big and little bear. In the English-speaking world we know them better as the big and little dippers. Their depiction as bears is a long tradition and, even though no one has yet to find a bear-shaped figure for the Little Dipper, H. A. Rey found the figure of a bear for Ursa Major (see Figure 2 of this article, page 12). Despite Rey’s creative view, however, the bears are universally represented with long tails, and Arabic star names speak of ears and other body parts for both bears.

When we look around the world, however, we find that only the Greeks, Finns, Siberians, and American Indians saw these asterisms as bears. Among the latter, some tribes accounted for the long tails by supposing the bears had been hurled into the sky by their tails, which stretched in the effort. Others supposed that bears were created with long tails but, by one mechanism or another, ended up with short tails. Typical among the latter was the story about a bear who went ice fishing with his tail only to have it frozen into the ice. When he pulled real hard, his tail snapped off, and ever since then, all bears have had short tails. A couple of tribes among whom the Algonquin concluded that whoever originally called the two asterisms, “Bears,” had never seen the animal. Because most of what we know of the constellations came from the Greeks, our Western star charts have featured the bears as far back as we can see.

Bring on the bears

Surprisingly, it has taken hundreds of years to piece together the Greek myths and origins of the two bears. Strabo wrote that the Little Bear was not recognized by the Greeks until about 600 B.C. Two other ancient authorities, Aratus and Homer, knew nothing of the bears before about 550 B.C. According to Strabo, it was Thales of Miletus (ca. 624-547 B.C.) who introduced the Greeks to the constellation as a superior navigational aid. At the time, the Greeks were navigating by the seven stars known as the Big Dipper. Phoenician ships used the seven stars of the Little Dipper.

Now at that time, the star we know as Polaris was twelve degrees from the Pole. The star, Kochab served as pole star, even though it was located about five degrees from the Pole. To appreciate just how close Polaris is to the Pole, consider Fig. 1 on page 8: In the sixth century B.C. the Pole was located under the final “s” of Ursus in the header, and level with the star Yildun. At that time, the star Polaris was $12^{\circ} 24'$ from the Pole. Today, the Pole is located about a tenth of the way from Polaris to Yildun.

The Phoenicians called the Little Dipper, *Doube*, which means “guide.” The seven stars guided Phoenician ships in their journeys throughout the world; thus the name of the asterism. Thales was familiar with the ship navigation techniques of his era. After he settled in Greece he tried to convince Greeks of the superiority of using *Doube* for navigation. He thus introduced them to the word.

When the Greeks heard the word, *doube*, they must have heard it as *dobe*, the Semitic word for bear.¹ Thus they dubbed the Little Dipper the *Phoenician Bear*. Their seven guide stars, in turn, were also “doube,” in that they had the same purpose; and they had a similar configuration. That asterism became the Big Bear, to distinguish it from the Phoenician Bear, which was too hard to say and soon became the Little Bear.

Enter the myths

The myths about the ursas, major and minor, were introduced before 350 B.C. Condos² has pieced together the two versions of the Greek myth devised to explain the origins of the two constellations. The main character is either called Phoenice or Callisto. She was a huntress who hunted with Artemis, also called Diana. One day, while

¹ See H1677 in *Strong's Concordance*.

² Condos, Theony, 1997. *Star Myths of the Greeks and Romans: A Sourcebook*, (Phanes Press: Grand Rapids), pp. 197-205.

hunting alone, she was forced by Zeus. She kept the incident secret from Artemis until the latter saw that Phoenice was with child. In anger, Artemis changed her into a bear. Phoenice (in bear form still,) had a son, Arcas. He was raised by her father, Lycaon.

As fate would have it, Arcas grew up to become a guardian of Zeus's sacred precinct, and one day Phoenice wandered into the area. Hunted by her son and his company, she tried to escape but was captured. Ultimately Zeus remembered his tryst with her, and honored her by placing her in the sky.

There are several variations to the tale, the main difference lying in who places her in the sky, Zeus or Artemis. Condos resolves the two tales by resolving the constellations, both of whom are thoroughly confused in Greek mythology. The resolution is that the Big Bear was Zeus's tribute to Callisto, while the Little Bear was Artemis's tribute to her as Phoenice.

Actually, these myths tie together several ancient themes and names associated with one or both constellations. Phoenice and the Phoenician link is obvious. The name Arcas derives from *Arktos*, a name applied to Ursa Minor even earlier than the Phoenician time. It is reflected in the name of the star, Arcturus. From it we derive our word, "arctic."

Before the bears

Having discovered the origin of the bears to be a linguistic quirk, it is not surprising that Ursa Minor cannot be made to look like a bear, even assuming that ancient eyes were a lot more sensitive than ours. Let us now go back in time to look at what the two constellations looked like before the bears arrived on the scene.

Homer refers to the two constellations in his works,³ calling them both *wagons*. Aratus also knew them as wagons. Other Greeks thought them the two nurses of Zeus, Helice (who is also Histoe) being Ursa Major, and Cynosura Ursa Minor. No other civilization mentions the nurses, but others mention the wagons and we shall have more to say about that when we look at the constellations individually. Before we do we should note that among the star lists, that of Hipparchus is the oldest and lists only seven stars for Ursa Major. Hyginus lists 22, and Ptolemy lists 27. This shows that the constellation was enlarged after Hipparchus.

³ Homer. *Iliad*, 18.487, and *Odyssey*, 5.273.

Ursa Minor

The Arabs followed the Greeks in picturing the constellations in the sky, so it is not surprising that Ursa Minor is called *Al Dubb al Asghar*, the lesser bear. Before that, however, they saw a bier, a place to rest or transport a coffin. They called the three stars in that tail, *Benat al N'ash al Sughra*, meaning daughters of the lesser bier. We shall speak more of this under Ursa Major. Still earlier, the constellation was a fold or pen to protect cattle. The stars β and γ were called the two calves, and α the young he-goat.

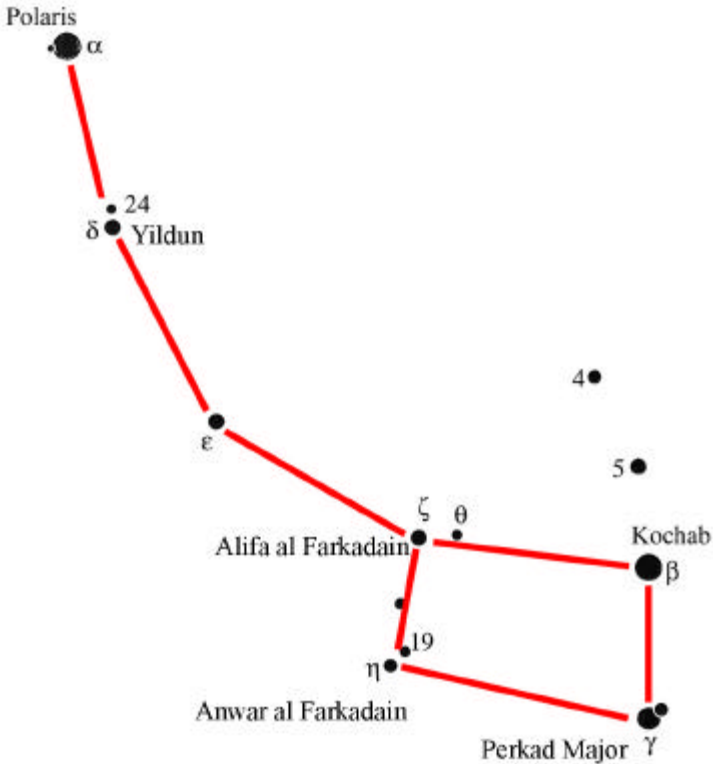


Figure 1: Ursa Minor, the Little Dipper.

Among other nations, Egypt saw the jackal of Set, the Danes the throne of Thor or the smaller chariot; and the Finns saw a little bear. Another name, which appears rarely, is *Alrucaba*, which has been applied to both Polaris and the constellation. It means a wain or vehicle and appears in the Alfonso tables, presumed to have been put there by

its Hebrew editor. The Old Germans called the constellation *Tramontane*, and the Italians applied the name to Polaris as recently as 1511. Thence it also came to be known as the Lode Star. Tramontane appears to be the same as Mons Coelius, the mountain of heaven. Reference is made by some to the Mount of the congregation in the sides of the north mentioned in Isaiah 14:13 and the mountain of God referred to in Ezekiel 28:14. Tramontane was also known as Mount Ash, of which more in Ursa Major.

Rolleston, Seiss, and Bullinger claim that the most ancient view of the Little Dipper was that of a sheepfold. They start with one of the star names in Ursa Major, namely *Dubhe*, which means herd. In Arabic, *dubah* means cattle. Furthermore, the Hebrew word, *dober*, (Strong's H1699) is translated as "fold" in Micah 2:12. *Dobeh*, (Strong's H1679), means strength, or stronghold. Both Ursas are said to be strongholds to protect flocks, with Ursa Minor holding the little flock (Luke 12:32⁴).

The star names in UMi

α **Polaris**, Phoenixe. The Finns called it *Taehti*, the star atop heaven's mountain. The Arabs, *Al Jadi*, young he-goat, which by the 1700s had been shortened to Juddah. Also spelled as *Al Gedi*.

β **Kochab**, which is Hebrew for star. Bullinger renders it as awaiting him who is to come.

γ **Al Pharkadian**, the calves; also: redeemed, that is, peculiar flock. β and γ were dubbed the guardians of the pole some time before 500 B.C.

δ **Yildun**, a Turkish name meaning excellent star.

ζ **Alifa al Farkadian**, the dim one.

η **Anwar al Farkadian**, the bright one.

From this we can only conclude that the original asterism was never a bear. The original form may well have been seen as an enclosure to protect a flock, be they sheep, goats, or cattle. In terms of scriptural prophecy, the only reference to little flock is found in Luke 12:32, where the context is to first seek the kingdom of God (v. 31). The kingdom of God is a spiritual kingdom, not an earthly one as exempli-

⁴ Luke 12:29-32— And seek not ye what ye shall eat, or what ye shall drink, neither be ye of doubtful mind.

³⁰ For all these things do the nations of the world seek after: and your Father knoweth that ye have need of these things.

³¹ But rather seek ye the kingdom of God; and all these things shall be added unto you.

³² Fear not, little flock; for it is your Father's good pleasure to give you the kingdom.

fied by the kingdom of heaven. The context is a people that are not members of the Gentile nations (v. 30), thus most likely believing Jews. As we are currently in the kingdom of God, according to Scripture,⁵ so the reference is to believing Jews with most likely, the 144,000 mentioned in Revelation 7 and tribulation saints included in that set. This is indeed a small flock when compared to the number of believing Gentiles and the number of unbelieving Jews.

Ursa Major

We commented earlier on the myths and the various significations of Ursa Major, the Big Bear. We now consider a word that is related to bear, namely bier. Other related words are bear (to carry), bairn (a babe, as one borne), burden, fertile, differ, offer, etc. A bier is a platform on which a corpse or coffin is placed before burning or burying. It may be mobile.

Before we begin that, let us examine what the asterism has meant to the peoples of the past.

In North America, the Algonquins and Narragansetts saw them as bears, which most likely came from European traders such as those of Tarshish. Contact between the Algonquins and the Celts was broken in the fifth century A.D. The speculation that the Indians got the bear from the Sanskrit via the Siberians came from Whitney's *Century Dictionary* from about the turn of the eighteenth to nineteenth centuries. It was later embellished by evolutionists to incorporate the land bridge supposed to exist between Siberia and Alaska.

The ancient Syrians called it a wild boar; the Irish King David's chariot (an Irish king), the French the great chariot or the Car of Boötes. The Greeks are said to have called it *Amāxa*, meaning axle, but that was probably a reference to Ursa Minor. The Swedes and Goths called it Kar's Vagn, meaning Karl's chariot, where Karl was a name for Thor. The Poles called Ursa Major the heavenly wain. Until the 1800s the later Syrians saw a bier. Egypt, ever the odd man out, saw a bull's thigh or foreshank.⁶ The Chinese called the seven stars the Government. Ancient India saw *sugi*, the wain, or Libra's yoke. The English saw a plough, with the dipper's handle stars as the handle of the plough and the cup the plowshare. Others saw the three stars in the handle as a team of oxen pulling the plough.

⁵ The kingdom of heaven is only mentioned in Matthew; the kingdom of God occurs in Matthew, the other gospels, and beyond.

⁶ There is in the Dendera star chart a figure that looks like a cattle leg, but given the uncertainties in scale introduced by the oddities of the zodiacal constellation placements, it is not clear to this author whether Ursa Major is the leg or the cherub (ox-like figure) holding the jackal (Ursa Minor) on what appears to be a tray.

The ursas as biers or wagons was prominent among the early Arabs, the later Syrians, and the English. From the latter originated Arthur's Chariot (wain). The "arth" part of Arthur relates to bear, and Uther means wonderful. (Arthur's father, Uther, assumed the surname Pendragon, meaning son of the dragon, after a dragon-like comet appeared in the sky).⁷ The constellation was usurped by the myth of Arthur. The real Arthur ruled the Britons from ca. A.D. 521-542. On the mainland, the Nordic appellation, Karl's Wain, was later assumed for Charlemagne (ca. A.D. 742-814).

Arcturus and his sons

We now consider the Hebrew appellation for the constellation of the Big Dipper. Allen mentions the names *Kalitsah* and *Parashah* applied to the asterism or an individual star. The former means safety, and the latter means guiding star. One immediately sees the "ayish" in the Semitic (probably Persian) *Parashah*. *Ayish* appears twice in the Bible, and both times it is translated as Arcturus. Both occurrences are in Job, namely, 9:9 and 38:32.⁸ Although greatly out of favor these days, Arcturus is the correct (and earliest) translation of *ayish*. Modern versions lean towards the Arabic term for the Big Dipper, namely *Banat Na-ash al Kubra*, the daughters of the Great Bier, meaning the mourners. That is not how the Hebrew scripture reads, however. We have seen before, especially under the constellation Draco, where relying on the Arabic meanings has totally violated the Scripture's integrity, not to mention abandonment of history.

There is really no great mystery associated with the identification of Arcturus (or Ayish, if one must) and his sons. Ayish means assembler, gatherer (as a shepherd gathers his flock), and we noted guiding star before as its full name. The sons of Arcturus are the seven stars known as the Big Dipper (Ursa Major). The star at the tip of the handle (η) is called "Benet Nash" which means son of Ash. The word Arcturus signifies a gatherer (as into a fold); bear-watcher; or consuming (fire). It recalls the Spirit speaking in Revelation 2:7, 11, 17 etc. addressing the spirits of the seven churches (Rev. 1:20). As the Little Dipper was a type of the Jewish remnant, the Big Dipper is a type of the Gentile remnant, the believers of the Gospel.

⁷ Cooper, Bill, 1995. *After the Flood*, (Chichester: New Wine Press), p. 81.

⁸ Job 9:9 Which maketh Arcturus, Orion, and Pleiades, and the chambers of the south.
Job 38:32 Canst thou bring forth Mazzaroth in his season? or canst thou guide Arcturus with his sons?

The star names in UMa

There appears to be much confusion in the literature about which star is the brightest in the Big Dipper. Some have even speculated that their brightness has changed over the centuries, and that may well be true, but if one will refer to the figure of Ursa Major on the next page, one will note that the usual rule for assigning Greek letters to stars in a constellation was not followed for the Big Dipper. The Greek letter alpha (α) is supposed to be assigned to the brightest star in the constellation, beta (β) to the second brightest, and so on. When it came to the Big Dipper, the rule was abandoned. The stars are labeled in order from the front of the dipper to the end of the handle without any consideration for their relative brightness.

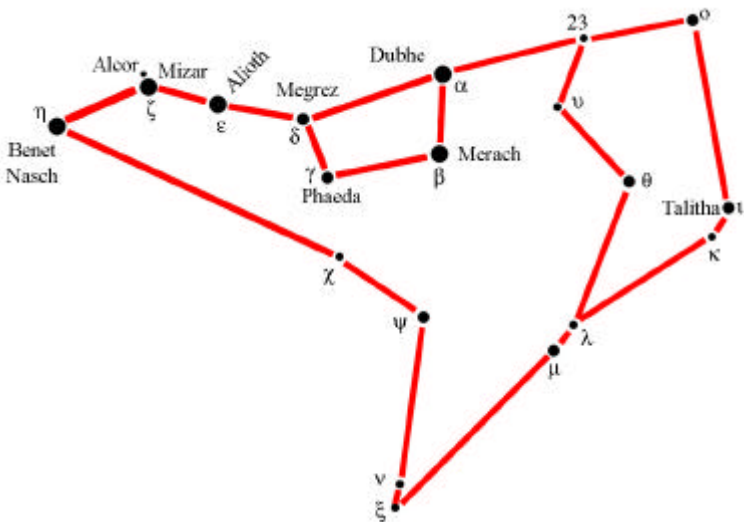
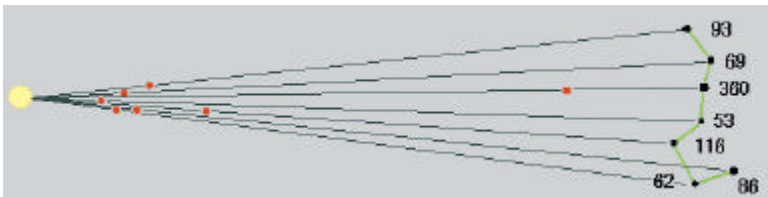


Figure 2: Ursa Major, after H. A. Rey.

- α **Dubhe:** flock; also called Dubb, bear. It is reported on the back of the bear.
- β **Merach,** Hebrew for flock, Arab for purchased. Allen says *Al Marahk*, Arabic for loin.
- γ **Phaeda** with various spellings: visited, guarded, numbered (Psa. 147:4). Allen says from Arabic *Al Falidh*, meaning thigh.
- δ **Megrez:** not translated by Rolleston. Allen says with the Arabic, *Al Maghrez*, root of the tail.

- ε **Alioth:** she-goat. The name is recent, originating with the first edition of the Alfonsine Table. It may mean fat tail of the eastern sheep. Later editions changed it to *Aliare* and *Aliore*, white of the eye.
- ζ **Mirak**, the original name of Mizar. Scalinger changed Mirak to Mizar. In Hebrew Mizar means little one, in Arabic, girdle or waist-cloth. Allen claims the name, Mirak, derives from the Arabic *Anak al Banat* meaning neck of the daughter or goat of the mourners. Mirak has also been applied to β and ε. The nineteenth century defenders of the witness of the stars only recognized Mizar as meaning small, or separate. That name better fits its neighbor, Alcor.
- 80 **Alcor:** the lamb. Allen reports that the name derives from *Al Khawwar*, the faint one. The Greeks thought it to be the lost Pleiad⁹ and dubbed it *Alopex*, the fox. It is still a test of good eyesight to be able to resolve the two stars. Physically, Alcor lies three light years beyond Mizar. The figure below plots the relative distances to each of the seven stars in the Dipper.



- η **Benet Naish:** Arabic for daughters of the assembly (Ash). The star is more commonly called **Alkaid**, meaning assembled. Allen expands the name to *Ka'id Banat al Na'ash*, meaning governor of the daughters of the bier, that is, chief mourner.
- θ **Sarir Banat al Na'ash:** throne of the mourners (Allen).
- ι **Talitha:** Ulug Beigh, the Arab astronomer's, *Al Phikra al Talitha*. Allen says Phikra should be Kafzah, in which case it means third spring of the gazelle. The allusion is that each of the three pairs of twin stars along the bottom of the bear represent the footprints of a gazelle's jump.
- μ, λ **Tania Australis** and **Tania Borealis** respectively, representing the second spring of the gazelle.
- ν, ξ **Alula Borealis** and **Alula Australis** respectively. They represent the first spring of the gazelle.
- ο **Muscida:** the muzzle. The name appears to originate in the Middle Ages.

⁹ See Bouw, G., 1999. "The Bible and the Pleiades," *B. A.*, 9(87):4.

π^1, π^2 Also called **Muscida** at times. Locate north of σ .

σ^1, σ^2 **Al Thuba**: the gazelle. These are to the North-North-East of star 23.

χ **El Kophrah**: protected, covered. Hebrew, redeemed, ransomed.

Finally, for some of the other names associated with Ursa Major, Bullinger lists some meanings: Amaxa, or Amaza, as an alternate name for Alcor, the Pleiad, means “coming and going.” Callisto is sheepfold, set, or appointed. Finally, Helice of Helike means company of travelers, that is, pilgrims. All in all, the constellation does exhibit overtones of the theme of salvation in our Lord Jesus Christ.

Engineers On Management

A man in a hot air balloon realized he was lost. He reduced altitude and spotted a woman below. He descended a bit more and shouted: “Excuse me, can you help me? I promised a friend I would meet him an hour ago, but I don’t know where I am.”

The woman below replied: “You’re in a hot air balloon hovering approximately 30 feet above the ground. You’re about 2 degrees west longitude and about 52 degrees north latitude.”

“You must be an engineer,” said the balloonist.

“I am,” replied the woman, “How did you know?”

“Well,” answered the balloonist, “everything you told me is technically correct, but I’ve no idea what to make of your information, and the fact is I’m still lost. Frankly, you’ve not been much help at all. If anything, you’ve delayed my trip.”

The woman below responded: “You must be in management.”

“I am,” replied the balloonist, “but how did you know?”

“Well,” said the woman, “you don’t know where you are or where you’re going. You have risen to where you are due to a large quantity of hot air. You made a promise which you’ve no idea how to keep, and you expect people beneath you to solve your problems. The fact is you are in exactly the same position you were in before we met, but now, somehow, it’s my fault.”

—From the Internet

Who is this Deity named Yahweh?

Dr. Thomas M. Strouse¹⁰

Introduction

The Psalmist David proclaimed, “*O LORD our Lord, how excellent is thy name in all the earth!*” (Ps. 8:1). Certainly the Lord’s name is excellent, but what is this excellent name? Some state dogmatically that the Hebrew *tetragrammaton* JHVH¹¹ (יהוה) was originally pronounced “*Yahwe.*”¹² Others say that it should be rendered ‘*Iabe* or ‘*Iao* or ‘*Jaho.*’¹³ Orthodox Jews substitute the word *Ha-Shem* (“The Name”) into their commentaries to avoid taking the name of the Lord in vain. The Masoretic Hebrew Text behind the Authorized Version renders the vocalization of the *tetragrammaton* as Jehovah (יהוה). This has been the accepted pronunciation of JHVH for at least the last four hundred years in the Western world. Scripture, translations, commentaries, prayer books, theological works, hymns and Christians at large have utilized this standardized pronunciation Jehovah. Yet recently in scholarly circles the notion has been advanced that the pronunciation Jehovah should be replaced with Yahweh. Is it important that believers know the correct vocalization of the Lord’s special Old Testament name? How will believers “*sing praise to the name of the LORD*” (Ps. 7:17), if they do not know how to pronounce it?

The History of the Pronunciation of JHVH

The traditional history for the pronunciation of the name for JHVH assumes that the original correct pronunciation was lost, if ever given. Some have claimed that God never inspired a pointed, vocalized original Hebrew text.¹⁴ Others, building upon this initial view, have

¹⁰ Emmanuel Baptist Theological Seminary, Newington, CT 06111.

¹¹In Hebrew the *yodh* (*jot*) may be transliterated as an English “y” or “j.” Also the *vau* (*waw*) may be transliterated “w” or “v.” For the purposes of this essay the *yodh* will be transliterated as a “j” and the *vau* will be transliterated as a “v” and hence the *tetragrammaton* will be designated JHVH rather than YHWH.

¹²J. Barton Payne, *The Theology of the Older Testament* (Grand Rapids: Zondervan Publ. House, 1962), p. 147.

¹³Gustave F. Oehler, *Theology of the Old Testament* (Grand Rapids: Zondervan Publ. House, n.d.), pp. 92-93.

¹⁴“No system of writing is ever so perfect as to be able to reproduce the sounds of a language in all their various shades, and the *writing of the Semites* has one striking fundamental defect, viz., that only the consonants (which indeed form the substance of the language) are written as real letters, whilst of the vowels only the longer are indicated by

posited that the Lord gave an oral tradition of vocalization for the unpointed consonantal text, but the vocalized pronunciation was lost. For instance, Oehler stated, “The Jews maintain that the knowledge of the true pronunciation of the name has been entirely lost since the destruction of the temple.”¹⁵ Josephus affirmed that the name was originally given to Moses (cf. Ex. 3:14 ff.) and that he, Josephus, was not permitted to enunciate it.¹⁶ Maimonides (AD 1135-1204) averred that the sacred name was pronounced at blessings and by the high priest on the Day of Atonement during the early years of the Second Temple, but later was exchanged for ‘*adonai*’ after the death of Simon the Just (3rd century BC).¹⁷

The alleged loss of the proper pronunciation of JHVH occurred because of one of several reasons, according to this common historical account. 1) The Jews developed a superstitious fear of taking the Lord’s name in vain according to the warning of Ex. 20:7, and consequently stopped pronouncing it.¹⁸ 2) These same Jews further interpreted Lev. 24:16 to read “and he that nameth (Hebrew: blasphemeth) the name of the LORD, he shall surely be put to death.”¹⁹ Consequently, according to this history, during the silent years until the coming of Christ, Jews refused to pronounce the sacred name. This refusal among the Jews continued until time of the Masoretes (c. AD 6th - 10th century),²⁰ who, having supposedly invented vowel pointing for the traditional Hebrew text, substituted the vowels of ‘*adonai*’ (אֲדֹנָי) for the vocalization of JHVH, producing the popular, but “linguistically impossible,” Jehovah. Based on the practice of the LXX to render JHVH by *ho kurios* (“the Lord”), the pre-Christian Jews and ultimately the Masoretes placed the *shewa* of the *hateph pathach* under the *yodh* (יְ),

certain representative consonants. It was only later that special small marks (points or strokes below or above the consonants) were invented to represent to the eye all the vowel-sounds,” E. Kautzsch and A. E. Cowley, editors, *Gesenius’ Hebrew Grammar* (Oxford: At the Clarendon Press, 1910), p. 5.

¹⁵Oehler, p. 92.

¹⁶“Whereupon God declared to him his holy name, which had never been discovered to men before; concerning which it is not lawful for me to say any more,” William Whiston, trans., *The New Complete Works of Josephus* (Grand Rapids: Kregel Publ., 1999), p. 102.

¹⁷Oehler, p. 92.

¹⁸John M’Clintock and James Strong, “Jehovah,” *Cyclopaedia of Biblical, Theological, and Ecclesiastical Literature*, vol. IV (NY: Harper and Brothers, Publ., 1883), p. 809.

¹⁹This curious and un-biblical interpretation shows up in the LXX, although there is no reason to assume that the pre-Christian Jewry derived it from this faulty translation.

²⁰Jews in Tiberias passed on the standardized *Masorah* or the details of the Hebrew text tradition, which in turn was the preserved Hebrew OT consonants and vowels. These Jews were called Masoretes, although “who they were, and when or where their work was accomplished are points involved in some uncertainty,” M’Clintock and Strong, “Masorah, Masoreth or Massoreth,” *Cyclopaedia of Biblical, Theological, and Ecclesiastical Literature*, vol., V (NY: Harper and Brothers, Publ., 1883), pp. 860-861.

the *cholem* above the *vau* (ו), and the *kamets* beneath the *vau* (ו).²¹ The Reformation theologians continued the practice of using the *qeri* vowels of the Masoretic text for the *kethiv* consonants JHVH (the so-called *qeri perpetuum*), popularizing the artificially “hybrid” name Jehovah.²² To augment the veracity of this history, advocates appealed to the laws of philology, showing that the prefix and suffix forms for proper names based on JHVH (i.e., *Yeho* [Jehoshaphat], *Yah* [Shephatiah]) demand Yahweh (יהוה) as the proper pronunciation.²³ The German rationalist Heinrich Ewald (1803-1875) was the first to popularize the form *Jahve*, followed by the eminent E. W. Hengstenberg (1802-1869) promoting *Jahveh*.²⁴

In summary then, the best that critical scholars can derive from history for the discovery of the pronunciation for the sacred *tetragrammaton* JHVH is as follows. If God ever revealed the proper vocalization of His OT name JHVH, the apostate Jews, from the Babylonian captivity onward, lost this pronunciation. Believers therefore have not known the true name of the Lord for about 2,600 years. However, with the help of the *LXX*, the laws of philology, and the scholarship of liberal German rationalism, the “true” vocalization Yahweh has been recovered. Should believers be thankful that critical scholarship has restored the proper vocalization of the name of JHVH that God chose not to preserve? Is it true that Christians may now know that the proper pronunciation of the OT name of the Deity they serve is Yahweh?

The Biblical Position on the Name of JHVH

It should be evident to those who believe God has promised to preserve His Words perfect, and this preservation is in the Masoretic Hebrew text and the Received Greek text, that this history contradicts Scriptural promises and is therefore un-biblical and consequently contrived. The Lord has promised to preserve all of His inspired, canonical Words through His ordained institutions for all generations subsequent to the inscripturation of these Words. Therefore, He has preserved His OT Words, consonants and vowels, jots and tittles, including the inspired vocalization of His name, the *tetragrammaton*. Since the Lord God has preserved the proper pronunciation of JHVH, schol-

²¹M’Clintock and Strong state that the prevalence of this practice occurred may be “inferred” from the similar pointing, but no historical documentation is forthcoming, vol. IV, p. 809.

²²Madeleine S. Miller and J. Lane Miller, “God,” *Harper’s Bible Dictionary* (NY: Harper and Brothers, Publ., 1952), p. 230.

²³“Jehovah,” *Illustrated Davis Dictionary of the Bible* (Nashville: Royal Publishers, 1973), p. 378.

²⁴M’Clintock and Strong, vol. IV, p. 810.

ars have no need to restore their vocalization of it, and, as history, philology, and critical scholarship have demonstrated, they are incapable of restoring authoritatively²⁵ the pronunciation of JHVH.

The Scriptural Promises of Plenary Verbal Preservation

The Bible is replete with the teaching that God will perfectly preserve His Words. This teaching then constitutes the doctrine of the verbal, plenary preservation of the Words of God. Several passages from the OT Scripture promise the preservation of the Words of the Lord forever. Although one reference is sufficient to establish the doctrinal truth of the preservation of the Words of the Lord, a selective few additionally clinch the clear Biblical position. The Psalter gives these references for this doctrine: Pss. 12:6-7; 119:111, 160, *et al.* In addition, Prov. 22:20-21 and Isa. 40:6 make the same claim for perfect Words preservation.

In the NT, the Lord Jesus Christ claimed the perfectly intact Hebrew OT Words (Mt. 4:4), the preservation of the consonants and vowels of Hebrew Words (Mt. 5:18), and the perfect preservation of all of His canonical words including the NT Words (Mt. 24:35). The Scriptures also teach the respective agencies which God promised to use for His preservation process. For the OT Scriptures, His agency was the Jewish nation (Rom. 3:2) and for the NT Scriptures, He promised to use the pillar and ground of the truth--the NT churches (I Tim. 3:15). In fact, bound up in the great Commission is the requirement of the churches to observe or guard His canonical Words (Mt. 28:19-20). The Lord's people, in their respective agencies, have the sole responsibility to preserve for their generation and following the Words of the Lord Jesus Christ.

The Deficiency of History, Philology and Critical Scholarship

In rejecting the preserved Words of Scripture, including the inspired vowel pointing for JHVH, critical scholars are left with several non-authoritative means to attempt to discern the "correct" vocalization of the Lord's *tetragrammaton*. These means are historical documentation, comparative philology, and rationalism.

History

Bible history indicates that believers and unbelievers did not have

²⁵The only ultimate authority the enemy has is the Scripture (cf. Mt. 4:6), and the rejection of this final authority leads to confusion and destruction (cf. I Cor. 14:33; Ps. 1:6).

“the dread of uttering The Name” of the Lord. From the first writer of Scripture to the last, OT saints pronounced the name of Jehovah. The first writer of the OT canon, Job, referred to “*the hand of the LORD*” in the affairs of man (Job 12:9). Moses, upon writing Genesis, initially referred to the LORD God as creator of the earth and the heavens in Gen. 2:4. Later, Moses began to express the name of Jehovah to the Lord and to others (Ex. 4:1; 5:1). About a thousand years later Nehemiah expressed the LORD’s name in his prayer (Neh. 1:5) as did Ezra in his preaching (Neh. 8:9). The last book of the *Tanak* records the name of Jehovah (II Chron. 36:23) as well as the last book of the prophets (Mal. 4:5). Furthermore, unbelieving Gentiles mentioned the vocalized *tetragrammaton* in their conversations without fear of punishment by death. Ranging from Pharaoh to Rahab to Cyrus, these *goyim* pronounced Jehovah’s name without dread and suffered no ill affects (cf. Ex. 9:27; Josh. 2:9; Ezra 1:2). This survey of the period of Biblical history (22nd to 5th century BC) indicates that no saint or sinner, Jew or Gentile, from beginning to end, ever expressed dread to pronounce the *tetragrammaton* or suffered death as its consequence.

The history of this “dread” must have commenced during the silent years (the four centuries before Christ’s first advent) while Judaism continued to apostatize. The testimony of unbelieving Jews, such as Josephus or Maimonides, and fallible patristics such as Origen, Eusebius, and Theodoret, suggesting that the vocalization was lost among all the Jewry for sacred reasons must be debunked. These non-authoritative historians have passed on their surmisings of the traditions of apostates. Maimonides’ speculation that the vowels for ‘*adonai*’ were substituted for the *tetragrammaton* is just that--non-authoritative speculation. There is no historical documentation for this popular but fanciful conjecture.

That this conjecture is strengthened by the supposed existence of a pre-Christian *LXX* which translated the *tetragrammaton* with *ho kurios* and approved of the ‘*adonai*’ pointing for JHVH is based on unproved assumptions. There is no credible history for the origin of the *LXX*,²⁶ and the Bible does not teach that Christ and the Apostles ever used the *LXX*²⁷ or had need to use it. If there was a pre-Christian *LXX*

²⁶Aristeas’ letter about the desire Ptolemy II had in securing a Greek translation of the OT for his library is replete with fanciful legends about the origin of the Pentateuch. Seventy two (or was it the seventy?) Jewish elders translated the Law in seventy-two days. The letter has “extravagances” and is in part “unhistorical.” H. Thatcher, “Septuagint,” *The International Standard Bible Encyclopaedia*, Vol. IV (Grand Rapids: Wm. B. Eerdmans Publ. Co., 1939), p. 2724.

²⁷The Lord Jesus did not quote verbatim from the *LXX* or from the Hebrew text in Lk. 4:18-19. Luke recorded His inspired synagogue “targum” (i.e., paraphrase) on Isa. 61:1-2.

it is not extant except in the hybrid form of three different “LXX” translations in Origen’s *Hexapla*.²⁸ The Lord Jesus Christ declared that the Hebrew text was perfectly intact in His day (Mt. 4:4),²⁹ the jots and titles were preserved (Mt. 5:18), and the three-fold *Tanak* division of the Hebrew OT was in use (cf. Lk. 11:50-51; 24:44). Neither He nor His disciples attempted to evangelize Gentiles with the Greek OT Scriptures. They used the Hebrew OT with the Jews and their inspired Greek statements and messages, as recorded in the canonical Scriptures, with the Gentiles (cf. Mt. 15:21 ff.; Acts 2:42, etc.).³⁰ The best that history can demonstrate is that some Jews, apparently apostates, had a dread for pronouncing the Lord’s name and may have justified re-pointing JHVH with the use of a Greek translation. This history however, is inadequate for overturning the pointing of JHVH as it is preserved in the Masoretic text.

Philology

Philology is the study of words, and is foundational to the study of grammar, which includes linguistic phenomena and their origin. Modern philology is based on evolutionary principles, including the evolution of the Hebrew language and the need for the practice of textual criticism³¹ since God allegedly did not preserve His words. However, the preserved OT words must constitute the basis for Hebrew grammar as divine revelation, since scientific and comparative linguistics are not authoritative and therefore fallible. For example, M’Clintock and Strong argue that JHVH comes from the *hayah* (= *hawah*) “to be” verb and consequently the middle radical may not take the *cholem*, thus ruling out the Jehovah pronunciation.³² However, this is an effort to make the science of linguistics authoritative over divine revelation and ignores the fact that the *tetragrammaton* is the unique revealed name of God (cf. Ex. 6:3).³³

Furthermore, the aforementioned authors insisted that the Greeks would have pronounced JHVH as Jao, treating the two *He* consonants

²⁸Thatcher, pp. 2726-2727.

²⁹He used the perfect tense verb “*it is written*” (*gegraptai*) denoting that the OT Scripture had been and still was written.

³⁰Since the Ethiopian treasurer was coming to Jerusalem to worship, he no doubt was bilingual, knowing how to speak and read Hebrew, as he apparently was reading from the Hebrew text of Isa. 53:7-8 (Acts 8:27-39).

³¹“Advance in grammar is therefore closely dependent on progress in textual criticism,” Kautzsch and Cowley, p. 22.

³²M’Clintock and Strong, vol. IV, p. 810.

³³Even Payne admits, “As to the meaning of Yahweh, etymological speculation is rather fruitless,” p. 147.

as silent letters, placing an *alpha* after the *iota* and substituting the *omicron* for the *vau*. Gehman favored extra-biblical sources as well, stating, "There was also in the coastal Plain and in part of Galilee a dialect pronunciation *Yeu* from *Yehu*, a form derived by dissimilation from Phoenician *Yohu* from *Yahu*. The *Yahweh* pronunciation is also favored by Greek transcriptions: *Iabe*, *Iaoue*, *Iaouai*, *Iae*."³⁴ In this case, looking to extra-biblical grammatical guidance is an attempt to make comparative linguistics authoritative over the preserved vowel pointing the received Hebrew text.

In the classic passage for the presentation of the special name of JHVH, the LORD punned on the *hayah* verb with His name (Ex. 3:13-15). The Lord God gave His name as a denominative with the *jodh* prefixed and special, unique pointing. As the NT confirms, He did not give Moses the *Qal* imperfect of *hayah*, which would be *Yihyeh* ("he shall be").³⁵ In Jn. 8:58, the Lord Jesus Christ declared, "*before Abraham was, I am*" (*ego eimi*), emphasizing His interpretation of the unique Hebrew pointing for Jehovah. Philology which rejects the divine preservation of Hebrew pointing, words and grammar, must instead rely upon evolutionary linguistic schemes and extra-biblical comparisons for the vocalization of JHVH is deficient. It produces the non-biblical and therefore non-authoritative vocalization *Yahweh* and must be rejected by Christians.

Rationalism

The Scripture is clear about its own authority and sufficiency. The Apostle Paul stated, "*All scripture is given by inspiration of God, and is profitable for doctrine, for reproof, for correction, for instruction in righteousness: that the man of God may be perfect, thoroughly furnished unto all good works*" (II Timothy 3:16-17). The Lord God does not need man to recover what He allegedly chose not to preserve, because He has indeed preserved all canonical revelation He gave man. The doctrine of verbal plenary inspiration demands the doctrine of verbal plenary preservation and the Bible teaches both doctrines. Man's only responsibility is to receive by faith God's written revelation and then guard it for his respective generation. It is ludicrous then, for critical scholarship to attempt to restore and reconstruct the text of the divinely written revelation, including the vowel points for the *tetra-*

³⁴Henry S. Gehman, ed., "Jehovah," *The New Westminster Dictionary of the Bible* (Philadelphia: The Westminster Press, 1970), p. 453.

³⁵J. Davis incorrectly speculates, "*Yahweh* is an archaic form. It probably represents the *Qal* imperfect of the verb *hawah*, later *hayah*, to be or become," *The Illustrated Davis Dictionary of the Bible*, p. 378.

grammaton. As rationalistic scholarship looks to historical documentation and philological techniques to determine the “true” name of the Lord in the OT, it falls short because of its initial rejection of the doctrines of inspiration and preservation. The best that rationalistic scholarship can produce is the suggested speculation, confirmed by liberal Bible scholarship, for the vocalization of the *tetragrammaton*. Unregenerate Jews, catholic patristics, and liberal scholars have all agreed that the best pointing for the *tetragrammaton* should be something like Yahweh, and not Jehovah.³⁶ However, this rationalistic approach for vocalizing the name of the LORD is Biblically deficient and spiritually unsatisfactory for the Bible believer.

Rationalists have rejected the teaching of the preserved vocalization for JHVH because they have rejected the teaching that the preserved OT Scriptures have been preserved through the Masoretic text. For instance, E. Wurthwein reasoned that the main criterion for discovering the OT text must be the history of the transmission of the text. However, he did not look to biblical history that gives theological grounding for the transmission of the text, but instead considered religious history. He maintained that three text types representing the OT text emerged at Qumran, namely the Samaritan Pentateuch, the *LXX* and the Masoretic text. How this could be, however, he could not answer reasonably. Wurthwein cited F. M. Cross, who stated, “The ground is not yet sure, and many missteps will be taken before sure results can be hoped for.”³⁷ Although others suggest a pre-sixth century AD “Masoretic” text, they do not look to Scripture for this “faith” position as expressed by the Lord Jesus Christ (Mt. 4:4). For instance, B. J. Roberts affirmed the “likely existence of a pre-Masoretic ‘Masoretic’ text.”³⁸ The student of the Bible knows that there *was* a pre-Masoretic Hebrew text and a pre-Textus Receptus Greek text based on the promises of God, and not on the skills of the Masoretes or Erasmus. These “pre” texts are the preserved texts of the Hebrew OT and the Greek NT.

The Name Jehovah in the OT

The preserved vocalization of JHVH is Jehovah as represented by the Masoretic Hebrew text. The Authorized Version (1611) and the

³⁶ “[A]t the present day, most scholars agree that this pointing is not the original and genuine one (i.e., Jehovah), but that these vowels are derived from those of...*Adonai*,” M’Clintock and Strong, p. 809.

³⁷ Ernst Wurthwein, *The Text of the Old Testament* (Grand Rapids: Wm B. Eerdmans Publ. Co., 1981), p. 16.

³⁸ B. J. Roberts, *Biblical Journal of Religious Literature* 42 (1959), p. 144.

American Standard Version (1901) translate the *tetragrammaton* as LORD and the Hebrew name ‘*adonay* as Lord, differentiating the two Hebrew words. The AV transliterates JHVH in Ex. 6:3, Psalm 83:18, Isa. 12:2 and 26:4 as JEHOVAH, with the last two references reading literally *Jah Jehovah*. David’s reference to Jah is transliterated JAH in Ps. 68:4. The writers of Scripture coupled both Jehovah and Jah with ‘*elohim* (God) in various places throughout the OT (cf. Gen. 2:4 and Ps. 68:18, respectively). The translators of the AV have given English-speaking people a consistent presentation and biblical understanding of the vocalized *tetragrammaton* Jehovah.

Conclusion

Do Christians worship and serve a God named Yahweh? If God has not preserved His words including the vowel pointing of the *tetragrammaton*, and critical scholars have restored His name through historical documentation, philology, and rationalism, then the answer is in the affirmative. However, since none of the aforementioned is Scripturally valid or authoritative, then believers do not know how to pronounce the name of the Lord unless they receive by faith the preserved vocalization found in the Masoretic Hebrew text. Christians do not know or worship a god named Yahweh, but instead believers do know and worship the God Jehovah. Believers have the assurance that “*His name shall endure forever*” (Ps. 72:17), which name is “*the LORD God*” (v. 18).³⁹

³⁹Of course, during the Millennium, saints with “*a pure language*” (i.e. Hebrew), and the inspired and preserved vocalized OT Scriptures, including the *tetragrammaton*, will call upon the name of the LORD--*JEHOVAH* (Zeph. 3:9).

THE PROBLEM WITH COMETS

Gerardus D. Bouw, Ph.D.

Comets are solar system objects with highly elliptical orbits, such as the one shown below for Haley's comet. During the Dark Ages, so called because the Roman Church refused to educate the laity, comets were regarded as evil omens, portending disasters. The appearance of Haley's comet in 1066 just before the death of the last Anglo-Saxon king, Harold II of England, helped perpetuate the myth. It was also a bad omen for king Harold III of Norway, who was killed in the same battle fighting against Harold II. One must not forget, though, that what portended disaster for the Anglo-Saxon was a good omen to the victorious Normans who thus conquered England. Other civilizations viewed comets with mixed emotions, some for evil, others for good. The name *comet* literally means hairy star, reflecting the ancient views of these mysterious objects. Today we think of them as icy mud balls, though before probes flew by a couple of comets they were regarded as dirty snowballs.

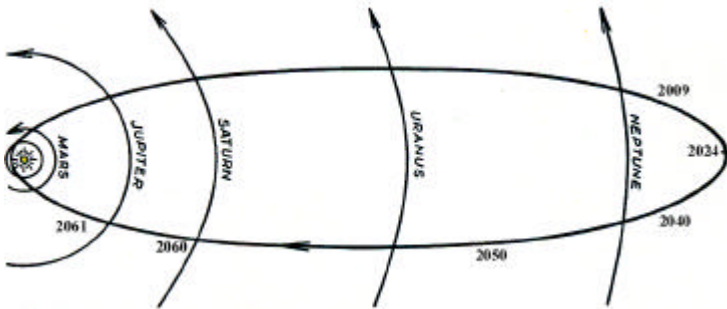


Figure 1: The current orbit of Halley's comet. Note that the orbit is retrograde (i.e., runs in the opposite direction) to the planetary orbits.

Comets fall into two major categories: long period comets, and short period comets. In the 1930s, astronomers recognized three categories, based on the distance from the sun of their aphelion points.⁴⁰ These had their aphelia clustered near Saturn, near Uranus, and near Neptune respectively. Halley's comet belonged to the Neptune group and today falls into the short period comet category. In the early twentieth century these were called "Periodic comets." At the time, what

⁴⁰ The aphelion point is the spot in the orbit where a body is at its maximum distance from the sun, the point marked 2024 in Figure 1.

we now call long period comets were thought to be from beyond the solar system. This was a reasonable conclusion for all the long period comets discovered in the nineteenth century had periods of tens of thousands of years or longer—if they were periodic at all. Today, not only are the comets classed into long and short period categories, but at least the short period comets are subdivided into two major subgroups.

Long period comets

Long period comets have periods ranging from as short as 200 years to more than 10 million years. Such periods mean that these comets have very elongated elliptical orbits, ranging out from 34 astronomical units⁴¹ up to 100,000 a.u., almost two light years out or half-way to the nearest star.

In 1950, Dutch astronomer Jan Oort noticed three things about the long period comets:

1. no comet has been observed that definitely came from outside the solar system;
2. long period comets can come from any and all directions,
3. and that there is a strong tendency for the aphelia of long-period comets to lie at a distance some 50,000 times as far away as the earth is from the sun.⁴²

From those three observations, Oort concluded that long-period comets originate from a shell centered on the sun and populated by as many as a trillion (10^{12}) comets. Modern astronomers believe that the innermost part of the shell starts at 20,000 a.u. and extends out to 100,000 a.u.

Evolutionist astronomers believe that the Oort cloud, as the proposed shell of comets is called, is left over from the formation of the solar system. The outer regions are postulated to have been too cold to be evaporated and blown away by the young sun's heat as it formed. Yet no such cloud of comets has been observed at such great distances. It turns out that evolutionary ages of billions of years require such a cloud, nevertheless.

The Oort cloud postulate offered a solution for a rather vexing problem for evolutionary ages. Astronomers compute that it takes about a hundred orbital passes near the sun before a comet's gas and

⁴¹ An astronomical unit (a.u. or AU) is the distance the sun is from the earth, that is, about 93 million miles or 151 million kilometers.

⁴² 50,000 a.u. is 4,650,000,000,000 miles (read as four quadrillion, six hundred fifty trillion miles or about 8 quadrillion kilometers). A comet that far out at aphelion has a period of four million years.

dust evaporate, leaving just the rocky core. Now even if one imagines comets with periods of 15 million years, in the 4.5 billion years that the sun is alleged to have been shining, such comets would have made as many as 300 passes near the sun, so at best they should be dark bodies of rock and sandy debris, and we should rarely, if ever, see a comet today. Nevertheless, a handful are discovered every year, though most are faint. So, neither the long orbital period, nor the tremendous distance from the sun (where a comet spends most of its time) solves the age problem for the evolutionists. Another postulate is needed to save the 4.5-billion years from extinction.



Comet Hyakutake 1996

In order to keep the comets reasonably young, it is now assumed that they spend billions of years orbiting the sun in nearly circular orbits. Occasionally a passing star perturbs the comets in the Oort cloud, like a breeze disrupts particles of smoke. Many of the comets will be thrown out of the Oort cloud into interstellar space, but some will fall towards the sun. As they enter the realm of the planets, the planets will further perturb the long period comets, ejecting some completely from the solar system and capturing some into shorter-period or even short period cometary orbits. These, of course, will fade quickly from the scene in evolutionary time, but there are more on the way to replace them. In this way, if there were indeed a trillion comets in the Oort cloud and not just a few million, evolutionists think to explain why we see long period comets today. The most recent candidate for an Oort cloud object was the long period comet called Sedna that was discovered in 2004.⁴³

But is that reasonable? Let us assume that the average distance between stars is 4 light years. We observe that most of the stars in the solar neighborhood move with a speed of about 2 miles per second or 3 km/sec. If so, we can expect a close passage roughly once every four light years of travel. Now to travel 4 light years at 2 miles per second takes only 400,000 years, so in 4.5 billion years 11,250 stars should have passed close enough to the sun to disrupt the comets in the Oort cloud. After so many close encounters, would any comets remain in the Oort cloud? And how come we don't see comets from any of the 11,250 passing stars? Why are they all from our solar system? Increasing the mean distance between stars to six light years reduces the figure to 7500 close encounters, still a significant number. Increasing the speed of the stars increases the number of encounters.

⁴³ Panorama, 2004. "Evidence for a young solar system from KBO pairs," *B.A.* 14(110):127.

the speed of the stars increases the number of encounters. For instance, stars with a speed of 20 miles per second would cover the four light years in 40,000 years, a tenth the time.

We find then that whether or not the Oort cloud exists—and its existence really is still up in the air—the cloud may not at all satisfy the evolutionists' need to keep the inner solar system supplied with comets for 4.5 billion years. We conclude that even if the Oort cloud exists, it poses no significant challenge to the 6,000-year old solar system account of the Holy Bible.

But evolutionists take heart; some astronomers are honest and smart enough to see the impossibility of insisting that the Oort cloud is a remnant of the formation of the solar system 4.5 billion years ago. They now propose that the Oort cloud is not a leftover from the protoplanetary disk that allegedly formed the solar system. Instead, they postulate that it consists of short period comets that have been ejected from a region in the solar system called the Edgeworth-Kuiper belt, named after Gerard Kuiper and Kenneth Edgeworth who proposed its existence in 1950.

Short period comets

In 1992, astronomers became aware of small bodies orbiting the sun beyond Neptune. There are at least 70,000 “trans-Neptunians,” as these objects are called, with diameters larger than 60 miles (100 km) in a zone extending outwards from the orbit of Neptune (at 30 a.u.) to 50 a.u. Observations show that the trans-Neptunians reside within a thick band around the ecliptic. In other words, they form a ring, or belt, surrounding the sun. This ring is generally referred to as the Kuiper Belt.

Short period comets, by definition, have a period of 200 years or less. That, in turn, means that their aphelia are under 34 a.u., 4 a.u. beyond Neptune and 6 a.u. short of Pluto's 39.4 a.u. mean distance from the sun. Though presently Pluto and its moon, Charon, are closer to the sun than is Neptune, Pluto spends most of its time in the Kuiper belt. Indeed, more and more astronomers are starting to view the planet as a Kuiper belt object, though for historical reasons, Pluto is not about to lose its status as planet.

Because Pluto spends so much time in the Kuiper belt, and because so many of the known Kuiper belt objects are binaries, it behooves us to look a bit more closely at that icy object and its moon. With a diameter of 1400 miles (2274 km), Pluto is the largest known Kuiper belt object by at least a factor of two. Pluto's moon, Charon, orbits 12,120 miles (19,640 km) above Pluto. Charon's diameter is 723

miles (1170 km). Pluto and Charon are phase locked. That means that just as the moon always shows the same face to the earth, so Charon always presents the same side to Pluto. The moon's rotation is thus phase-locked to the earth. But the similarity does not stop there; Pluto always shows the same face to Charon, too. That means that seen from Pluto, Charon never sets in one hemisphere and never rises in the other. Like Uranus, Pluto's rotational pole lies almost in its orbital plane, being inclined 124° . (That means that Pluto's north pole lies 34° below its orbital plane. For comparison, Uranus' pole points about 10° below its orbital plane, whereas every other planet's north pole lies above its orbital plane. The earth's north pole is inclined 23.5° to the ecliptic, the yearly path of the sun about the earth commonly called "earth's orbit.") From an evolutionary stance, it is reasonable to expect that in the tens of millions of Plutonian years that have elapsed in the alleged 4.5 billion years since the solar system was formed, Pluto and Neptune should have cleaned out much of the Kuiper belt objects around them. That means that the number of Kuiper belt objects should increase further out from these two planets.



Figure 3: Pluto (left) and Charon photographed by the Hubble telescope in 1994. The bright spots are reflections of the sun from their icy surfaces.

Most short period comets are now thought to belong to the Kuiper belt, with a small percentage being long period comets that have been perturbed into short-period orbits by encounters with the planets. Just how the comets originate is still a matter of speculation, but the theory is that close encounters between Kuiper belt objects (KBOs) cause some to be ejected from the belt. Some of those ejected will escape into interstellar space; others may fall into long period orbits, some of which

will approach the sun. Some of the ejected objects will head for the sun and become short period comets. That, at least, is the theory.

Although observations so far have confined the Kuiper belt to a region between 30 and 50 a.u., it is expected to extend to 1000 a.u. from the sun. The perceptive reader will note that this leaves a huge empty gap between the Kuiper belt and the Oort cloud, fully 19,000 a.u. if the long period comets are thought to originate from a shell ranging from 20,000 to 100,000 a.u., as stated above. The following table illustrates the problem.

Distance in a.u.	Period in years
100,000	32 million
20,000	3 million
1,000	32 thousand
30	164

There is no reservoir of comets with periods between 32 thousand and three million years. The distinction made between short and long period comets suggests that such a division is real. Indeed, the upper value of 200 years for the short period comets suggests that even among them, the majority originate not from the Kuiper belt but come from inside the Kuiper belt. But there is more.

The Kuiper belt does not help comet origin theories⁴⁴

In 2003, astronomers using NASA's Hubble Space Telescope conducted a search and discovered three of the faintest and smallest objects ever detected in the Kuiper belt. Each object is a lump of ice and rock—roughly the size of Philadelphia—orbiting beyond Neptune and Pluto. The Kuiper belt is presumed by evolutionists to be the left-over building blocks, or “planetesimals,” from the solar system's formation.

The study's big surprise is that so few Kuiper belt members were discovered. With Hubble's exquisite resolution, Gary Bernstein of the University of Pennsylvania and his co-workers expected to find at least 60 Kuiper Belt members as small as 10 miles (15 km) in diameter, but only three were discovered.

That there were many fewer Kuiper belt objects observed than was predicted makes it difficult for evolutionists to understand how so

⁴⁴ Bradt, Steve and Donna Weaver, 2003. NASA Press Release No. STScI-PR03-25, “Farthest, Faintest Solar System Objects Found Beyond Neptune.” Sept. 6. The results were announced by Bernstein at the 2003 meeting of the Division of Planetary Sciences, held in Monterey, California

many comets appear near earth. Instead of ejecting each other, the study is a sign that the smaller planetesimals have been shattered into dust by colliding with each other over the past few billion years.

Bernstein and his colleagues used Hubble to look for planetesimals that are much smaller and fainter than can be seen from ground-based telescopes. Hubble's Advanced Camera for Surveys was pointed at a region in the constellation Virgo over a 15-day period in January and February 2003. A bank of 10 computers on the ground worked for six months searching for faint-moving spots in the Hubble images. The search netted three small objects, named 2003 BF91, 2003 BG91, and 2003 BH91, which range in size from 15-28 miles (25-45 km) across. They are the smallest objects ever found beyond Neptune, but an icy body of their size that approached the inner regions of the solar system, can be seen from earth as a comet.

If the Hubble telescope could search the entire sky, it would find perhaps a half million planetesimals, at least, that is the claim of the secular astronomer. If collected into a single planet, however, the resulting object would be only a few times larger than Pluto. Why the Kuiper Belt planetesimals did not form a larger planet, and why there are far fewer small planetesimals than expected, are questions that evolutionists confidently assert will be answered with further Kuiper Belt studies. Their batting average is not good.

So it's back to the drawing board for the world's astronomers. There is still no explanation for comets that fits the criterion that the universe was created 12 billion years ago, nor is there any solid evidence that the solar system is 4.5 billion years old. The best and most consistent theory for the origin of the cosmos and the solar system is still that they were created by our omniscient, omnipotent God about 6,000 years ago.

PANORAMA

The peak of eternal light

Astronomers have discovered a mountain on the moon where the sun never sets, which might become the site of a U.S. moon base. The “peak of eternal light,” as it is called, is on the rim of Peary, a 50-mile-wide crater at the lunar north pole. Scientists from Johns Hopkins University announced its existence on 19 March, 2004, at a meeting of astronomers in Houston. It was discovered by analyzing images taken of the moon’s poles by the Clementine spacecraft in 1994.



Because the moon’s axis of rotation is tilted by about 1.5 degrees, it experiences small but detectable seasons at its poles. Earth’s tilt, by contrast, is 23.5 degrees. The moon’s low tilt angle means there are crater floors and walls at the poles that never see the sun at all. Nevertheless, at least one mountain always protrudes into the sunlight.

The presence of a permanently illuminated peak means the lunar north pole might be a good place to build earth’s first permanent moon base. The location probably has daily temperature changes of only about 70 degrees Fahrenheit, making lunar base operations easier than at the lunar equator where temperature changes are as much as 450 degrees daily. (Remember, a day on the moon is 29.3 of our days.)

NASA Scientists Use Radar to Detect Asteroid Force

NASA scientists have for the first time detected a tiny but theoretically important force acting on asteroids by measuring an extremely subtle change in a near-Earth asteroid’s orbital path. This force, called the Yarkovsky Effect, is produced by the way an asteroid absorbs energy from the sun and re-radiates it into space as heat. The research will impact how scientists understand and track asteroids in the future.

Asteroid 6489 “Golevka” is relatively inconspicuous by near-earth asteroid standards. It is only a third of a mile (one-half kilometer)

across, although it weighs in at about 230 million tons (210 billion kilograms). But as unremarkable as Golevka is on a celestial scale it is also relatively well characterized, having been observed via radar in 1991, 1995, 1999 and 2003. An international team of astronomers, including researchers from NASA's Jet Propulsion Laboratory in Pasadena, Calif., have used this comprehensive data set to make a detailed analysis of the asteroid's orbital path. The team's report appeared in the December 5, 2003 issue of *Science*.

"For the first time we have proven that asteroids can literally propel themselves through space, albeit very slowly," said Dr. Steven Chesley, a scientist at NASA's Jet Propulsion Laboratory and leader of the study. The idea behind the Yarkovsky Effect is the simple notion that an asteroid's surface is heated by the sun during the day and then cools off during the night. Because of this, the asteroid tends to emit more heat from its afternoon side, just as the evening twilight on earth is warmer than the morning twilight. This unbalanced thermal radiation produces a tiny push that has until now gone undetected.

"The amount of force exerted by the Yarkovsky Effect, about an ounce in the case of Golevka, is incredibly small, especially considering the asteroid's overall mass," said Chesley. "But over the 12 years that Golevka has been observed, that small force has caused a shift of 15 kilometers (9.4 miles). Apply that same force over tens of millions of years and it can have a huge effect on an asteroid's orbit. Asteroids that orbit the Sun between Mars and Jupiter can actually become near-Earth asteroids."

The Yarkovsky Effect has become an essential tool for understanding several aspects of asteroid dynamics. Theoreticians have used it to explain such phenomena as the rate of asteroid transport from the main belt to the inner solar system, the ages of meteorite samples, and the characteristics of so-called "asteroid families" that are formed when a larger asteroid is disrupted by collision. And yet, despite its profound theoretical significance, the force has never been detected, much less measured, for any asteroid until now.

"Once a near-earth asteroid is discovered, radar is the most powerful astronomical technique for measuring its physical characteristics and determining its exact orbit," said Dr. Steven Ostro, a JPL scientist and a contributor to the paper. "To give you an idea of just how powerful - our radar observation was like pinpointing to within a half inch the distance of a basketball in New York using a softball-sized radar dish in Los Angeles."

To obtain their landmark findings, the scientists utilized an advanced model of the Yarkovsky Effect developed by Dr. David Vokrouhlický of Charles University, Prague. Vokrouhlický led a 2000

study that predicted the possibility of detecting the subtle force acting on Golevka during its 2003 approach to earth.

“We predicted that the acceleration should be detectable, but we were not at all certain how strong it would be,” said Vokrouhlický. “With the radar data we have been able to answer that question.”

Using the measurement of the Yarkovsky acceleration the team has for the first time determined the mass and density of a small solitary asteroid using ground-based observations. This opens up a whole new avenue of study for near-Earth asteroids, and it is only a matter of time before many more asteroids are “weighed” in this manner.

This effect is related to the Poynting-Robertson effect which applies to interplanetary dust and is one of the evidences for a young solar system. The Poynting-Robertson effect works as follows: when a photon hits a piece of dust, it is more likely to be deflected in the direction that the dust particle is moving. The recoil slows the particle down, which causes it to fall towards the sun. The effect of the Yarkovsky force for Mars, for example, would speed up the planet’s orbital velocity and at the same time push it closer to the sun. The exact direction of the push depends on the direction of spin and the direction of the body’s orbital velocity. Both effects change the body’s orbit and tend to cause them to get closer to the sun at one point in their orbit, or, as is the case for dust, to spiral into the sun. Both effects favor a young creation.

Cosmologist scoops religion prize

A theoretical cosmologist who is “renowned for his bold and innovative contributions to the dialogue between science and religion” has been awarded the 2004 Templeton Prize for progress in religion. George Ellis from the University of Cape Town won the 795,000 pounds sterling prize, which is funded by Wall Street financier Sir John Templeton. Ellis, 64, is a practicing Quaker and co-author of “On the Moral Nature of the Universe.” He is the fifth physicist to win the prize since 1995.

Satellites detect a geocentricity effect

If a sphere spins in water, its surface will drag surrounding water with it. Back in 1918, two German physicists, Joseph Lense and Hans Thirring, published a paper that took a look at what forces would exist near a sphere located at the center of a rotating shell of mass.⁴⁵ Al-

⁴⁵ J. Lense & H. Thirring, 1918. *Physikalische Zeitschrift*, **19**, 156. That paper, as well as Thirring’s earlier paper, have been translated from the German and published in *The*

though the physicists did not say so, the implication was clear: the sphere was the earth and the shell was the universe. The result was that a twisting force, like that observed by the ball spinning in water, should exist about the earth. Since the two physicists used Einstein's General Theory of Relativity to derive their results, the effect, known as the Lense-Thirring effect or frame-dragging, has been deemed a test of relativity.

But today scientists have switched the rotations around, so that the earth rotates and the starry heaven does not. Their justification is that since all motion is relative, then rotation is also relative. But there is a possible fly in the ointment there. Conservation of momentum—the property that a moving object wants to keep moving unless acted on by some force—is never violated in creation, but when it comes to the momentum of spin, called conservation of angular momentum, we find that angular momentum is not always conserved. Nevertheless, on the surface the switch does seem reasonable.

Earlier in 2004, a satellite was launched specifically to detect the Lense-Thirring effect. Called Gravity Probe B, it is designed to produce results with an error of 1%. The 17 Oct. 2004 issue of *Nature* reported the first solid evidence for the existence of the Lense-Thirring effect. This, however, came not from the Gravity Probe but from the two LAGEOS laser-ranging satellites. Ignazio Ciufolini of the University of Lecce, Italy, and Ericsson Pavlis of Goddard Space Flight Center in Greenbelt, Maryland, used the two rapidly spinning LAGEOS satellites, LAGEOS I and LAGEOS II, as gyroscopes, and looked for the predicted precession.

The satellites are about twenty inches (half a meter) in diameter and were launched in 1976 and 1992 as targets for laser range finders. Lasers can track their positions within an inch of two (a few centimeters). As the satellites orbit earth, the Lense-Thirring effect slightly twists the planes of their orbits. The effect is predicted to be about six feet (two meters) per year. The two authors and other published a result some years ago, but at the time the difficulty was that the oblateness of the earth produces a similar effect thousands of times greater than that caused by frame-dragging. That could be corrected for, but in order to do that one needs to know the mass distribution of the earth, which is poorly known. The error estimate of the first results was 20%.

Since then, the gravitational maps produced by twin satellites known as GRACE, as well as improved gravitational models and other refinements, the perigee estimation, used in the earlier paper, is no

longer needed. The current result is much firmer, with an error margin of about 10%. Nevertheless, there are still uncertainties in the earth's mass distribution disturbing the LAGEOS result. Thus Ciufolini and others are pushing for a third LAGEOS satellite. A third one, in the right orbit, may reduce the error margin to under one percent.

A geocentrist's experience in Europe

The following was found on Malcolm Bowden's web site at: <http://www.mbowden.surf3.net/Geocexpl.htm>. It is here quoted as Mr. Bowden recorded it, without any comments by your editor.

Philip Stott has lectured in many countries on a wide range of creation topics. In May 1992 he gave a lecture on geocentricity to a group of Christians in Switzerland. In an email he mentioned this event as follows.

After a lecture on geocentricity in Switzerland to a group of Christian scientists (many of whom work at CERN), the physicists were so upset that some were actually in tears. Their biggest source of frustration was that they could not refute my lecture. Unbeknown to me they met afterwards and decided to send an audio tape of the lecture to Jean-Marie Mousca, the physicist they considered the most competent to rebut it. He was in America at the time. On receipt of the tape he spent considerable time in the library checking my statements and looking for refutation. He found none, but found even more support for geocentricity than I had given. On my next lecture tour in Switzerland Mousca (who had returned to his post as research physicist with the French nuclear research establishment at Grenoble) drove hundreds of kilometres to meet me and thank me for opening his eyes. He told me that he has come to the conclusion there is only one reference source that he can trust, and that is the Bible.

Many have told me that accepting geocentricity has changed their attitude to the Scriptures, changed their lives and strengthened their faith.

Yes, I agree with what you say about what the world will think. The world, and many Christians, look upon me as an utter fool (I have been devoted a whole chapter of ridicule in a South African theological text-book). Is that my criterion? God is true though all men be liars. I would rather be a fool for the gospel than keep quiet about their lies for the sake of respectability."

Scientists Create Petrified Wood in Days

Years ago a group of creationists produced petrified wood by natural means in less than a year. The process involves replacing the wood with minerals, and in this case, the wood was left in a mineral-rich stream. In their ignorance of anything that runs contrary to the religion of evolution, evolutionists insist that it “takes Mother Nature millions of years to convert wood to mineral. Creationists who point out facts to the contrary are ignored.

Now, however, the evolutionists’ tone has changed. Petrified wood now has commercial value; it may be useful for separating industrial chemicals, filtering pollutants and soaking up contamination. Of course, a year-long process is not commercially feasible, so research scientist at the Pacific Northwest National Laboratory have recently made petrified wood in a matter of days.

“Wood petrified is very hard and very porous material — it’s not really a wood component,” said Yongsoon Shin on 24 January 2005 in a telephone interview. “As a mineral product, petrified wood has a large, hard surface and a porous inside, making it ideal to soak up or separate substances or act as a catalyst in other processes,” he said. Then, in an AP press release came the evolutionists’ old saw: “Natural petrified wood occurs when trees are buried without oxygen, then leach their wood components and soak up the soil’s minerals. For instance, at the Ginkgo Petrified Forest, a state park on the west shore of the Columbia River in central Washington, trees were believed to have been buried without oxygen beneath molten lava millions of years ago.”

To petrify their wood, the researchers used commercial pine and poplar boards. They gave a half-inch cube of wood an acid bath, then soaked it in a silica solution for several days. The wood was then air-dried, cooked in an argon-filled furnace at temperatures up to 1,400 degrees and cooled in argon to room temperature. Argon, an inert gas, provided a protective atmosphere for crystal growth.

The result was a new silicon carbide that exactly replicates petrified wood, Shin said. The research was published in the latest edition of the journal *Advanced Materials*. The next step is trying to create narrow, ordered pores in the silicon carbide to make the material even more porous, which would make it even more useful in the industrial world.

And there you have it. Petrified wood can be made in a matter of days. The keys seem to be temperature, a mineral source, and an absence of oxygen. And it can take days, not millions of years.

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

DRACO AND URSA MINOR.

PL I

