Southern Skies

Volume 26, Number 4 Journal of the Southeastern Planetarium Association Fall 2006

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partial solar eclipse of Dec. 14, 2001 from Seista Beach, FL
Credit: George Fleenor

Southern Skies is the quarterly journal of the Southeastern Planetarium Association published for the purpose of communicating association news, reports, reviews, and resources to its members.

President's Message

Patsy Wilson
Margaret C. Woodson Planetarium
Salisbury, NC

I've been giving this column a great deal of thought over the past few weeks, pondering what to say to the membership in this my last official correspondence to you as SEPA President. Unfortunately, I deliberated so long that I missed my deadline for the first time in two years! So first, I'll extend an apology to our editor for making his job more difficult. I'm sure none of you regular contributors out there never miss deadlines. (Ha!)

I want to say thanks to each of you for entrusting me with the responsibility for this office. Many of you have served "unofficially" as the SEPA cabinet - willing advisors, mentors and friends who shared your expertise, experience and love of this organization. Your input has helped me through a few rocky places in my tem of office. Thanks for that. I'm not going to use this column to list our achievements during the past two years, but rather will say that I believe we've successfully weathered a few storms and that SEPA is in great shape with a great Council, financial comfort and an informed and involved membership.

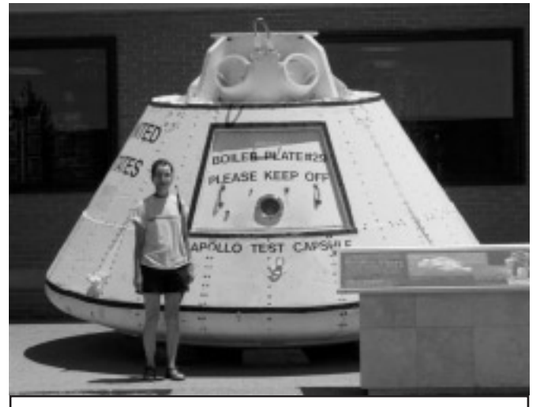
Mike Sandra will rotate off the Council in December. We all owe him a great debt of thanks for his service over the past six years. In spite of tremendous personal adversity, he has persevered and continued to love and serve SEPA. Thanks, Mike!

Adam Thanz stands ready in the wings to assume his role as President. He has lots of ideas and a clear vision of the future of this organization. He is thorough and very organized. I hope each of you will do all you can to assist Adam and support him through his two-year term.

Over the past few weeks, Drew Gilmore, Mickey Jo Sorrell and I have completed the process of changing website hosts. Our previous contract was quite costly and had several provisos that limited Drew's access for editing. The changeover did not require any changes in our URL, so you should still be able to access the site as before. Please review the information on our website and email any suggestions or changes (especially to your institutions homepage) to Drew and Adam.

I'm sure most of you are busy adapting your presentations to address the recent IAU resolution about the plants. Regardless of your personal reaction (and there have been many extreme and emotional reactions) to this decision, our first responsibility is to educate and enhance the understanding of our audiences. Looking at and considering the progression and evolution of scientific understanding throughout the ages helps to put all of this into proper perspective. Play the public response to this decision against that of Galileo's time and you see what I mean.

I never assume that I've discovered some new information about astronomy of space exploration that the rest of you have never heard. After all, one only has to watch a rousing game of Astropardy at conference to realize that we have some extremely knowledgeable people out there. However, I did some pleasure reading this summer that opened my eyes to information about the History of Space Exploration. The first book was one I'm sure most



SEPA President Patsy Wilson with the Apollo Boiler Plate at Meteor Crater

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IPS Report

John Hare
ASH Enterprises
Bradenton, FL

Slightly over 300 delegates were in attendance at IPS 2006 in Melbourne, Australia. The conference was very well organized and run. One particular activity of note was the dark-sky observing site that delegates were taken to early on in the conference. The organizer's comments about "you can see your shadow by the Milky Way" were dismissed as hyperbole until we arrived at the site. Not only could we see our shadow but the dark lanes in the Milky Way we were told, were recognized as "constellations" by the native Australians, and were very evident to all who were lucky enough to be there that night.

The 2008 IPS Conference will be hosted by Chicago's Adler Planetarium. The conference dates are June 15-20, which is why the dates for SEPA-2008 had to be pushed into July. The last IPS conference in North America, Wichita 2002, attracted over 400 delegates and Chicago promises to be larger still.

Three sites were presented as possible hosts for the 2010 IPS conference:
Alexandria, Egypt
Beijing, China
St. Etienne, France
The site will be selected by IPS Council at the 2007 Council meeting. I'll furnish details on each site in a future issue of Southern Skies.

IPS Council in Melbourne. Credit: John Hare

The 2007 IPS Council meeting will take place at a

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Paul Campbell Fellowship Award Nomination Form

Nominees must have been a member of SEPA for at least ten years, and they must display qualities in each of five areas, as represented by the five-pointed star shaped award: integrity, friendship, service, knowledge, and vision. Please submit this form to any SEPA Council member.

Nominee's Name: _____

Qualifications: _____

_____

_____

_____

_____

Editor's Message

James Sullivan
Buehler Planetarium & Observatory
Davie, FL

In this issue, there is an article on the Star of Bethlehem. It is a topic that many of us have strong opinions on. I am certain that many of the people who visit our institutions also have opinions. Due to our connection to the stars, many people believe that we are experts at anything that uses the word "star." We are put into positions to share with them our thoughts, our knowledge, or maybe even our beliefs. Or maybe we respectfully direct them to another source for guidance.

Because the public comes to us for answers, we have to be prepared to give them some response. Knowing what different individuals think on a topic, whether we agree or not, can be very useful in helping each one of us to formulate or bolster our opinions. No matter how we feel, each of us will be confronted with the Star of Bethlehem about this time of year. Whether we have the freedom to present our personal beliefs or if our institution has dictated a position for us, the topic is not going to go away, and sooner or later we will each be asked.

It is interesting that we deal with people's beliefs on a daily basis. We use mythology and belief systems from all over the world to make cute snappy stories for our sky tours. But I think that many of us at public institutions strive to keep religion out of our theatres. Do you see the paradox there?

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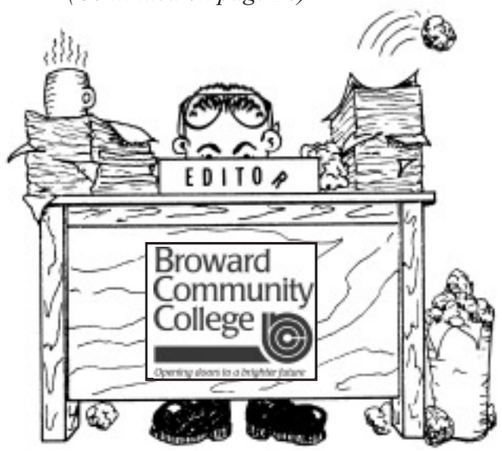

SEPA Membership Form

Please send your check for $25 (or $15 if outside the SEPA geographical region) to SEPA, c/o Mickey Jo Sorrell, Morehead Planetarium & Science Center, CB#3480 UNC-CH, Chapel Hill, NC 27599.

Name _____
Organization _____
Planetarium _____
Address _____
City _____
State / Zip Code _____
Voice Phone _____
Fax Phone _____
Email Address _____
Staff Position _____
IPS Member? Yes _____ No _____
Contribution to Scholarship Award Account: $_____

Small Talk

Elizabeth Wasiluk
Hedgesville High School Planetarium
Hedgesville, WV

Wow, since the school year started for me it has been extremely busy. You probably remember my talking about no longer having access to the room outside the planetarium that was considered a holding room for overflow groups before the school became overcrowded. Currently it is being used as a photography/art room and the sink for the class is located right out my door, so the planetarium door is now splashed with all sorts of colors. To get to my storage area, I have had to jump over a cord. My supervisors offered me the office across the hallway claiming it is larger; it is also further away. I asked if I could have the old office for a production room. They said they did not know, so I said that the extra space is miniscule, so that unless they give me my old office as a storage room there is no deal.

On Friday, September 1, 2006, school was closed due to fears that a hurricane was headed our way. All that materialized was rain, but I didn't have the luxury of a day off. I was headed in to school to be with Steve Pielot from Ash Enterprises to work on my star projector. It always feels like Christmas when Steve comes getting everything nice. He even found a new light source for the star projector that is brighter with smaller star images and the bulb is cheaper. Now I have stars smaller than a golf ball and brighter. Unfortunately, less than three weeks later, the annual motion is out. Is it Murphy's Law that everything on your star projector cannot work completely for at least the school year?

In astronomy, I have 9 kids. No sophomores this year. Just freshmen and juniors with one senior. Only one female, so far. Do you have ideas on how to get more high school girls interested in astronomy? Drop me an e-mail.

I belong to two different astronomy clubs. The Shenandoah Astronomical Society and the Tri- State Astronomy Club. Both do outreach and recently the Tri-State Astronomers went to Boonesboro, MD for the local "Boonesboro Days". We were blessed with two days of clear weather for astronomy and even a large sunspot on the sun. Lots of people passed through the booth on that day and got a peak at a "live" and active sun. The Shenandoah Astronomical Society is hoping for clear skies on October 21-22 to collaborate with "the Historic Longbranch" and view the sun during the Hot Air Balloon Fest. What sorts of astronomy outreach are you doing in your planetarium? Are you working with your local astronomy clubs?

Speaking of outreach, I got a chance to head to Baltimore for the Astronomical Society of The Pacific's Educational Outreach Professional (EOP) Conference. Now I don't know about you, but planetarium people were EOP's long before there was a name for it.

Part of the reason I wanted to go to the conference is that there were great tours involved. Going to NASA Goddard, I got to see specialists working in the "clean room" on parts to go on the Hubble Space Telescope Servicing mission which I hear is now scheduled for the early part of January in 2008. Specifically, we saw the wide field camera three. Did you know that the Hubble Space Telescope's control room has now been moved back to Goddard? I guess things are getting ready for James Webb to replace HST, well not really since it is infrared. Let's say compliments it.

We also spent some time at the Hubble Space Telescope Headquarters on the campus of John Hopkins University. Their staff co-hosted the conference and we were treated to a whole host of talks about the innovative science done by the Hubble Space Telescope. Those that wanted could also go to see the Far Ultraviolet Spectrum Explorer (FUSE) headquartered across the street in the John Hopkins Science Building. You may remember seeing the

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Astro Video Review

Priscilla Bernardo
Orlando Science Center Planetarium
Orlando, FL

The Unexplained Astrology

Surfing around looking for my next video I stumbled across this little ditty. Ah…an astronomer's paradise. What astronomer can resist anything that goes after astrology; that wonderful "science of the heavens" that we are often mistaken as experts in. Finally I may have something that can be shown to visitors to explain to them how I have no way of knowing if next week they will be lucky in love. I go to place the order on Amazon. Rats, no longer available. Maybe I should consult my chart to see if this the most auspicious day for ordering? I got a better idea. I will take matters into my own hands and try for the source, A&E (http://store.aetv.com). I locate a VHS copy for $19.95 but since the order's arrival and this review it is now only available on DVD for $24.95. A quick look at the specs of the DVD and there are no special features included, just 47 minutes of "simply the high quality programming you've come to expect" according to A&E.

In goes the popcorn, off comes the shrink wrap. The first thing one should note is that this is almost vintage, according to my youngster friends. Circa 1997. We open with the O.J. Simpson trial. According to expert astrologer Katherine de Jersey, O.J. and Nichole were headed for disaster from the day they took their first breath. She also predicts that before O.J.'s death he will confess to his role in Nichole's terrible end. And this is how much of the video goes. Throughout the presentation there are many incidents that are used to point to this "science of timing." The stock market crash of 1987, a personal account of one lady's search for true love are among the examples doled out in an effort to give you the heebie jeebies and make you go hmmmm.

Also smattered about this rather disjointed presentation are interviews with astronomers, psychologists, and physicists, all offering up their views on what makes this all a bunch of hooey. They talk about how astrology is still earth centered and how much of the jargon used by astrologers only appears to sound scientific in nature. The show points to various studies done to debunk astrology; my favorite being the 1970's experiment of Michel Gauquelin who sent 500 people a interpretation of supposedly their own birth chart but which was actually that of the notorious mass murderer Marcel Petiot. When he asked for comments, 94% of the recipients found it to accurately describe their character.

While there is a token pass at explaining the origins of astrology and how eventually science prevailed, propelling astronomy into its own, the most intriguing thing included in the show was the question put to one astronomer - why spend so much time going after astrology if it isn't real? A&E pointed to Nancy Regan's use of an astrologer in the White House. While having those in ruling power consulting a starry eyed guru on world matters is scary, I point to a 2005 Gallup poll where 25% of the American population believes astrology is real and other polls that show over half of all American teenagers believing astrology, as truly frightening. When you have such a big chunk of a populace that can be so easily swayed by mumbo jumbo, when bureaucrats insist we instill in our youth the mind numbing art of regurgitating learned information for a test rather than nurturing their innate desire to question and explore, suddenly the work that we do in "astronomy for the general public" comes into sharp focus as an urgent need. A populace that has lost its ability to question has lost more than its inquisitive edge; it loses its power to remain uncontrolled and free. And what better tool could there been than the universe to inspire someone to question the world around them. So now, when someone asks me if I study astrology I will begin my response by asking them why would I choose to let someone else dictate my life decisions when I could study astronomy and chart my own course through the cosmos.

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yet-to-be-determined site sometime around the time of the September Equinox. Since the next SEPA conference will be after the IPS Council meeting, it is important that I hear your feedback regarding the site choice and any other issues pertaining to IPS prior to mid-September 2007.

Dues will go up effective January 1, 2007. Treasurer Shawn Laatsch presented very detailed financial data that justified the need for the increase, the first since 2000. As before, there is a substantial savings with the 2-year membership. The new rates are:

Individual 1-year- $65
Individual 2-year- $100
Institutional- renewal $125, new $250
Library- $45

A new member category, Corporate, has been proposed. This change, along with other changes to the By-Laws and the IPS general election, will be voted on by IPS members this fall. Results will be announced by the end of the year.

You know how to reach me should you have any questions pertaining to IPS.

Jon Elvert and George Fleenor at IPS. Credit: John Hare

Shawn Laatsch at IPS. Credit: John Hare

John Hare outside the Melbourne Planetarium. Credit: John Hare's camera

Dr. Sultana Kahn at IPS. Credit: John Hare

A Summer Intern's View

Amanda Greer
Bays Mountain Planetarium
Kingsport, TN

When I first heard about the internship at Bays Mountain Planetarium, I knew that it was perfect for me. I would get to work with children, interact with the public, and learn a lot of new things all of which I liked doing. I applied for the job and was lucky enough to get it. My first task was to design an activity to do with the Bays Mountain Day Camp kids. I needed something that would work for two different age groups. I decided to make rockets. It was easy enough that the younger kids could do it while still being interesting for the older kids. The first week I learned how nerve-wracking it is to have thirty children staring at you, all waiting for you to tell them what to do, but it got better as I learned what worked and what did not. The children would get a template with the rocket body, nose cone, and fins and a Fuji film canister. They would color the pieces and then cut them out. After that, they taped the pieces to the film canister. We would put in a little bit of water and 1/4 of a tablet of Alka-Seltzer. The children closed the lid, put the rocket down, and watched it shoot off. The rockets were a hit!

Amanda Greer helps assemble a Day Camper's rocket. Credit: Adam Thanz

Everybody loved their rocket, except for one boy who tried to shoot off my model rocket because he thought it was prettier then his. After everybody shot off their rockets, we went into the planetarium to watch the current program, *Sky Tellers*. It was a perfect program for the children, combining stories they would like with science. Then we would take a spaceship ride, which was the children's favorite thing of the day. If you have never taken a spaceship ride, it is a 5 minute program that makes you feel like you are in a spaceship flying through space. I hope that the children had as much fun as I did.

The Day Campers loved launching their rockets. They are seen here waiting to enter the planetarium for a special showing of 'Sky Tellers.' Credit: Adam Thanz

A big part of the job was to also learn how to run the current public show. There was so much to learn with it. I had to write down all the steps to setting up the show so I could remember them. At first, whenever I would set up the show, I had to refer to my notes and make sure I had not left a step out. Eventually, I became confident enough where I did not need the notes anymore. I was dreading messing up, but I knew it had to come one day. The day came very soon. I messed up a show where I had almost a full house and had to get the planetarium director to come fix my mistake. I hated messing up but I never made that mistake again.

I am so happy that I got this job. It has taught me a lot. I worked 40 hours a week, so I now know how hard it is to work a full time job. I met interesting people and had so much fun working with the children. I think this job beats flipping burgers any day.

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launch of FUSE from the Kennedy Space Center if you went to the SEPA meeting in Jacksonville.

There were great sessions with the lady who produces the NOVA televison series, as well as a Man from France who does publicity for the International Astronomical Union. (The IUE, those same folks that made Pluto a dwarf planet.) Speaking of Pluto, drop by to take the "What is a Planet?" survey at www.iserga.org. Have something to say about the decision? This is the place to go to be heard.

Former planetarium people were there but working in a different capcity. For example, did you know that James Manning, formally of the planetarium in Bozeman, Montana is now a publicity person for SpaceTelescope? I chatted with him to ask if he misses us in the planetarium field and he said yes, but at Space Telescope he gets to be a bureaucrat and has a great staff, so he says it is different, but still fun. I liked him giving a "crabby hat" to the president of the ASP. Baltimore, blue crabs, seafood, get it? It is great the planetaium folks are livening up the often stogey ASP folk. Edna Devore, a former planetarium person from San Jose has been at the SETI Institute and the SOFIA mission and talked about the on again/off again status of SOFIA.

I also saw Jeanne Bishop, who has been a former IPS and GLPA president and a former speaker for SEPA. She lost her dad a year ago and established a well- needed award for college teachers in astronomy at the ASP in his memory. She lost her husband Allan who retired from the NASA John Glenn facility in Cleveland in early August and had to cancel the trip they were planning to go on to IPS in Austrailia. She is officially retired from the planetarium in Westlake, Ohio, but is planning on going back to volunteer running it on a part time basis.

Coming up is science camp with fifth graders at the end of September and a planetarium program for the public on the upcoming transit of Mercury with information on the sun and SOHO and the launch of the new solar explorer "Solar B" and the Messanger mission to Mercury. So, what have you been up to? Drop a line regardless of how you define your planetarium, small staff, small budget, small physical size, etc. I am sure the planetarium community would love to hear about it.

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of you have read, but believe it or not, I had never read *The Right Stuff* or seen the movie. That was one book I devoured this summer. It really opened my eyes to attitudes, the selection process, and the celebrity status of the Mercury 7. Another book that I stumbled across was called *The Mercury 13*. The title intrigued me. I'd never heard of the Mercury 13! So I read it and learned all about the Lovelace Foundation and its secret testing of women. NASA did not sanction this testing. It was more of a science experiment to determine how women would score on the intense physical and mental screening that early astronaut candidates had to endure. There's no denying that many qualified women were flying during that time; some with more air hours than those chosen, but the test pilot requirement effectively eliminated their ability to compete for a spot. Against the background of society during the sixties, it isn't too hard for most of us to understand why women weren't allowed. It is, however, fairly difficult to explain it to children in the 21st century. If you've never read anything about this program, and there are lots of books on the subject, I recommend this book.

Since our next conference will not be until October 2007, it is very important to renew your membership so that you won't miss any issues of *Southern Skies*. This will be a primary avenue of communication regarding the happenings of SEPA during the months to come. Contact Mickey Jo Sorrell, if you have questions about when your membership expires. You should find an invoice in the envelope with your journal during the quarter that your payment is due.

I'll close the column with best wishes for the coming months. Thanks again for your cooperation and support during my Presidency. It has been quite a ride!

Objections to Planetary Conjunction Hypotheses for the Identity of the Star of the Magi

Sherman P. Kanagy, II
Associate Prof. Physics
Charleston Southern University
Charleston, SC 29423
(843)863-8084
kanagy @ earthlink.net

ABSTRACT

Planetary conjunctions, particularly those of Jupiter and Saturn in Pisces (6/7 B.C.) and more recently Jupiter and Venus in Leo (2 B.C.), in combination with some astrological system of interpretation, are the most popular explanations given by astronomers, theologians, and historians for the Star of the Magi. After briefly tracing the history of such hypotheses, difficulties with each are examined.

The involvement of astrology, at least in its traditional forms (as in Ptolemy's Tetrabiblos), is argued to be problematic both theologically and scientifically, yet planetary conjunction hypotheses require it. This problem, as well as numerous other objections based on such things as their frequency, sky position, visibility in Jerusalem, as well as on the likely identity of the Magi, the singularity of Matthew's word for "star," and there being a different explanation that fits Matthew's account and its biblical context much better than does any planetary conjunction, argue against these commonly accepted proposals for identifying the Christmas star.

It is suggested that the popularity of such explanations among Christian astronomers and theologians often derives partly either from a superficial examination of the relevant data; a rejection of, or an embarrassment with, the blatant supernaturalism of the biblical account; or from a willingness to grab onto any explanation that has an air of science and that seems to confirm the accuracy of the biblical text (Barr 1977). This latter approach seems to be part of a oxymoronic tendency among Christian scholars and scientists toward effectively deistic explanations for biblical events.

Finally, it is argued that the supernaturalism of the content need not require the removal of the subject from the proper realm of scientific discourse.

Introduction

Any serious examination of the Christmas Star must recognize that the issue is not merely a scientific one. If planetarium astronomers, for example, are to treat the issue at all, they must involve themselves, implicitly or explicitly, in current controversies on theological and philosophical matters as they relate to science. Biological evolution is only one of the topics in which such issues arise. The Christmas Star is another. Sinnott (1968), for example, involved himself in questions of the meaning of Gen. 49 in connection with Regulus as "the lawgiver between the lion's feet" (Gen. 49:10; Cf. Num. 24:17). Intense renewed concern over the science education aspects of the Intelligent Design Movement makes the religion/science discussion of this paper especially timely and relevant.

Thus, in the following discussion, philosophical and theological as well as purely scientific issues are raised. Although readers of this journal are probably more monolithic in their views on science than in their theological positions, I hope that the paper will invite more open and healthy dialogue among relevant scholars on these important though often divisive matters.

Historical Background

Of the numerous proposals for the identity of the Star of the Magi (Matt. 2), the planetary conjunction

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hypothesis is, and long has been, the most popular, particularly among scientists. Major works on the subject by Martin (1991), Kidger (1999), Molnar (1999), and Teres (2002) all promote the importance of planetary conjunctions to understanding the events recorded in Matt. 2. The hypothesis dominates the vast literature on the Star, both scientific and theological, going back to the time of the German Lutheran astronomer Kepler (c.1604) or perhaps even earlier. The common claim that Kepler believed the Star to be a planetary conjunction of Jupiter and Saturn in Pisces c. 6/7 B.C. is erroneous however (See Kepleri opera omnia 4.346 quoted in Molnar (1999), p. 24). As demonstrated by Burke-Gaffney (1937, p. 421), although Kepler thought that the planetary conjunction may have brought attention to the actual Star, he actually identified the Star as a supernatural light that moved in the lower atmosphere. Sinnott (1968) likewise promoted the planetary conjunction identity for the Star, as did Hughes (1979). Brown's (1977) classic theological study on the birth of the Messiah favors a planetary conjunction hypothesis as well.

Despite the massive case favoring the Jupiter-Saturn conjunction of 6/7 B.C. in Pisces presented by Teres (2002), his work seems to have been largely ignored (at least in the U.S.). Instead, the Jupiter-Venus conjunction in Leo (2 B.C.) near Regulus appears to be the more popular planetary conjunction identity for the Star (Mosley & Martin 1980), replacing the earlier proposal of the Jupiter-Saturn conjunction in Pisces of 6/7 B.C. that had dominated the Christmas Star planetarium programs in the mid-decades of the 20th century as well as practically all scientific speculation on the Star back to the time of Kepler. This replacement appears to have been stimulated by the chronological arguments of Martin (1991), defending a date for the death of Herod the Great that was several years later than the traditional 4 B.C. (which had been based partly on statements by the Jewish historian Flavius Josephus about an eclipse of the moon visible from Palestine then). Ernest Martin was formerly an associate of the fringe Christian, some would say cult, organization of Herbert W. Armstrong's Worldwide Church of God and later with the "Foundation for Biblical Research." Griffith Planetarium's John Mosley later promoted Martin's work, with the result that many planetariums across the U.S. replaced their older JSC-based Christmas Star programs with JVC-based ones. Various Christian groups promoted the NC hypothesis as well, with Christianity Today publishing Martin's "Celestial Pageantry" article and Pat Robertson's 700 Club broadcasting a visual dramatization of Martin's ideas for a couple of years.

To the extent that non-astronomical hypotheses (miracle, angel, the Shekinah Glory) were defended at all, the defense came primarily from the theological camp, relatively recent examples being the writings of Boa (1980) and Wenning (1980). Although Kepler and others of his era seriously considered such "supernatural" hypotheses, the modern trend of grounding science in methodological naturalism had the consequence that such hypotheses were at best ignored or politely dismissed in the scientific literature as mere "personal belief." People could believe in leprechauns if they liked, but don't call it science.

The Support-for-Astrology Problem

Before Martin's revision of the chronology (a revision not universally accepted by the way), the Jupiter-Saturn triple conjunction of 6/7 B.C. in Pisces was elaborately treated in planetariums across the country as an amazing match to the biblical account of the Star. Precise scenarios itemizing correlations between the timing of sightings of the close approaches of the planets to one another by the Magi (seeing the Star in the East, seeing it appear again on their way to Bethlehem, "going before them" and then "standing over" the place where the child was (Matt. 2)) all were hailed as astonishing fits to the details of Matthew's account. Anomalies, such as Matt. using "aster" (singular, non-collective) not "astron" (collective; a group of stars), not "asteres" (plural; stars) and not "planetos" (planet; wandering star), were conveniently "swept under the rug" by *ad hoc* suggestions such as the Magi being nearsighted (Burke-Gaffney 1937) or by alleging Matthew's careless, or at least faulty, transmission of the Magi's account of their experience. Also, the Magi, and probably astrologers and astrology-aware people throughout the vicinity of Jerusalem, would have known the "Star" was a group and could predict every step in the event - there would have been no unexpected behavior. No need for a sudden uproar as suggested by Matt. 2:3.

The necessary astrological interpretation was defended as indeed fitting the story of the Star as well: Jupiter was the planet of kings, Saturn was associated with Israel and Pisces was even thought to be "the house of the Hebrews" and, as fish, was a symbol for Christianity as well. Jupiter was symbolically king of gods; in Babylonia, Assyria, & Greece, Jupiter was "the savior of the world" (Molnar, 1999, P. 80); Saturn was considered Star of the Sabbath (Teres, 2002, p. 103) whereas was Jesus = Lord of the Sabbath; Saturn was protector of the Jews and Star of David may have been Saturn; Jesus was the son of David; and Tacitus claimed that the Jews were ruled by Saturn (p. 29, Molnar, 1999). According to Manilius and Ptolemy, Judaea was associated with the southwestern stars of Pisces (where the Jupiter-Saturn triple conjunction occurred in 7 B.C. See Teres (2002, p. 104)). Obscure medieval literature (Isaac Abravanel's Wells of Salvation) was found to justify claims of a religious significance for Jupiter-Saturn conjunctions. More recent literature supporting a Jupiter-Venus conjunction in Leo in 2 B.C., of course, ignores the work of Don Isaac Abravanel since he noted the importance of conjunctions of Jupiter and Saturn, *not* those of Jupiter and Venus. Neither Abravanel nor Kepler showed any awareness of a tradition in which Jupiter-Venus conjunctions had any special relevance to the Jews. If its significance was so astrologically remarkable, why wasn't the memory of it passed down?

Some recent investigators avoid the singularity problem by asserting that only Jupiter was the Star, but they continue the traditional arguments based on astrological symbolism. Martin says Jupiter was the planet of the Messiah, but Regulus was the Star of the Messiah (1991, p. 41), yet Matthew refers to the His Star (astera), not His planet (aster planetai), so Martin's claim that Jupiter was the Star of Bethlehem does not seem to be consistent. The claim that Jupiter or Regulus is the Star of Jesus or Yahweh is odd since both Jupiter and Regulus are above the horizon daily on most months of the year, so that there would be nothing particularly unusual about seeing "His Star" or "His Planet." Why would the Magi decide to make their long journey on seeing either of these commonly visible objects?

Despite the lack of any condemnation of the Magi in Matthew 2 in the broader context of universal biblical condemnation of astrological divination (Deut. 4:19; Jer. 10:2; Isa. 47:13; Amos 5:26) and, with the possible exception of Num. 24:17 which is so vague as to be useless astrologically, the virtual silence and apparent lack of interest otherwise of both the old and new testaments about astrological speculations, such astrological interpretations were and continue to be supported by both astronomers and even conservative Christian leaders including creationist Henry Morris in his Many Infallible Proofs (Morris 1974).

Defenders of PC hypotheses invariably end up giving an apologetic for traditional astrology despite protestations to the contrary (Martin, 1991, p. 17), for example, Molnar (1999, p. 97): "the horoscope must be so incredibly portentous that it points unquestionably to a regal birth in Judea." Molnar goes on to argue that that's exactly what his occultation of Jupiter by the moon in Aries provides. His proposal is said to "exactly" fit Matthew's language (Molnar 1999, p. 93) as well as extra-biblical materials, in astonishing detail. The Jupiter-moon occultation in Aries is called "astounding" & "stupendous" in its astrological import. Yet, after presenting a stupendous book-length case arguing for an exact, successful astrological hypothesis to explain the Star, he dismisses the whole thing as mere coincidence and implies that it means nothing about the validity of astrology!

In the process, Molnar informs us that it is Aries, not Pisces or Leo that is the important constellation for identifying the Star of the Magi! Aries, of course is a lamb or sheep just as Jesus is called the Lamb of God (John 1: 29, 36); mythologically Aries is the bearer of the Golden Fleece known for its ability to bring the dead back to life; gold is astrologically associated with the sun and with divinity, whereas Jesus is called the sun of righteousness; Aries symbolized Judah according to Molnar (p. 5, 1999) and so on. I find it interesting as well that both Kidger (1999) and Teres (2002) present a roughly equally intricate, but entirely different, astrological scenario that amazingly fits Matt. 2! Teres (2002, p. 125) for example says that in the ancient Near East, it is always Jupiter, Saturn and Pisces in combination that signaled the time of messianic salvation. *The protean flexibility of astrological interpretation allows almost any astronomical object or arrangement of objects to "amazingly fit" the brief biblical account, making hypotheses which use it unfalsifiable and all PC hypotheses are plagued by this flexibility of traditional astrology. Almost any proposal for the Star can be made to "work" by simply choosing the right combination of constellations, planets, aspects, meanings, etc. (the Fourier principle).*

Consider the following sources of symbolic meanings: Not only was Jupiter symbolic of kings, but Regulus was the "lawgiver between the Lion's feet" (Gen. 49) and was called the "Star of Kings" which has been identified as symbolic of Christ and Leo the Lion itself was symbolic of kings, so that Jupiter in Leo might be said to be symbolic of the King of Kings. Jesus, of course, is the Lion of the Tribe of Judah (Rev. 5:5). Conjunctions of Jupiter with Regulus might then mean the coming of the King-Messiah. Also, Seventh Day Adventists

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associated the Leonid Meteor Storm of Nov. 1833 with the Second Coming of Christ (Smith 1944). Venus as the Morning Star was likewise associated with Jesus in Rev. 22:16, although the Morning Star connection with Jesus was made only decades after His birth and an OT name for Venus was Lucifer = Phosphoros (Isa. 14:12), thus perhaps placing the planet in a negative light.

Other examples include: Mercury was thought to be a mediator between the gods & men as was Christ and Ptolemy's Tetrabiblos says Judea was under Aries & Mars! (quoted by Molnar, 1999, p. 46), so that Mars-Mercury conjunctions might be thought to announce that the mediator between God and men had appeared in Judea. In fact, biblically, the planets in general are nearly always in a negative context. The case of Venus is not as clear as it at first appears: Aphrodite is not mentioned in Scripture directly, Old Testament Astarte or Ashtoreth both are mentioned in the context of idolatry and "the Morning Star" may or may not refer to Venus since Mercury, Venus, Mars, Jupiter, or Saturn are at times "morning stars." Conjunctions of Jupiter with Spica might be seen as indicating the coming of a virgin-born King, since Spica is at times represented as a baby in Virgo's lap (cf. "The good boy in Virgo's lap" of Shakespeare's Titus Andronicus). Virgo, of course, has often been identified with the Virgin Mary. Yet these conjunctions occur every Jovian sidereal period, so that they occurred many times both before and after the time of Jesus - are we to believe that a like number of Messiahs or avatars of the deity have appeared associated with these?

In the opinion of most interpreters, the Bible does symbolically relate the Christ to a celestial body in the Jewish scriptures that might have been available to the Magi (unlike the NT books that refer to Jesus as the "Morning Star") in Malachi 4:2: "the Sun of Righteousness" that would arise with healing in its wings. So it might be suggested that the sun rising in Ophiuchus was the "Star." Ophiuchus was a constellation usually equated with the Greek god of healing Asclepius, the great physician of the Argonauts who was so skilled that he had the ability to bring the dead back to life and whose symbol was the caduceus (Cf. "As Moses lifted up the serpent in the wilderness, so also must the Son of Man be lifted up" of John 3:14; cf Num. 21:8,9)!

If the meaning of the conjunction was indeed determined through astrology, one can perhaps understand why Herod and "all of Jerusalem" (Matt. 2:3) showed no awareness of the occurrence of the event. But, on the other hand, astrology was universal in the cultures surrounding Israel and even common within Israel (Martin himself says (1991, p. 22) that Herod no doubt had his own court astrologers), so that if an astrologically highly significant event announcing specifically the birth of the Hebrew Messiah did indeed occur, all sorts of astrologers should have wanted to come seeking the newborn king, yet there is no biblical or extra-biblical evidence for anyone other than the Magi showing any particular interest in the event at all. Perhaps the particular astrological system of interpretation used by most astrologers did not imply the birth of a King of the Jews; only the system used by the biblical Magi did? Or perhaps others did come, but Matthew doesn't mention them.

Note, however, that one cannot consistently maintain that the unawareness of Herod and all Jerusalem arose from the fact that the Star was not eye-catching and its significance could only be recognized by experts in astrology while, in the same breath, harp on how visually rare and stunning the Jupiter-Venus conjunction was. It has often been pointed out that there was a great expectation in the Middle East at the time of the coming of Jesus that a Messiah was about to appear (based perhaps on Dan. 9 or Virgil's 4th Eclogue) and people were on the watch for any sign that He may have arrived. Would they not have noticed the JVC or, for that matter, any conjunction of great astrological import?

But, after all, proponents of planetary conjunction hypotheses say, such beliefs were just "the ignorant beliefs of that day," much as Bultmann dismissed biblical references to angelic and demonic activity, and if the Magi didn't get their understanding of the significance of the conjunction by astrology, how did they know what it meant? Besides, "magi" were Babylonian astrologers were they not, just as the New English Bible translates the term and who but astrologers would interpret the meaning of the appearance of an unusual "star"? Note, however, that the Greek word for the "wise men" is magoi, not astrologoi. The NEB presumes the magi to be astrologers even though Matthew did not actually use the Greek word for "astrologers" which was available to him.

The curious fact that the Magi, based on these interpretations, were portrayed as **successful** in their quest apparently is not seen as a problem for astronomers who almost universally condemn astrology as pseudoscience (Culver & lanna, 1988) and for theologians who almost universally condemn astrology as occultism and biblically-forbidden superstitious divination from the stars. Astrological interpretation, when referred to explicitly, is biblically portrayed as either ineffectual & unreliable or evil, as in Isa 47:13. The LXX version of Isa. 47:13 reads: "Let now the astrologers of the heaven stand and deliver them, let them that see the stars tell thee what is about to come upon thee." Here, the astrologers are not condemned for any *worship* of the stars (at least not directly), but their act is to predict the future from the stars. Often, though, the context is a worship of the heavenly bodies, not merely using them for divination.

There are forms of divination, however, that apparently had biblical approval (using Urim & Thummim, casting lots, dream interpretation) but there is no explicit positive mention of astrology *in the sense* of Ptolemy's Tetrabiblos (as "when the moon is in the seventh house and Jupiter aligns Mars, then peace shall ..."). Daniel is not portrayed as a superior astrologer to the astrologers of Babylon, even though he is called "Chief of the Magicians"(Rabmag), but rather his divinatory methods were effective and theirs were not. He had the gift of interpreting visions and dreams (Dan. 1:17). There is no evidence whatsoever that he practiced any form of astrology. "Signs in the heavens" (sun & moon brightening by a factor of seven or being eclipsed or turned "to blood," the stars "falling," darkness in midday, sun & moon stopping their normal motions as in Josh. 10 and in the regression of the Dial of Ahaz) are a different matter. Gen. 1:14 is frequently mentioned by those who argue for a "biblical astrology," but this verse surely can't be used legitimately to defend such things as necromancy, geomancy, and the like, but is more likely referring to calendrical use of the sun, moon, and stars. Although Jesus says "an evil and adulteress generation seeketh a sign," often "signs" seem biblically condoned. as in I Sam. 2:34; Isa. 37:30; Jer. 44:29; Luke 2:12; Luke 21:25 and Jesus Himself refers to the "sign of Jonah." It is worthy of note, though, that of all the astronomical signs mentioned in the Bible, none involve any of the planets let alone planetary conjunctions.

If the Magi got their information from the teachings of Daniel, one must note that there is no traditional astrological content practiced by biblical Daniel. There is no reference to Jupiter, Saturn, Venus, or Regulus whatsoever. Yes, Daniel says the "heavens do rule" (Dan. 4:26) but the more likely interpretation of this verse is that Yahweh and his angels rule rather than that planetary or stellar influences rule. Daniel makes no reference to retrograde loops, stationary points, cusps, heliacal or acronycal risings, or any technical astronomical or astrological terminology whatever. The key point is that the astrology used to defend PC hypotheses is not of this latter sort.

Various suggestions have been made over the years to deal with the apparent support the success of the Magi's quest gives to astrology. Perhaps their success was mere coincidence and successes are remembered, whereas failures are forgotten. Mosley (1991) points out that something unusual is nearly always occurring in the skies, so that admitting that the Magi saw something unusual is not to suggest that there is some validity to astrology. Perhaps the entire story is pious fiction (*theologoumenon*), although fiction stimulated by a real, rare astronomical occurrence. Isaac Asimov, for example, called the text of Matt. 2 an "ingenious reworking after the fact," portraying the early writers of the Gospels as a bunch of pious liars or deluded zealots.

Of course, if the entire story of the Star is a mere pious invention, the occurrence of a real conjunction is completely unnecessary.

Theologians at times have said things like "isn't it wonderful how God used the false beliefs of the Magi to lead them to the Truth!" The latter solution to the astrology problem seems much like the perhaps familiar story of the man who thought he was dead and when confronted with the fact that he bled when his finger was pricked, exclaimed in astonishment that "wow, I guess dead men bleed!"

Seventh Day Adventists in their interpretation of the Leonid Meteor Storm of November 1833 (Leo being symbolic of the Lion of the Tribe of Judah), and those who promote the "Gospel in the Stars" which claims that there is a "sacred" astrology of which traditional astrology is a corruption, continue the claim that some form of astrological reasoning is important to understanding biblical events. After all, some say, the standard proof texts, such as Deut. 4, used to argue that astrology is biblically condemned merely oppose *worship* of the stars --- not using them as "signs."

Merely making reference to the zodiac in Gen. 37 does not entail a condoning of astrological divination. Neither does Psalm 19 or Rom. 1. Yes, one can assert that the heavens declare the glory of God, His majesty, His power, His wisdom as Creator, His "eternal power and Godhead," but this is far from revealing detailed astrological predictions of future events. Both Gospel-in-the-Stars proponents and astrologers press these verses too far.

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The apparent support for astrology of Matthew's claim that a Star appeared to announce the birth of the Christ, and which Magi from the east somehow interpreted to mean that "the King of the Jews" had been born, was seen as an apologetic problem as early as the times of the church fathers. Note in this context that if astrological interpretation of a planetary conjunction were the key to identifying the Star of Bethlehem, it is odd that a father such as St. Augustine was not only anti-astrology but also showed no awareness of any alleged importance of astrology to scriptural interpretation. Care must be taken in asserting that the Magi were astrologers. Certainly they interpreted the meaning of a "Star," but "star" had a much more general meaning (any glowing thing in the sky) then than today. The Zoroastrians worshiped fire and a significant number of scholars favor a Zoroastrian identity for the Magi based on how they were portrayed in early art for example. If Zoroastrians, the need for an astrologically significant Star of the Magi would be significantly lessened.

It is not my primary concern, however, to resolve the problem of at least appearing to give credence to astrology that naturally arises when one defends a planetary conjunction hypothesis for the Star. Rather, I am just noting that such hypotheses inherently involve this problem, as numerous investigators have recognized.

Other Objections to Planetary Conjunction Hypotheses

1) *Frequency*: Planetary conjunctions are common, for example, Jupiter-Saturn conjunctions occur about every twenty years. Even the rarer ones (triple conjunctions for example) recur over intervals of hundreds of years so that even the rarer ones occurred multiple times in the years before and after the birth of Jesus and as far as we know other Messiahs did not come in connection with those. Certainly from a Christian perspective, the Star announcing the birth of the one and only Messiah and the one and only incarnation of the Son of God, might be expected to be a unique, one-time occurrence. Bar Kochba ("Son of the Star"), for example, was considered a false Messiah even though a Jupiter-Saturn triple conjunction occurred in 134 A.D. when Bar Kochba celebrated his victory (Teres 2002, p. 127).

Only one time in scripture is there any reference to a star of any kind announcing the birth of anyone and that is in Matt. 2. Num. 24:17, if it refers to an actual star at all - most scholars say it either refers symbolically to David or to the Messiah Himself rather than to an actual star - probably refers to the Messiah's birth star, not anyone else's. There is no clear evidence, biblically or otherwise, for a Star announcing the birth of David, although there has been a suggestion that the Star of David may have been a representation of Saturn (Lewy 1950). Even in that case the star is not related to David's birth, but is an emblem of his victory in battle. If Mosley's (1991) argument is correct, one would expect reports of an unusual astronomical event announcing the birth of many of the biblical notables: David & Elijah for example. Yet, from a biblical standpoint, there is no mention of any such phenomena.

2) *Sky Position and Motion*: If agreement with the only extant account of the Star is a concern, Matthew's statement that the Star "went before" (Matt. 2:9) the Magi until it "stood over the place where the child was" (Matt. 2:9) as well as the appearance/disappearance/reappearance of the Star (saw "in the East"; go to Jerusalem --- not Bethlehem; see Star again as they leave Jerusalem for Bethlehem) must be explained. Given the likely population of Bethlehem, it seems unlikely that the information given the Magi from Micah 5:2 would have been precise enough to locate the baby Jesus, so that many commentators claim that Matt. 2:9 means the Star physically stood above the "cave of the nativity." Noting that Bethlehem is close to being south of Jerusalem (slightly S SW), the "going before" implies the Star moved southward, perpendicular to the path taken (east to west as a result of the rotation of the earth) by any planetary conjunction. Likewise, explaining how planets could move and then stop requires contortions of reasoning, whereas such movement was typical of the Fiery Pillar --- an important object in the history of Israel and especially associated with the visible manifestation of God, whereas *not one mention is made of any planetary conjunction anywhere in the Bible.*

PC hypotheses require giving improbable meanings to biblical words & phrases - the words can be made to mean almost anything one pleases. A key example is "en te anatole." Molnar insists it means "at its rising as a morning star" (p. 87, 1999), but Martin equally firmly insists it means "at its evening rising" and others simply say it means "in the east." Both men say that the phrase requires that the subject is a "natural," astronomical object and they claim that the Greek words are used to refer only to the rising of normal Stars or planets, yet Isa. 60 uses the same words (in the LXX) except for tense to refer to the rising of "the Glory of the Lord" (Shekinah Glory).

The Hebrew word "zarach" is used for "rising" in Isa. 60:3 ("and kings to the brightness of thy rising"). Zarach is also translated "arise" in Ecci. 1:5 ("the sun also ariseth"), in Isa. 60:2 ("The Lord shall arise upon thee"), and Mal. 4:2 ("the Sun of Righteousness arise"). Besides, Matt. 2 has a blatantly supernatural context (angels appearing in dreams, fulfilled prophecy, virgin birth, etc.) which would seem to count against claims like "obviously Matthew intends the Star to be a normal astronomical object." Also note that one may agree that the phrase above means "in the east" or "at its rising" but that does not justify saying, as Martin does over and over again, that the Star was seen "rising in the east" (as do all natural stars and planets).

Contrary to the common claim that Matthew is using "dumbed down" technical astronomical terminology for aspects of planetary motion in Matt. 2:2 ("in the East" is said to be better translated as "at its rising as a morning star" (Molnar 1999, p. 87), "at its evening rising" (Martin 1991), or "at its heliacal rising" (Hughes 1979) and Matt. 2:9: "went before" doesn't mean "went ahead of or in front of' but rather "motion around the retrograde loop"; "stood over" does not mean "hovered above or on top of spatially" but rather "came to a stationary point in its retrograde loop"), Molnar & Martin are without necessary warrant "technifying" terms that probably rather mean just what they say. For example, the biblical writers claim the Fiery Pillar "went before" Israel, guiding them through the wilderness and it "stood over" the Tabernacle, the Mount of Olives, and so on. For example, consider Exod. 14:19: "And the Angel of the Lord that went before the camp of the children of Israel ..."; Exod. 23:23: "... mine Angel shall go before thee ..." and Exod. 32:34: "... my angel shall go before thy face ..." (LXX). Surely we are not to believe that the Fiery Pillar or the Angel of the Lord really was a planet undergoing retrograde motion. Neither was Jesus undergoing retrograde motion when, in Luke 4:3 9, he "stands over" Simon's mother-in-law. It may be a concern also that Matthew mentions only one "standing still," whereas each retrograde loop has two stationary points. Similarly, consider Deut. 31:15: the "pillar of cloud stood over the door" and Ezek. 10:4: "The Glory of the Lord ... stood over the threshold of the house."

Although it is possible that the tax collector Matthew was quoting the exact technical astronomical language that the Magi may have used, it seems unlikely. Would we expect Matthew to talk this way, given that,

> "...the ancient Hebrews knew very little of the starry heavens, and no indications are given in Scripture of scientific astronomy.... We find there only the ordinary observations of landsmen (Amos 5:8), especially shepherds (Psa. 8:3)." (Unger 1966)?

It seems unlikely that Matthew would use terms whose meaning could only be familiar to experts in astrology to communicate his gospel message to his intended audience --- trying to convince the Jews that Jesus was their Messiah. Neither Matthew nor any of the other NT writers indicate that they were eyewitnesses of the Star, and since he does not claim to have been given the information by supernatural revelation (though such often may be presumed in the biblical text), he may have had to depend on the account of the Magi given to him by someone who was around at the time of the birth of Jesus, most likely Mary. Mary was not a scholar and most probably was a simple peasant girl. It is doubtful, therefore, that she would have used technical astronomical terms to describe the Star. She would have been familiar with the religion of the Jews, because she was one, and perhaps she would have known a little about astrology since it was so prevalent in the Middle East, but the technical terminology of the field is another matter.

A big problem for the zenith option is that any distant object (star, planet) appearing to be over Bethlehem would also appear to be near the zenith of Jerusalem since the two cities are only 5 miles apart and differ in latitude by a mere 0.07 or 0.08 of a degree (4 or 5 arcminutes). The declination of the Jupiter-Saturn conjunction of 6/7 B.C. (JSC) was about - 5 degrees, putting it at about 31.7 - (-5) = 36.7 degrees or 73.4 moon angular diameters from the zenith of Bethlehem at upper culmination (closest approach to the zenith). The declination of the Jupiter-Venus conjunction (JVC) of 2 B.C. in Leo near Regulus was about +20 degrees, placing it at closest 31.7-20 11.7 degrees = 23.4 moon angular diameters from the zenith of Bethlehem. Even supposing that a distant stellar object did appear to stand over (be near the zenith of) Bethlehem, as the Magi approached Bethlehem. the Star would appear over the next more distant city such as Hebron as well.

Assuming that Bethlehem is approximately south of Jerusalem, since the zenith of Jerusalem has a declination of 31.77 degrees, the southern horizon of Jerusalem would be at 31.77 - 90 = -58.23 degrees. Thus JSC would have appeared 53.23 degrees above the southern horizon and JVC would have appeared 78.23 degrees above the southern horizon. Thus neither conjunction would have appeared to stand over Bethlehem as seen from

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Jerusalem. Even supposing that a distant stellar object did appear to stand over Bethlehem because of its low altitude, as the Magi approached Bethlehem, the Star would appear over the next more distant city of a similar azimuth such as Hebron. Only an object having a small linear distance above Bethlehem could appear near the horizon of Jerusalem in the direction of Bethlehem as the Magi left Jerusalem and yet not appear to be over Hebron when the Magi arrived at Bethlehem. Interestingly, such a low linear distance object could be at the zenith of Bethlehem when the Magi entered the city.

Likewise, claiming that the disappearance of the Star for a period was explained by the brief separation of the planets between successive conjunctions of a "triple conjunction" makes the wise men rather unwise. Surely such experienced observers as they were supposed to have been were smart enough to recognize that the mere temporary separating of objects in conjunction does not mean that the Star is gone. Yet, if they could still see it, why did they go to Jerusalem rather than Bethlehem? It is not clear how, using any astrological system applied to a planetary conjunction, the Magi could have determined the particular city in which the King of the Jews might be born, so the Magi may have simply presumed He would be born in Jerusalem or at least that people there could tell them where their Messiah had been born. When they chose to go to Jerusalem rather than to Bethlehem directly, they apparently were not being guided by the Star unless one argues, as a theologian, that God chose - to "fulfill the Scriptures" involving the massacre of the innocents to have them visit Herod before going to Jesus in Bethlehem. If the Star remained visible throughout their journey, however, it is odd that they rejoice, apparently in pleasant surprise, upon leaving Jerusalem.

3)*Visibility in Jerusalem*: According to Matt. 2, Herod and "all Jerusalem," including the chief priest and the scribes, showed no awareness of anything unusual going on in the sky, having to ask the Magi when they had seen the Star, and were in an uproar only at the *report* of the Magi, not before. For that matter, there is no indication that they ever saw the Star even though the fact that Paul quotes Aratus of Tarsus (Acts 17:24-28; Titus 1:12) suggests that the educated Jews of the time of Jesus would have been well aware of normal astronomical objects (Teres 2002, p. 192). Of course, those favoring planetary conjunction hypotheses claim that this unawareness was because the significance of the event could be discerned only by those adept in astrology. However, in the case of the JVC, the conjunction was so close and the planets involved so bright that it should have been a visually astonishing event even for non-astrologers. Venus is the third brightest normal astronomical object in the sky after the sun and the moon and Jupiter is not that much fainter. Besides, there were enough astrologers around that it would be odd if reports of the great astrological significance of the event did not get widely circulated given the commercial activity of Jerusalem in particular. Astrology was prevalent among the Romans and others who regularly visited Jerusalem, and perhaps even among the Jews themselves as evidenced by the images of the zodiac incorporated into the Synagogue Beth Alpha and horoscopes of the Messiah found at Qumran among other indications, and it is hard to believe that none of the various foreigners, let alone local astrologers, would not have commented on the event.

It is clear from Luke 21:25 and numerous other sources that even the Jews of that time were always on the lookout for supernatural "signs" and only slightly later Josephus mentions the comet hanging over Jerusalem in 66 A. D. as a "sign," so that unusual planetary conjunctions would probably not have gone unnoticed. This is especially true if, as proponents of planetary conjunction hypotheses often argue, there was a long tradition of Jewish belief that planetary conjunctions were connected symbolically with the fate of the Jewish nation (Cf. Abravanel). With the darker, clearer skies of that time combined with their more agrarian "outdoors" culture, the people of the Jerusalem area would surely have noticed such unusual celestial events.

4) *Likely Identity of the Magi*: The most common suggestions are that they were either Babylonian Astrologers or Zoroastrian Priests. Some early art shows the Magi in Persian dress, suggesting to some that the Magi were Zoroastrian priests, but the issue of whether Zoroastrians would practice astrology is moot. As noted earlier, whether the Magi were necessarily astrologers is not as obvious as it first appears because the word "star" did not have the narrow connotation then as it does today. For example, the sun was called the "Daystar" and comets were "hairy stars" despite their not being point sources or even not having spherical shapes (in the case of comets). Thus, one could say that the Magi need not have been astrologers in the modern sense even though they interpreted the appearance of a "Star." Alternately, one might say that they probably were astrologers, but in those days "astrologers" considered their proper subject matter to be any glowing object in the sky, even odd-shaped

objects within the atmosphere, rather than merely "stars" in the modem sense of distant, quasi-spherical orbs that either now or in the past, derive their energy from thermonuclear reactions in their cores, or planets ("wandering stars") and the moon.

Another consideration is that it is doubtful that the biblical writers would have conceived of the interpretation of the "sign of the Son of Man which shall appear in heaven" of Matthew 24:30 or even the "signs in the sun, and in the moon, and in the stars" of Luke 2 1:25 (for example) as astrology (in essence equivalent to the practices of "the Chaldeans.")

Thus, insistence that the Magi were "astrologers" does not require us to prefer planetary conjunction hypotheses over, say, hypotheses involving something like the fiery pillar.

5) *Singularity of Matthew's word for "Star"*: The word Matthew chose to use for "star" is a singular, non-collective noun. Other Greek words could have been used if he meant to refer to a *group* of objects, such as a planetary conjunction. The JSC never was closer than one degree (= 2 moon angular diameters), thus would not have appeared to be a single object and even if the two planets did appear to merge into one at some point, as the JVC may have done, even casual observers watching the progress of the conjunction event would know very well that the single- appearing object was actually merely a close grouping. To deal with this anomaly, some investigators, such as Ernest Martin, claim that the Star was Jupiter alone, although one might wonder why Matthew failed to use the Greek word for Jupiter (Zeus) since it was available (cf. Acts 19:35 --- "the image which fell down from Jupiter"; see also Acts 14:12,13.). These are the only direct references to Jupiter in the entire Bible and whether these references are to Jupiter the planet rather than Jupiter the deity is unclear. Saturn is mentioned a couple of times (= "Chiun": Amos 5:26, Acts 7:43), the sun and moon, the Pleiades, the Morning Star (probably Venus), Arcturus, Orion, "the chambers of the south" and perhaps the constellations of the zodiac ("mazzaroth"). Scripture assigns no particular significance to Jupiter, symbolically or otherwise, so it seems odd that it would suddenly in Matt. 2 become the "His star," announcing the birth of the King of Kings.

6) *Symbolism*: Biblically, planets are specifically mentioned only as objects of idolatrous worship (Amos) or as terms for fallen angels (the "wandering stars" of Jude = "planets."). Venus may be an exception assuming one can equate "Morning Star" with that planet (the text never uses the term Aphrodite = Venus). Teres (2002, p. 113) claims that in Chaldean tradition, the "morning star" was identified with Jupiter rather than Venus. Again, the Protean flexibility of astrology!

Of the biblical references to "the Morning Star" (Isa. 14:12; II Pet.l:19; Rev. 2:28 & 22:16), all are clearly metaphorical. In Isa. 14:12, the morning star is "Lucifer" (Latin for "light bearer"), which would normally be considered a negative connotation: "How you have fallen from heaven, O star of the morning ... ." (NASB). The other verses have "morning star" as a positive connotation, but surely do not refer to the planet Venus. Are Christians to be given *the planet* Venus?

Likewise, in Job 3 8:7, the "morning stars sang together" (KJV) is probably *not* a reference to the literal planets Mercury, Venus, Mars, Jupiter, & Saturn but more likely is a reference to the angels. Angelic bodies are often described as glowing, so they are at times metaphorically called "stars."

The "host of heaven" (Deut. 4:19; 17:3; II Chron. 18:18) was at times a phrase used for angels or the celestial bodies, but biblically "even the stars are not pure in His sight" (Job 25:5; see also Job 15:15) and it was idolatry to worship them (II Kings 23:5). The host of heaven had a positive connotation in the sense that they all were creations of God, as is everything, but their beauty and mystery so often led them to be worshiped that their connotation usually is negative or at best neutral. Certainly God is said to have made the Pleiades and Orion (Amos 5:8 and Job 9:9), Arcturus or Ursa Major and the "chambers of the south" (Job 9:9) but is that to condone their use in divination? Castor and Pollux, the Dioscuri (the twin sons of Zeus) and the two brightest stars of Gemini, are mentioned in an astrological sense in Acts 28:11, but they are simply mentioned in passing as the signs of the ship Paul was on. The belief of the people who built the ship was that Gemini the Twins were guardians of sailors, but that in no way means that Paul or the writer of Acts accepted such a belief. I know my (sun) sign is Taurus, but I do not accept the significance that astrologers give to that fact.

Jude 13 speaks of "wandering stars" in a clearly negative context. Of course "wandering star" in Greek is the origin of our term "planet," but even here the "wandering stars" are almost always interpreted as "angels that left their first estate" (Jude 6) - probably the fallen angels or demons - not as literal planets.

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The "something like a mountain burning with fire" thrown into the sea of Rev. 8:8 and the great "star" Wormwood of Rev. 8:10-11 that is cast down to earth both are more like what we would call in modern terms asteroids, and not planets, and certainly are not presented in a positive context either.

In connection with Jupiter-Saturn conjunctions, some scholars have argued that the origin of the Jewish Sabbath was the Babylonian belief in the strong negativity of Saturn's astrological influence. It is said that no work was to be done on Saturn's day because of Saturn's association with death and other negative influences. The "star of the god Rempha" of Acts 7:43 (NASB, variously spelled Remphan, Raiphan, or Rephan in other manuscripts) is at times identified with Saturn or Jupiter. Cf. Amos 5:26 where Sakkuth or Kaiwan is similarly identified in this negative context with the planet Saturn according to the notes of the NASB. Jupiter has also been identified with BaaI by Teres (2002, p. 106). Such a correspondence does not suggest favorable symbolism in the minds of the biblical writers (Judges 3:7; 1 Sam. 12:10; I Kings 18:21; Jer. 2:8). Jupiter was adopted as a special patron by Antiochus Epiphanes IV, who himself has frequently been seen as a "type"of the Antichrist. Antiochus had set up an idol to Jupiter in the Holy of Holies of the Jewish Temple in 168 B.C. Many scholars have connected this act with the "Abomination of Desolation" spoken of by Daniel the Prophet (Dan. 11:31). Note II Maccabees 6:2 as well. Also, according to the internet's "Crossmap Dictionary" on Jupiter (Crossmap 2006), "The character attributed to him in pagan mythology was a compound of all that is wicked, obscene, and beastly in the catalogue of human crime" and later says that Jupiter was "the true opposite to Jehovah." Yet some defenders of planetary conjunction hypotheses want to equate Jupiter with Yahweh or Jehovah. Again, this association would not be seen as particularly positive to a person who was a Jewish Christian (Matthew).

Even in the astrology that has come down to us, Saturn is the principal malefic planet, so that Jupiter-Saturn conjunctions are commonly interpreted as signifying the death of kings and presidents - not their births - and again one has planets in a negative light. The literature on Jupiter-Saturn conjunction hypotheses for the Star of the Magi nearly always avoids showing any awareness of this negative meaning given to Saturn and instead obscure ancient references to some meaning that would support the Jupiter-Saturn conjunction's positive association with the birth of the King of the Jews is intentionally selected so as to "make it work" as a viable identity for the Star. If I am correct in this claim, surely we have a case of intellectual dishonesty. An expanded discussion of this and similar misuse of data is found in Kanagy (1987).

In Acts 14:12 Barnabas is equated to Jupiter and Paul to Mercury, but Jupiter and Mercury here are probably the gods and the verse is not a reference to the planets. Besides, the references are made by the worshipers of the pagan gods Jupiter and Mercury, so that, from a Christian point of view, Jupiter and Mercury are not being presented in a positive light. The planets, if these are intended, are still objects of pagan idolatrous worship. Paul, notably, in speaking at the Areopagus in Acts 17:23 to the Greeks made a point of not equating Zeus to Yahweh., contrary to the claims of some planetary conjunction proponents who insist that Yahweh and Jupiter were equivalent. Surely Jupiter was not an "unknown god" to Paul's listeners. Besides, if the Magi had equated Yahweh with Jupiter, surely the Jewish writer Matthew as well as his Jewish audience would have seen this as blasphemous.

Certainly Israel was frequently involved in idolatry and, in particular, with astrology, but to imply therefore that astrology was a biblically condoned practice would be to commit the is-ought fallacy as happened in the case of Social Darwinism (the way the world is is not necessarily the way it was intended to be or ought to be).

7) *Chronology*: As the hypothetical identity of the Star, the JVC is superior to the JSC in the minds of many astronomers, yet it is untenable unless one rejects the still widely-held view that Herod died in 4 B.C. To be consistent with the biblical account, the Star must appear before the death of Herod. As best I can determine, despite the optimism of Martin, most relevant scholars correct his revision in favor of the 4 B.C. date: Molnar (1999, pg. 58) for example, still holds to a 6 B.C. date for the birth of Jesus and a 4 B.C. date for the death of Herod. Consider also the comments of John P. Meier, who was then the General Editor of the Catholic Biblical Quarterly and has been described as "perhaps the foremost biblical scholar of this generation" (jacket cover to his book, below) and whose book Jack Kingsbury of Union Theological Seminary describes as "one of the foremost studies ever written on the historical Jesus ... ." (book jacket):

> "All in all, the scattered attempts [including particularly those of Ernest Martin - SK] to undermine 4 B.C. as the year of Herod's death must be pronounced a failure." - Meier (1991).

The Problematic Trend Toward Deism

Astronomers need to be cautious in suggesting to their largely Christian public audiences that deistic explanations of biblical events resolve any problems between science and the religious beliefs of those audiences. The issue of the Christmas Star, if astronomers choose to discuss it with the public at all, clearly is an interdisciplinary one requiring involvement in theological issues (hermeneutics, philosophy of religion) as well as philosophical ones (philosophy of science). Since most public audiences are almost certainly theists and usually a majority are Christian (perhaps even evangelicals), it is important to consider seriously how an intelligent Christian conservative might think. The following is a sample of what such reasoning, by someone aware of the issues raised by the Intelligent Design Movement, might use in response to attempts by an astronomer to assuage concerns that the religious beliefs of the audience are being attacked.

Intelligent Christians are generally aware that a biblical view of the world is theistic. Deism (defined as the view that God's activity happened only in the creation event and that nature has been autonomous since then) is widely recognized as an unbiblical position (Sire 1976). Although indeed God could have programmed into the universe at the very beginning the laws whose *autonomous* outworking would, for example, cause a pair of planets to come into conjunction at just the right time to announce the birth of Jesus, such a deistic view is hard to reconcile with both the general biblical statements that all things "hold together" by His continuing action (Col. 1:17) and endless specific biblical assertions of direct divine intervention in the world of space and time, examples being the Mt. Sinai and other O.T. theophanies, the events of the Exodus from Egypt, God "speaking" to the prophets and especially the incarnation of Christ Himself.

One can distinguish several other types of explanations according to the details of God's interaction with the world. In what might be termed "Punctuated Equilibrium Theism" (PET), God intervenes at the creation event, but after that there is no intervention (nature is autonomous) except at isolated times. Sir Isaac Newton regarded miracles as the extraordinary, uncommon action of God, whereas what we usually call "natural laws" were seen as God's ordinary, common way of interacting with the world. God is continually interacting with the world and because He is a rational being, that interaction is not chaotic or random but in some sense "lawful" although the complexity of the law being followed may be so great as to be humanly undecipherable. One must distinguish epistemic from ontological laws. In this "Catastrophic Theism" (CT). God is active continuously, but at isolated times interacts with the world in a very atypical way (performs a miracle). Such catastrophic interaction may be unnecessary, however, in the case of the planetary conjunction hypotheses for the Star unless one cannot explain the apparent leading southward (from Jerusalem to Bethlehem) and the "stopping over" behavior of the Star reported in Matt. 2:9.

If one prefers that nature not be autonomous, one may prefer the theistic idea that God chose to act continuously according to the normal lawful pattern obeyed by gravitational forces to bring the planets into alignment at the appropriate pre-planned time. I will call this "Gradualistic Uniformitarian Theism" (GUT). No deviation from normal, lawful behavior of the planets occurs, but as a result of pre-programming and planning, a meaningful confluence of events occurs at the right time. Carl Jung would call this synchronicity. Note that even highly unusual events can be pre-programmed. Notice also that this popular form of theistic explanation for the Star event, though *definitionally* distinguishable from deism, is *observationally* indistinguishable from it and is distinguishable from atheism only if design can be objectively tested.

The main feature of deism that can separate it from atheism is the design argument. What is *not* explained by a non-theistic outworking of impersonal physical laws without a God that *is* explained by deism? The alleged presence of design in the universe. Thus the Intelligent Design movement has been criticized, though somewhat unjustly I think, as little more than a movement to defend deism rather than a defense of biblical theism.

Deism has the advantage that it is more palatable than theism to those who believe that direct causation of events by the action of superhuman, but non-divine beings such as angels or demons, or by divine beings --- particularly in ways that would manifest personality and intelligence and thereby distinguish the activity from the mere outworking of impersonal physical laws --- is inappropriate as an explanation in any scientific view of the world. If the "design" is not clearly evident, it can be dismissed as a mere "leap of personal faith," again having no effect on the practice of a science that denies the causal intervention of intelligence into the behavior of the universe. Putting God solely at the beginning of things in practice allows us to proceed in science functionally as

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atheists. If claims of design are untestable, after the beginning, a deistic universe would be identical to an atheistic universe. One then can "have one's cake and eat it too": one can be "a believer in God" and yet be accepted as a "good" scientist by the community of scientists who, as a body, believe --- in error I think --- that allowing non-negligible intervention into physical events by "supernatural" beings, at least after the beginning of all things, would lead to the death of science.

Without presuming to know the motives of those who practice a functional atheism and yet claim to be "Christian," many Christians are concerned that more and more in Christianity-and-Science dialogues there appears to be a lean towards functionally atheistic resolutions of tensions between science and Christianity which *effectively* give up a theistic worldview for the sake of having the support of, or at least peace with, a contemporary science grounded in a worldview antithetical to it.

It is a small step from having a God whose activity is confined to a distant creation event, or one whose activity is indistinguishable from the action of impersonal, unintelligent forces, to no God at all. The more one denies the *need* for (rather than mere possibility of) divine activity to explain one's experience of the world, whether because He allegedly acted only at the beginning or because He acts continuously, but the activity makes no difference in the behavior or characteristics of the world that can be detected by us objectively, the more warranted the belief that there is no God becomes (cf. Judges 7:2). Laplace's "I had *no need* of that hypothesis" applied to more and more of human experience eventually subsumes all of reality and one needs God to explain nothing, at which point God becomes irrelevant even if existent. This is not the biblical God despite the fideism, subjectivism, and irrationalism prevalent among some believers.

Numerous scientists have made the suggestion of the eruption of Thera in the Mediterranean Sea as the cause of the physical phenomena of the Exodus, an earthquake as the explanation of the collapse of the walls of Jericho and the stoppage of the flow of the Jordan river, a solar eclipse as the cause of the darkness at Christ's death, flooding of the Black Sea to explain Noah's Flood, a tornado to explain Ezekiel's vision (Ezek. 1), the experiences of Moses on Mt. Sinai as due to volcanic activity, or a sun pillar to explain references to the fiery pillar (a fond suggestion of astrophysicist Donald Menzel). Such hypotheses sound much like an apologetic for atheism.

Although certainly God could have used the eruption of Thera, an earthquake, a solar eclipse, and so on to accomplish His purposes, to many thinking Christians there is something troubling about the trend of such reasoning. For example, according to Exod. 14: 16, 21, God used "a strong east wind" blowing all night to bring about the division of the Red Sea (or "Sea of Reeds" if you prefer). As the immediate, proximate cause, the wind might fit well into a deistic view, but the claim that the event was associated intimately with the raising of the "rod of God" by Moses seems more difficult to make fit a deistic model without the specter of a determinism of the personal acts of Moses raising its ugly head.

One may even allow intelligent beings free will and still maintain a deistic position by combining God's foreknowledge of the future acts by such beings (Moses lifting his rod) with pre-programming (foreordination) of other causative factors (the sea dividing). It would seem that one could eliminate the need for any theistic hypothesis by such maneuvers. The question also arises that if one cannot clearly demonstrate design, why one cannot say that the earthquakes, eclipses, volcanic eruptions, and the like, combined with the presence of superstitious and pre-scientific observers, were sufficient-in-themselves to completely account for the reports of the strange phenomena in the Scriptures. Given that the east wind was a "natural" phenomenon, one might be tempted to proceed, in Bultmannian fashion, to dismiss the rod part of the account as mere "legendary amplification" or non-historical mythic element" of the text.

So although a planetary conjunction that occurred in the "natural" course of events is certainly not ruled out, scholars must honestly ask themselves whether their favoring of such a hypothesis is influenced inordinately by factors other than the weight of the objective evidence supporting the hypothesis.

A Superior Hypothesis Exists

In listing objections to planetary conjunction hypotheses, it is not my intent to deny that, of all the hypotheses *that exclude entirely the action of intelligent agents* (call these "type-I naturalistic" hypotheses) and various deistic hypotheses, they are the best. (Deistic hypotheses are identical to type-I naturalistic hypotheses except that they confine intelligent causation to the beginning). Hypotheses involving supernovae, recurrent novae, comets and the like have even more serious difficulties. But the best of the available "type-I naturalistic" hypotheses still fit the available data poorly. There are *naturalistic* hypotheses which fit the data much better - those that involve the immanent action of intelligent agents ("type-II naturalistic" hypotheses).

Some scholars may object to my use of the term "naturalistic" here, but my use of it is quite important. The National Academy of Sciences, for example, along with all major scientific organizations have excluded such hypotheses from science because, allegedly, hypotheses of this sort are "not subject to validation by objective criteria." The "supernatural," "upper story" miscategorization of significant Christian truth claims has effectively removed much of Christianity from its proper place in the marketplace of modern ideas.

Contrary to Hume, there are indeed situations in which intelligent agency is a superior explanatory hypothesis to hypotheses that exclude intelligent agency and the case of the Christmas Star is one instance. I make no hypotheses (*"hypothesis non fingo"*) about the ultimate nature of "intelligence," but the effects of intelligent agents are just as "naturalistic" as human beings acting in the world. One does not need to deal with the issue of whether ultimately man is an immaterial spirit or something physical. Calling these latter (type-II) hypotheses by the unbiblical term "supernaturalistic" is a category mistake, however, because the effects of such actions are in principle measurable, testable, physical, and just as properly in the realm of scientific discourse as are hypotheses that exclude intelligent agents.

Consider the hypothesis that the figures on Mt. Rushmore were formed under the guidance of human intelligence. Surely it would be absurd to insist that the hypothesis must be excluded from science. Human and animal intelligence is nearly universally recognized by all people, scientists and otherwise, as the causes of numerous events in the world. Certainly, materialists will insist that human agency is subsumed within their metaphysical framework, whereas Cartesian dualists would rather say that human intelligence is ultimately immaterial. Human intelligent behavior, however, can be studied scientifically without making a commitment to either metaphysical stance.

It is likely that something "physical" had to cause the scales to form in Saul's eyes at his blinding on the road to Damascus for example, independent of whatever spiritual significance the event had. Also, although psychosomatic phenomena associated with some purely psychological (internal) experience of Saul might account for the scales, Acts 9 suggests the cause was external to Saul since the horses as well as Saul's fellow travelers reacted to *something*. The scales were physical things that were *in principle* subject to scientific study independent of whether the cause of the scales ultimately was a non-mechanical action-at-a-distance or simply an unknown mechanical cause.

The destruction of the twin towers on 9/11 was a "naturalistic" event - the disintegration of the buildings could be explained in terms of physical forces, yet it also clearly was caused by the work of reasoning human persons (whatever a "person" ultimately is) and it is properly a *scientific* hypothesis to include these intelligent agents as an essential part of the scientific explanation of the destruction of the towers. To assert that "even though 'everyone knows' that human intelligent beings caused this tragedy, one cannot say that the claim is in principle 'scientifically testable'" seems absurd.

In like manner, hypotheses involving such objects as the Shekinah Glory are appropriate to consider, *as potential scientific hypotheses* and not merely "religious" hypotheses, for accounting for the events recorded in Matt. 2. This is not to claim necessarily that the hypothesis that an almighty God was involved is a testable hypothesis, but the claim that a superhuman, intelligent agent (perhaps God, perhaps not) was involved in an essential way in the appearance and physical behavior of the light that has become known as the Star of Bethlehem is testable in the same way that Condon (1969) tested the hypothesis of superhuman, intelligently-guided starships as an explanation of the extraordinary claims of many UFO reports. Yes, Condon concluded that the evidence did not warrant acceptance of the extraterrestrial intelligence hypothesis, but he never denied that normal scientific evidence was relevant to testing the hypothesis --- provided, of course, that there were physical phenomena involved.

Unless excluded by *a priori* considerations (for example, by classifying it as "supernatural," or "metaphysical" or "a matter of personal faith"), the Shekinah Glory (= SG), by definition, the visible, spatially localized presence of God, provides a much better explanation of the Star of the Magi than does any planetary conjunc-

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tion. (Note that although the term technically arose during the intertestamental period, I use it for the biblical Old Testament "kabod yahweh" or the New Testament "doxa" and more generally for any light or fire associated with the visible manifestation of God to man.) Although this short paper is totally inadequate to display the complete force of the argument, a synopsis of key points can be given (for more details, see Kanagy (1998)).

Teres, applying Occam's Razor, has pointed out that if one can find an acceptable naturalistic explanation for the Star, one should choose it before proposing supernatural explanations. (Teres is inconsistent, however, in his use of the principle, because he finds it necessary to bring in the supernatural in order to explain how the Magi could find the Christ child: The Magi "used their acute intuitive powers" [ESP?], one of the shepherds who had in Luke 2 heard the angels later told the Magi where to find the child, it was a "divine miracle." See Teres (2002, pp. 9 1-93)). As I have argued, however, the Shekinah is a type of naturalistic explanation. Besides, even if one insists on calling it "supernatural," I have argued that the (type I) natural explanations are unacceptable, so that consideration of a "supernatural" explanation is not inconsistent with Occam's Razor. Although the failure of other options, such as the planetary conjunction hypothesis, is a motivating factor *to consider* the hypothesis of the Shekinah Glory, this option should not be classed as a mere "God-of-the-Gaps" hypothesis. It is simply a logical and testable alternative explanation of the Star. It is a hypothesis - I am not saying that the failure of the proposed type-I naturalistic & deistic proposals entails the correctness of the Shekinah Glory hypothesis.

Perhaps there is an as yet unknown type-I naturalistic or deistic hypothesis that will fit available data better than does the SG hypothesis. Still, the SG hypothesis is one of the testable alternatives that should be considered in any --- scientific, not merely theological --- investigation that seeks to explain or identify the Star. In practice, the Shekinah hypothesis is difficult to test; nonetheless it is testable in principle because physical entities produce effects on the physical world. If one assumes, in addition, that the Shekinah is not manifesting itself in recent times, then one has the additional problem of testing a purely historical claim. Of course, dinosaurs are not manifesting themselves in recent times either, but study of dinosaurs is not consequently invalidated as science. The methods of the historical sciences are somewhat different from those of sciences that deal with entities that currently manifest themselves, yet historical sciences are genuine sciences. Also, to demand that science must presuppose that future data will necessarily always favor only type-I naturalistic hypotheses, and never type-II hypotheses, merely shows a metaphysical bias because the data may go either way. A key point of William Dembski and other proponents of the "Intelligent Design Movement" is that objective criteria can be developed which can allow one to recognize when data favor type-II hypotheses over type-I hypotheses. Since humans make such distinctions every day, there must be some way to formalize the procedure, whether one believes Dembski and his cohorts have found that way or not.

The doctrine of a visible manifestation of God's "physical" presence in space and time saturates the scriptures throughout both the old and new testaments, from the fiery pillar, the light on the mount of transfiguration, and "the light above the brightness of the noonday sun" of Paul's conversion - causing physiological effects (scales later falling from Paul's eyes); whereas there is not a single mention of a planetary conjunction in the entire Bible. This point fits well with Molnar's (1999, p. 35) remark that astrology in general was of little importance to traditional Judaism and that, according to the Sibylline Oracles, "[the Jews] do not worry about the cyclic course of the sun or the moon ... neither do they practice the astrological predictions of the Chaldeans." It is common knowledge that Matthew's gospel is written with the intention of convincing the Jews of the Messiahship of Jesus. In this regard, it is notable that the Shekinah Glory had immense significance for the Jews; planetary conjunctions had none (at least biblically). Also, the blatant "supernatural" (or better, Type-II Naturalistic) context of the story of the Star (angels appearing in dreams, prophecy being fulfilled, God appearing in human flesh and so on) fits better with the Shekinah Glory hypothesis than it does with a planetary conjunction.

The Shekinah Glory, assumed equivalent to the Fiery/Cloudy Pillar, was said to move, "go before" (cf. Matt. 2:9) and then stop, acting as a guide for Israel; it was said to "stand/hover over"; since it often was a low altitude object, said to hover over the O.T. tabernacle and, in Ezekiel, over the Mount of Olives, for example, it could easily point out the specific dwelling place of the Christ child within the city of Bethlehem --- planetary conjunctions could not do this; unlike planetary conjunctions, being under intelligent guidance, it could move southward (the direction from Jerusalem to Bethlehem, more precisely azimuth about 195 degrees); it is a singular, non-collective noun; it was a light that was said to rise over Israel (Isa. 60; cf. Matt. 2:2); the Magi may have been Zoroastrian priests, who were fire worshipers; it was only intermittently visible; at times it was seen in the sky, as in the decent of the pillar of fire onto Mt. Sinai and given the loose usage of the word "star" in N.T. times and the apparent equivalence of the Shekinah with the Angel of Yahweh along with the metaphorical equivalence of angels with stars, this light seen in the sky could legitimately be called "the star of Yahweh" ("His star" of Matt. 2); the only other biblical account of the nativity (Luke 2) explicitly mentions the Glory appearing to the shepherds; as an explanatory hypothesis, it does not require commitment to belief in any form of astrology and certainly does not lead toward deism.

Do I claim that the Shekinah Glory is a scientific explanation of the Star? No, but it is a *potential scientific hypothesis* because biblically it is a physical (spatially localized, at times publically visible) thing and is just as much a potential explanation as ball lightning was before its recent acceptance as a legitimate physical phenomenon, as meteorites were before Biot's decisive demonstration of their reality, and as claims of visitation by extraterrestrial intelligent beings in physical spacecraft are today, as in Carl Sagan's defense of the AAAS Symposium on UFOs and in the government's funding of Condon's scientific investigation of UFOs (Condon 1969). A more extensive defense would require an excessive digression from the main topic of this paper. Interested readers may watch for the publication of my book The Star of the Magi, presently in manuscript form.

Concluding Remarks

Despite the enthusiasm with which planetary conjunction hypotheses are commonly defended both by astronomers and Christian theologians, it is doubtful that they represent acceptable explanations of the Star of the Magi. Although, unlike the SG, they are universally accepted as physically real and gravitation theory allows one to calculate very precisely the characteristics of their past occurrences, they require improbable and strained meanings be given to the words of the primary and most reliable account of the Star - Matt. 2. Other accounts that mention the Star, such as the Testament of the Twelve Patriarchs, are known to post-date the biblical account and are probably legendary amplifications of it. Astrological interpretation is required by planetary conjunction hypotheses, yet such interpretation is at best ignored biblically and, more likely, strongly condemned and the scientific community almost universally classes it as pseudoscience. Even visually dramatic planetary conjunctions, and/or those filled with astrological significance, are neither rare nor unique, yet, from a Christian point of view, there was only one birth of the Son of God. Although planetary conjunctions of various types occur all the time and are mentioned in the literature of the nations surrounding Israel, none of these references connect the conjunctions with the birth of the King of the Jews (except by *post hoc* speculation) despite the astrological commentary usually accompanying such references.

In many cases, the continued popularity of planetary conjunction hypotheses among Christian scholars can perhaps be explained by some combination of the following: (1) Alternative hypotheses that may "work better" than planetary conjunctions, such as the SG, are regarded as "dead end" explanations, being "miraculous" and allegedly, therefore, untestable ("not subject to validation by objective criteria" to use the language of the National Academy of Sciences); (2) Examination of the relevant data has been superficial and somewhat uncritical, and (3) There may be an embarrassment with the blatant supernaturalism of the text of Matt. 2, and a related desire to be accepted as legitimate members of a community of scientists which on the whole does not share a biblical worldview. These possibilities are, of course, themselves hypotheses needing careful testing.

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So, with respect, we are running an article. The thing with the Star of Wonder is if it was a natural event that someone's belief system assigned as special, we as planetarians can take educated and some not so educated guesses as to what it was. If it was not a natural event, it enters the realm of the fantastic, and outside my expertise. It could just as easily have been a turtle carrying a flaming elephant across the sky.

One of the great things about working in a planetarium is we get to cover so much ground in so many different disciplines. I wouldn't have it any other way.

We can receive electronic files in most any format. Also, graphics can be received electronically or in hard-copy, including slides or photos, and will be converted to digital with sufficient resolution. Submission deadlines: January 1 (Winter), April 1 (Spring), July 1 (Summer), October 1 (Fall).

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FLORIDA

contact: George Fleenor
GeoGraphics Imaging and Consulting, Bradenton, FL
Jetson1959@aol.com

Florida Planetarium Association (FLORPLAN)

Contact George Fleenor for details.

Buehler Planetarium
Broward Community College
Davie, FL

Susan J. Barnett reports: The Buehler Planetarium & Observatory is running public shows four days a week. The weekend shows and monthly specials include *Teddy's Quest*, *Through the Eyes of Hubble*, *MoonWitch*, *Seeing the Invisible Universe* and *Clouds of Fire: The Origin of Stars.*

We continue to rotate shows on Wednesdays, and these shows include *To Worlds Unknown*, *Egyptian Skylore*, *Endless Horizon, The Secret of the Cardboard Rocket*, and *The Alien Who Stole Christmas/A Star for Santa's Tree.*

The Buehler Observatory has viewing four times a week. It has free public observing Wednesday, Friday, and Saturday evenings. In addition, we observe the Sun on Wednesday afternoons. We ususally have one telescope set up to view sunspots, and watch flares through a Hydrogen-Alpha filter on another.

Bishop Planetarium
South Florida
Bradenton, FL

Jeff Rogers reports: On September 21, the Bishop Planetarium premiered *Miracle Planet*, a remarkable, five-part documentary series exploring the history of Planet Earth. Using the Bishop Planetarium's capabilities as a high-definition movie theater, *Miracle Planet* traces the Earth's evolution over 4.5 billion years - from its birth as a planet to the emergence of Homo sapiens. On location footage shot around the world, spectacular computer animation, and interviews with leading scientists are combined to bring you up-to-date on the latest understandings of how we know what we know about our planet's past.

Following the premier of each episode, Jeff Rodgers, Director of the Planetarium and Director of Education for the Museum leads an informal discussion for those who wish to explore the concepts presented that evening in more depth.

Miracle Planet is presented Tuesday through Friday afternoons at 2:00 pm, Saturday and Sunday afternoons at 3:00 pm, Thursday* evenings at 7:30 (*Except for Wednesday November 22 to accommodate Thanksgiving)

Episode 1 - The Violent Past (Sept 21 - Oct 11)
Episode 2 - Snowball Earth (Oct 12 - Nov 1)
Episode 3 - New Frontiers (Nov 2 - Nov 21)
Episode 4 - Extinction & Rebirth (Nov 22* - Dec 13)
Episode 5 - Survival of the Fittest (Dec 14 - 31)

For information call 746-4131 ext.22 or 34 or visit www.southfloridamuseum.org/miracleplanet.asp.

Miami Space Transit Planetarium
Miami Museum of Science
Miami, FL

Where were you 40 years ago on November 4th, 1966? And where were you 30 years ago on November 4th 1966? And who the heck cares? Well, we do

here in Miami because on Nov. 4, 1966, the Miami Space Transit Planetarium opened its doors to the public for the first time and exactly10 years later to the day on Nov. 4, 1976 our PBS TV series "Star Gazer" (which was then called "Star Hustler") went on-air for the very first time. So if things come in 3's we decided to hold a major anniversary blow-out on another November 4th...2006. Consequently, as this is being written, the event hasn't happened yet...but by the time you read this, we will have chalked up 3 milestones in the history of this middle-aged dome and it can be safely said that a major good time was had by all and that there is still a little booze left for the South Beach crowd.

Our half-year run of *Titanic* came to a close on Oct.15th and currently we are showing a souped-up version of *Ring World: Revisited* plus our daily live star shows and a lot of new laser shows. And, amazingly, our laser shows are still getting sold out audiences (well, not every show). At any rate, in case you're wondering how long Jack Horkheimer has been shoveling stars under the Miami STP's artificial heavens...suffice it to say that if you're under 39 years of age, you weren't born yet when he began what he thought would be only a minor hobby. And in case you're wondering what he looked like in 1976 go to http://www.jackstargazer.com. Look for the episode entitled *Looking Back In Time 30, 40 And 2.5 Million Years Ago*.You can see it in streaming video using Realplayer. And if you don't have it you can download it free. Plus while you're on site you can also see a facsimile of the very first Star Hustler script...the one that went on the air Nov. 4th, in the 200th year of our nation's independence (1976).

Keep Looking Up!

Planetarium
Science Center of Pinellas County
St. Petersburg, FL

Marie Stempinski reports:

COMING UP AT THE SCIENCE CENTER!
Saturday, September 30. 7-11 p.m. Family Astronomy Night "Back to the Moon", Free to members, $5 prospective members.

Saturday, Oct. 28, 6-9 p.m. Science Spooktacular, Free to members, $5 Prospective members.

Saturday, Nov. 18, 7 p.m.-9 p.m. Family Astronomy Night, "In a Galaxy Far, Far Away!" Free to members, $5 prospective members.

Saturday, Jan. 13, 1 p.m. Lecture Series, Presentation by Dr. Al Goodyear, Renowned Archaeologist "Florida's First Peoples". Reception for the speaker following. Free for members, $6 prospective members.

Saturday, Jan. 27, 6 p.m.-10 p.m. "Wine Under the Stars," $45 per person. The Science Center's premier Fund Raiser. Food from area restaurants, wine tastings, music, Planetarium Shows and more! Call 384-0027 for more information.

Saturday, Feb. 10, 1 p.m. Lecture Series. NASA Scientist to discuss the "Orion" and the CEV (next generation of space flight after the space shuttle). "Space: Future exploration, colonization and beyond!" Reception for the speaker following. Free for members, $6 prospective members.

Saturday, March 10, 1 p.m. Lecture Series. Solving Mysteries with Forensic DNA. Speaker: Kevin Lothridge of the National Forensic Science Technology Center. Reception for speaker afterward. Free to members, $6 prospective members.

Saturday, March 24, 10 a.m.- 3 p.m. Archaeology Day. The Gulfcoast Archaeology Society brings the Center's 16th Century Indian Village to life with dancing, food, singing, native crafts, music, etc. Featured speaker at 1 p.m. Free to the public. $4 per person for Planetarium Shows.

Saturday,April 14. 12:30-3:00 p.m. Science Works: How science center classes are practical stepping stones to actual careers. An expo with presenters in classrooms and labs who hold actual science based jobs in the City of St. Petersburg, Pinellas County, companies and firms. A summer science teacher will be with each presenter showing information on the type of class we offer that complements each job.

Saturday, April 14. 8 p.m.-11:00 p.m. Astronomy Expo. Presentation, displays on telescopes and astronomy, hands-on activities for kids, Planetarium Shows and Observatory Viewings. Free to members, $5 for prospective members.

Saturday, June 23. 8 p.m.-11 p.m. Family Astronomy Night. "Jupiter Watch". Free to members, $5 prospective members.

LOUISIANA

contact: Jon Elvert
Pennington Planetarium
Baton Rouge, LA
jelvert@lasm.org

Irene W. Pennington Planetarium
La. Art & Science Museum
Baton Rouge, LA

Jon Elvert reports: The Irene W. Pennington Planetarium and the Louisiana Art & Science Museum hosted an evening with Apollo astronauts Captain Eugene Cernan and General Thomas Stafford on 28 September. The two revered astronauts spent the day in Baton Rouge speaking to middle school students and the public. Both Cernan and Stafford flew together on Gemini IX and Apollo X missions and captivated our audience with a few of their flight stories. The evening event at the museum included a planetarium presentation of *Future Moon*, a full-dome, digital production by the Houston Museum of Natural Science and narrated by Walter Cronkite, which includes a brief narration by Cernan.

The two astronauts were accompanied by an Apollo space suit and an Apollo XVII lunar rock weighing 152 grams. The event was sponsored by the watch manufacturer Omega (all Apollo astronauts wore an Omega Speedmaster), along with Lee Michael's, a local fine jeweler. Also attending the event was Mr. Sean O'Keefe, previously head of NASA and now Chancellor of Louisiana State University, who was presented with an Omega Speedmaster watch worn by an Apollo astronaut on the moon.

In conjunction with the planetarium's sky show, *Black Holes: The Other Side of Infinity*, Dr. Ed Seidel, a black hole expert at LSU, presented a talk for the general public about black holes on 6 October. A black hole education workshop for middle and high school teachers was presented on 4 November. This workshop was created by the NASA Education and Public Outreach Group at Sonoma State University and was compliments of the distributors of the show *Black Holes: The Other Side of Infinity*.

Left to right: astronaut General Thomas Stafford, Jon Elvert, astronaut Captain Eugene Cernan. The lunar rock is displayed between Cernan and Elvert. Credit: Ken Gikas.

NORTH CAROLINA

contact: Patsy Wilson
Woodson Planetarium, Salisbury, NC
wilsonpk@rss.k12.nc.us

PARI StarLab
Pisgah Astronomical Research Institute
Rosman, NC

Bob Hayward reports: It was a very busy summer at PARI. Besides the Duke *Talent Identification Program* students mentioned in the last report, two other groups of high school students spent a week

each in residence at PARI. A total of 27 students chosen from three local counties participated in PARI's first *Space Science Lab* funded by the Burroughs-Wellcome Fund. *Space Science Lab* is a solar research lab in which students study solar activity using optical and radio telescopes. With the generous participation of the technical staff and area volunteers, each of these students was successful in building a Radio Jove receiver to take home or to their local schools to measure solar radio bursts. All 27 receivers were successfully built and tested!! The students returned to PARI on a Saturday in September for the first of four follow-up programs in which they collaborated on the ongoing research they are doing with their kits.

In addition to these high school students, eight undergraduate university students from UNC-Asheville and the University of Washington-Seattle spent the better part of the summer in residence at PARI as student interns. While each of these had a specific project to work on, the opportunities for them to interact with the high school students was invaluable to both parties.

PARI hosted two sessions of the Morehead Planetarium and Science Center's project OBSERVE for teachers. We also hosted two groups of teachers participating in environmental education workshops at the Pisgah Forest Institute at Brevard College.

New Science Educator Christi Whitworth has been a great addition to the staff. She and Bob Hayward have been visiting curriculum coordinators and/or superintendents from local school systems making them aware of the educational services available at or through PARI. This has resulted in invitations to make presentations to several groups of teachers. Christi and Bob have also been working on updating existing StarLab programs and polishing up the new *Stars of My People* program.

Finally, we have been working with the people at the new Transylvania County Library to present programs in their new community room in which we have determined PARI's giant dome StarLab fits perfectly. Programs have been presented in this magnificent facility to folks from the Transylvania Endowment and the Community Foundation of Western North Carolina both of whom have provided funding for the StarLab outreach. We have also offered programs there for homeschool students and for the public.

Margaret C. Woodson Planetarium
Horizons Unlimited, Rowan-Salisbury Schools
Salisbury, NC

Patsy Wilson reports: John Hare of ASH Enterprises spent two days here in September helping us with programming using the new ECCS equipment. Several school shows were adapted for automated use with the new system including *Friendly Stars*, *Space Adventures* (a planet show), *Explore the Moon* and *Our Wonderful Sky*. School shows have started with second and third grade visitors.

In August, we had about 40 paying customers attend our premier Saturday public show. Through grant funding, our facility, normally only open to school visitors through the week, is opening one Saturday per month to the paying public. The cost is minimal, only $2.00, and word is spreading. This experiment will continue throughout the school year and then will be evaluated on the basis of attendance and financial gain to determine whether it should be continued. Our biggest push is publicity. The planetarium in this community seems to be a well-kept secret.

At this writing, we are hopeful of earning a PLATO grant through SERCH to extend our Saturday public outreach to several group homes of handicapped adults and to the local Hispanic community. More on that later, if we are successful.

Finally, in late October Horizons Unlimited will host almost 1,500 fifth graders for the North Carolina Water Festival. Various interactive activities concerning water will be stationed throughout the building and grounds. The planetarium will host the "Water Jeopardy" activity. There is just no end to the flexibility and uses of planetariums.

SOUTH CAROLINA

contact: Glenn Dantzler
Settlemyre Planetarium, Rock Hill, SC
dantzler@chmuseums.org

DuPont Planetarium
Ruth Patrick Science Ed. Ctr. , USC
Aiken, SC

News from the DuPont Planetarium: The DuPont Planetarium at the Ruth Patrick Science Education Center on the campus of the University of South Carolina Aiken is pleased to announce that our director, Dr. Gary J. Senn was re-elected as president of the Digistar Users Group during their annual conference that met in Salt Lake City, UT.

The Ruth Patrick Science Education Center is in the midst of celebrating its 20th anniversary. There will be a number of activities throughout the year and a few of them will focus on the planetarium. On November 30, 2006, the planetarium will host the Galaxy Gala. This will be a fund raising activity that will provide supporters with an opportunity to "adopt" a heavenly body at the DuPont Planetarium. Supporters will be provided with a certificate and have their name posted at the planetarium in recognition of their support.

On March 3, 2007, we will host activities related to the lunar eclipse and on April 21, 2007, we will have activities surrounding National Astronomy Day. On May 31, 2007, we will have a "Blue Moon Festival" on the second full moon of May to finish out the year of celebration.

In September, the DuPont Planetarium presented *In My Backyard* from the Calgary Science Centre and *Journey Into the Living Cell* from the Buhl Planetarium and Carnegie Science Center. In October, *Blown Away* from The New Detroit Science Center was the feature presentation. During November in the planetarium, visitors will find *The Voyager Encounters* from Lochness Productions. Throughout the Christmas season, the planetarium will once again present *Tis the Season*, also from Lochness Productions, which has become an annual favorite.

Settlemyre Planetarium
Museum of York County
Rock Hill, SC

Glenn Dantzler reports: The Settlemyre Planetarium had a very successful summer with our morning and afternoon program offerings. We are also off to a good start to the school year as well. Our weekend programming this fall will *The Space Bus*, *Carolina Skies*, and *Ring World II*. These are offered every Saturday and Sunday. We are also offering a quarterly public star gaze. Our fall offering is a "MOON WATCH". This has helped to sustain membership in our astronomy club. On a less positive note our museum has been reorganized. My once assistant has been shifted to the interpretation division. I am once again alone in the planetarium biz so I had better not get sick! That's about it from South Carolina so have a good fall season.

TENNESSEE

contact: Kris McCall
Sudekum Planetarium
Nashville, TN
krismccall@adventuresci.com

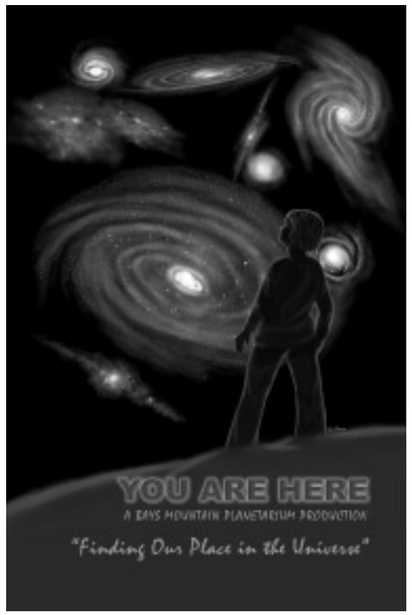
Bays Mountain Planetarium
Kingsport, TN

Adam Thanz reports: It is still a busy time. We have finally hired an educational interpreter for the planetarium and not a moment too soon. In fact, he'll start three days from now! His name is Jason Dorfman. He was the planetarium curator at San Francisco State University and we're excited about having him on board. The planetarium and exhibits departments at Bays Mountain have been busy producing their latest show entitled *You Are Here*. It was written and narrated by Robin Byrne. She is an associate professor of physics & astronomy at Northeast State Community College. She also happens to be my wife! You probably met her at the 2006 SEPA conference in Cocoa, FL. She's

an excellent writer and has narrated many of our programs over many years. The program is about our changing understanding of our universe and our place in it. The show highlights artwork by our exhibits staff, Allen Davis and Deborah Mann. It also spotlights the 3-D animations by Allen that demonstrate geocentric and heliocentric motions, retrograde motions, a rotating galaxy, and a galaxy with its globular cluster distribution.

We will soon be working on the SEPA solar system show written by Jon Bell and narrated by Kate Mulgrew. As I write this, the soundtrack is on its way to my mailbox. Once we gather the imagery to add to the show and create the DVD video component, we'll duplicate the DVDs for the SEPA membership. Allen Davis has agreed to create rotating planet animations for the program. The plan is to have them complete and in the Winter 2007 issue of *Southern Skies*.

I will also be working on the SEPA archive at the same time as the solar system show. If that weren't enough, we also plan on starting production of a show for our summer 2007 time slot. We have a complete written script, with input by the planetarium and exhibits staff, but we've been waiting for more time to be available to do production. This show will have more graphics and animations than we've ever had before. We're excited about this upcoming production.



As I'm writing this article, we're getting ready for our annual StarFest regional star party event on October 14-15. It is hosted by the Bays Mountain Astronomy Club. I'm the chair this year and we have some exciting activities planned. We'll have Bob Anderson as our main speaker. He is the chief engineer at Green Bank Radio Observatory. Other events include many presentations by some of our registrants, solar and nighttime observing, a swap shop, a planetarium show, a presentation by Paul Lewis from UT, Knoxville, and to top off our Saturday night, Astronomy Karaoke! Registrants can enjoy not only those activities, they can partake or our Park's normal slate of programs. You may ask, what will they do for nourishment of the body? Not to worry, we have six meals planned! Deborah Mann did the T-shirt design of Andromeda and it looks great. It will also highlight our Park's new logo on the sleeve. I think our registrants will really enjoy it. All of this is included with one low registration cost! You can even sleep in our Nature Center if you like. No, really! Just ask one of the numerous SEPA members that will attend this year.

In addition to StarFest in fall, our astronomy club hosts StarWatch. They are our free, nighttime public star parties held each Saturday night of October and November. It's a great opportunity to show off the real night sky.

I guess that's all for now. We have many more plans for our future, but that will wait for a future issue.

VIRGINIA

contact: Dave Maness
Virginia Living Museum
Newport News, VA
david.maness@valivingmuseum

Chesapeake Planetarium
Chesapeake Public Schools
Chesapeake, VA

Dr. Robert Hitt reports: I have been out traveling for some time now. There is not much news here in Chesapeake. We did install new carpet this summer and now will try to keep it clean for the rest of the school year. I am still working on keeping the planetarium programs in link with the VA SOLs. I will be updating all grade level programs this school year. We still have very strong public support for our weekly night time public programs and we are trying to work with the public on the use of our telescope when interesting celestial events occur. We need a new bright comet to spark interest again like Hale-Bop did several years ago. We will be helping to support the EAST COAST STARPARTY coming up at the end of October.

The planetarium's web site is at www.cpschools.com.

Virginia Living Museum Planetarium
Newport News, VA

Dave Maness reports: Summer was a busy one for programs as usual. The planetarium program was *The Cowboy Astronomer* from Loch Ness Productions alternating with *Laser Beatles* and *Laser Magic* from AVI and projected on their SkyLase system. *The Cowboy Astronomer* was chosen to tie in with our new changing exhibit called *The Scoop on Poop*. We were the first venue on the tour schedule for this new touring exhibit dealing with everything scatological. Although it doesn't seem appealing at first, it was done in a very professional way and was actually quite interesting. For more information contact Clyde Peeling's Reptiland at http://www.reptiland.com/exhibit.html.

We are currently running a program that includes Sections from *Skytellers* a great program of Native American stories. We will feature *Tales of Coyote* at that time along with the accompanying Science stories narrated by Astronaut Captain John Herrington. We are also offering a matinee version of *Fright Light*, a Halloween themed laser program.

Evening laser programs through November 4 include the full length version of *Fright light*, *Metallica*, and Pink Floyd's *The Wall*.

With October final plans firm up for our popular annual Halloween program called *The Night of the Living Museum*. This program over two nights (October 20 and 21) is a safe Halloween evening for children including games, treats, crafts demonstrations, and planetarium programs. This year we will be presenting clips from the laser program *Fright Light*.

November will bring the return of *Star of Wonder* along with our first Skylase showings of *Laser Holidays*.

Our *Wild and Starry Nights* are continuing and have been quite successful with night sky observing, planetarium programs, and talks by NASA and other nature, science, and technology experts. October and November programs will feature scientists from NASA Langley with talks on Uranus and Mercury respectively. Admission for these evening events continues to be free during our Ruby anniversary year which ends in November.

Any Virginia Planetarian with news to share with SEPA should contact Dave Maness at david.maness@valivingmuseum.org or 757-595-1900 ext.231

Planetarium
Children's Museum of Virginia
Portsmouth, VA

Dan Borick reports: Not too much new to report here. Fall brings the cycle of grade 3 - 6 Portsmouth Public Schools kids to the planetarium for SOL (Ed: short for Virginia Standards of Learning) specific programming. Each grade gets an appropriate show with follow up lessons. Grade 3 focuses on the causes of seasons, grade 4's focus is on the moon, its phases and cycles, grade 5 is focus on light energy and how it is used in astronomy while grade 6 students focus on the solar system. I have the occasional earth science and physics classes from PPS come to the planetarium for special shows.

At this time of year our planetarium is also open to outside groups for grade specific show as well. Our public show is presented several times daily. For October it is Moon Witch and our holiday show

starting in November is A Christmas Story.

Plans have been developed for the museum's next phase of development. We are planning to revamp the entry to the museum to resemble a "movie" type marquee. We are in the planning stages of reupholstering and refurbishing the seats in the planetarium. I submitted the proposal for a digital upgrade to Scidome also but that is going through the budget process and is up in the air as to its acceptance.

I have installed an amplified subwoofer system to supplement the decent studio monitors used in our presentations

I am busy with Portsmouth Public Schools implementation of Starry Night into the middle school and high school curriculum. Also I will be aboard the Schooner Virginia this October serving as instructor to PPS teachers on a three day sojourn around the bay. I will be instructing basic astronomy, celestial navigation as well as marine biology lessons and labs.

I attended the Aerometry of Ice clouds in the Mesosphere (NASA) workshop at the University of Alaska in Anchorage this summer. The NASA project is based upon one of the satellites of the "A Train" studying atmospheric climate change. This satellite particularly studies Polar Mesospheric Clouds (PMCs) or noctilucent ice clouds. I was the first one from the group of teachers to see and photograph one (12:37 AM after a long hike off Anchorage's Flat Top mountain). Hampton University was instrumental in this workshop. Here is the link to the workshop: http://aim.hamptonu.edu/outreach/AK-2006/overview.html

The scheduled public shows for autumn are:
October 3 - November 1 *Moon Witch*
Moon Witch - Ideal for grades 2nd through 5th, and as a super family Halloween program, this planetarium production examines the nature of the moon and its changing appearance in the sky. The show was produced by Bowen's Technovations.

November 14 - January 8 *A Christmas Story*
The seasonal offering un-wraps the origins of many of our Holiday traditions: such as burning candles, gift giving, Santa Claus and the Holiday Tree. Young and old will enjoy seeing the winter sky and exploring possible explanations for the Christmas Star. It is from the Sudekum Planetarium catalog.

Thomas Jefferson HS Planetarium
Richmond, VA

Dave Maness reports: Leslie is the SEPA Historian. If you are a past officer, have old journals or other information that should be included in the archive, please contact her at Bochenski@verizon.net.

Itinerant Planetarians
Richmond, VA

Retired (but not tired) planetarians George and Jane Hastings, Richmond, VA report that they sometimes present the "Live Sky" programs at the Science Museum of Virginia. These are the popular, monthly "What's in the Sky" programs at the museum, and we enjoy using the Digistar! Jane was able to attend SEPA in June 2006 and really enjoyed the launch that was provided by the host institution while we were there. Eating dinner under the Saturn V rocket was...well...a riveting experience. Hope to catch up with everyone again soon.

We are in Oakland CA where I grew up, and this evening we are attending my 50th year high school class reunion. We'll get back to Richmond on Friday morning next week and immediately jump in the car to drive to Martinsville for Jane's 50th year class reunion! Four days later we drive to Bedford to join a group that is flying to Switzerland for a ten day cruise down the Rhine River through Germany, ending in Amsterdam. Daggone! this retirement life sure is tough! :)

Ethyl Corporation IMAX®DOME
& Planetarium
Science Museum of Virginia
Richmond, VA

Ken Wilson reports: The current Public Planetarium Show is *Icy Worlds.* Written by Ken Wilson running September 16, 2006 - September 1, 2007. In the far reaches of our solar system, a billion miles or so from the sun, space is very, very cold. So cold that water and the air we exhale can freeze solid and as hard as any boulder on Earth. This is the mysterious realm of *Icy Worlds*, where dozens of strange, frozen landscapes await our exploration. This multimedia planetarium show is produced in collaboration with Dr. Anne Verbiscer and Dr. Edward Murphy of the University of Virginia.

Also presented is *LiveSky*. Would you like to know what's up - in the sky, that is - this month? Do you have a nagging question about astronomy but don't know any astronomers to ask? Is there a favorite star or constellation that you'd like to learn how find in the sky? If you answered yes to any or all of these questions, then *LiveSky* is for you. This show takes you on a guided tour of the current night sky and brings you up to date on the latest celestial happenings. You'll also have the opportunity to ask questions and make requests of your astronomer host. Since the sky is always changing and audience questions and requests vary, each *LiveSky* show is different. *LiveSky* is presented every month on the third Friday of the month.

Some upcoming programs include Holiday Special Double Features:

Icy Worlds and *Nightwalk*
October 1 - 31, 2006
Get ready for Halloween as *Nightwalk*, a spooky 6-minute DIGISTAR animation, follows *Icy Worlds*. Please note: *Nightwalk* may be too intense for young children.

*Icy World*s and *First Star I See Tonight*
November 18, 2006 - January 1, 2007
During the museum's Joy From The World celebration, *First Star I See Tonight*, an enchanting DIGISTAR animation, follows *Icy Worlds*.

A new program offering (by request) is:
Boy Scout Astronomy Merit Badge LiveSky
Scout out the stars in the Ethyl IMAX®DOME & Planetarium! Museum astronomer Ken Wilson presents everything Boy Scouts need to know to earn their astronomy merit badges. This special two-hour *LiveSky* includes star maps and other study guides. Fee: $12 per scout (Minimum 15 people). One chaperon is required for every 10 scouts and is admitted free. Additional adults are $12 each.

Hopkins Planetarium & MegaDome Theater,
Science Museum of Western Virginia
Roanoke, VA

Mark Hodges reports: Seasonal sky shows are *Autumn Skies*: September 8, 2006 - November 25, 2006 and Jewels of the Night: November 26, 2006 - March 3, 2007. Each of these shows demonstrates the night sky as seen from Southwest Virginia during a particular season. Viewers learn how to locate constellations, starting with the bright, easy to find stars, and using them as guideposts to point the way to more obscure groups. Mythology associated with the constellations is included, and serves as a device to help viewers remember the star patterns.

The current Mega Dome film is *Volcanoes of the Deep Sea. Volcanoes of the Deep Sea* is a giant screen science adventure that will plunge audiences into the ocean 12,000 feet deep for an unprecedented experience of the vas and little explored dimension of our planet. The film follows a team of scientist as they dive to research mysterious hydrothermal vents on the mid-ocean ridge. As the dive unfolds, the film and the scientists reveal for us the fantastic diversity of the deep: its strange communities of organisms, its shipwreck gardens, bioluminescent creatures and awesome giant predators.

Hopkins Planetarium is also currently running a variety of Laser programs using the AVI SkyLase system.


SOUTHEASTERN
PLANETARIUM
ASSOCIATION