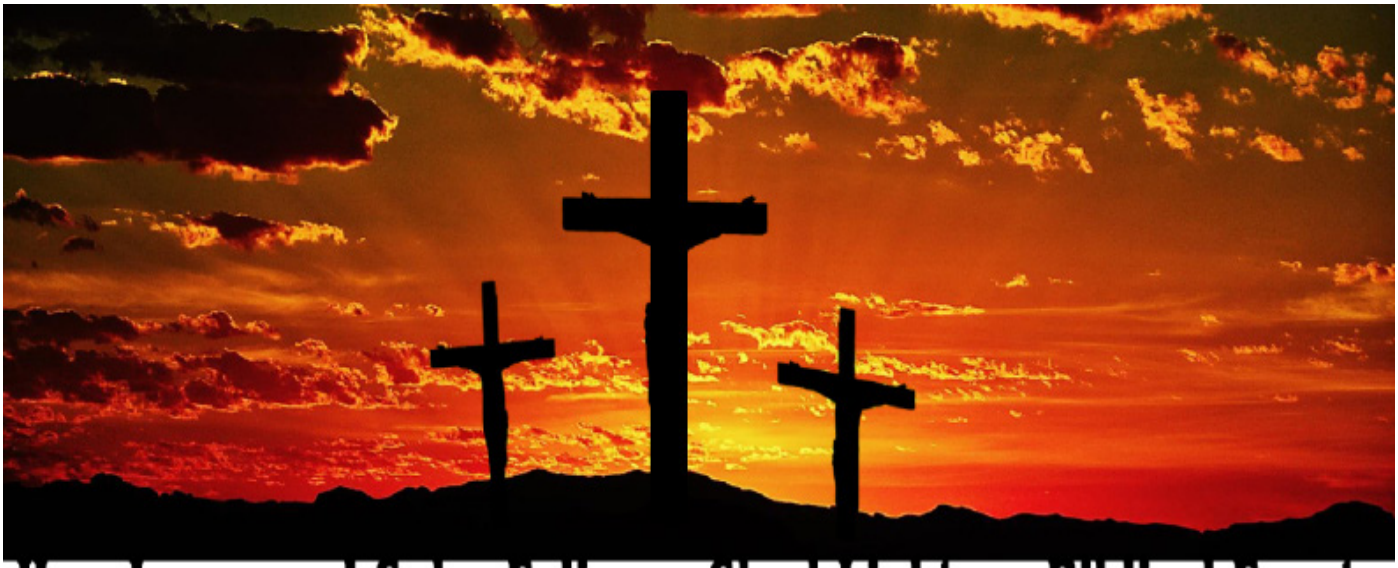


How Lunar and Solar Eclipses Shed Light on Biblical Events

By Rodger C. Young

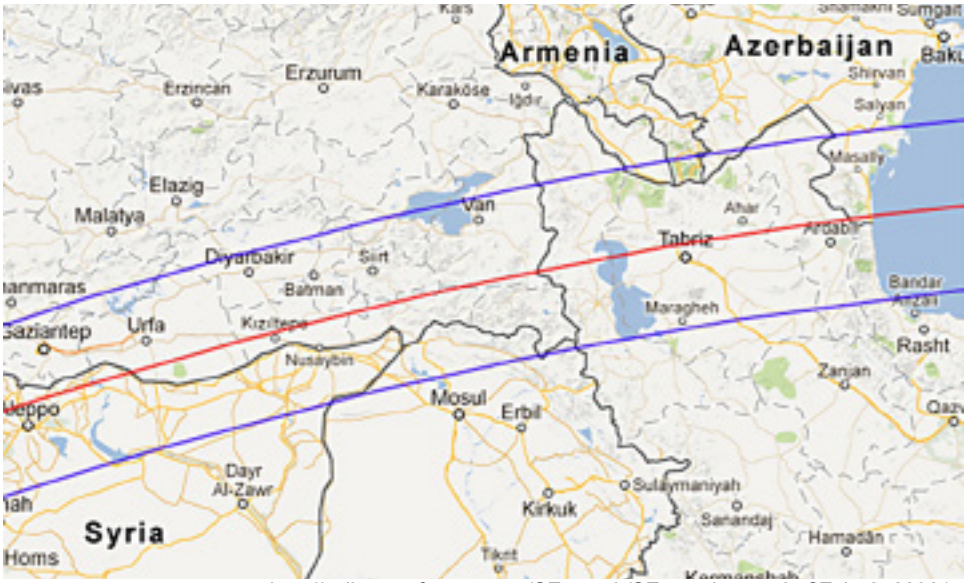
In the closing days of his life, Herod the Great was presented with a crisis called the golden eagle incident. Herod had placed a golden eagle over the entrance to the temple. Although he professed that it was an offering dedicated to the Lord, it was regarded as a desecration of the temple by two rabbis, Matthias and Judas, who provoked a group of more than 40 individuals into pulling down the eagle. Herod's soldiers captured and executed many of the participants; Matthias and Judas were burned alive. After relating this sordid incident, Josephus comments that the night after Matthias and Judas were executed by burning, there was an eclipse of the moon (*Antiquities* 17.6.2–4/17.149–67).

This is the only reference to a lunar eclipse in all the writings of Josephus. Perhaps a modern historian would not have mentioned it, judging that an astronomical event like an eclipse is independent of the activities of man, unless it preceded some important occasion such as a battle and so influenced a decision such as whether or not to go to war. In the ancient world, however, an eclipse was regarded as an omen or portent whenever it happened. For Josephus, the eclipse in the night after Herod put to death the two protesters was a sign of displeasure from God. This is shown by the fact that Josephus describes, immediately after the mention of the eclipse, Herod's physical suffering, a suffering from which he could find no relief until his death at some time between the eclipse and Passover. In the *Antiquities* passage, the eclipse and Herod's torment signified the same thing: God's solemn judgment on Herod after he put to death individuals more righteous than himself.

Jonah and the Bur-Sagale Eclipse

Another famous eclipse, this time of the sun, may have played a part in the account of Jonah and the Ninevites. The time of Jonah's preaching in Nineveh can only be estimated very generally from the Bible. Second Kings 14:25 says that Jeroboam II, king of Israel, restored the northern and eastern borders of Israel according to the word of the Lord spoken by the prophet Jonah, son of Amittai. Jeroboam II began a coregency with his father Jehoash in 793/92 BC and reigned alone from 782/81 to late summer or early fall of 753 (Thiele 1983: 116; McFall 1991: 45; Young 2005: 245). Assuming that Jonah's prophecy of restoration came early in the reign of Jeroboam, Jonah's ministry would have been in the first half of the eighth century BC, i.e. from about 793 to 750 BC. During this time the Assyrian Eponym Canon records an eclipse of the sun that occurred in the eponym of Bur-Sagale, in the month of Simanu. Modern astronomical calculations date this eclipse to June 15, 763 BC, and show it was a total eclipse as it passed near Nineveh.[1] For historians, the importance of this eclipse is that it provided an absolute date that allowed assigning BC years to the yearly eponyms of the Assyrian Eponym Canon (AEC). The accuracy of the AEC dates was later confirmed when new inscriptions were found, and also when compared to the data derived from Ptolemy's *Canon* for the century for which the *Canon* overlaps with the AEC, 747 to 648 BC (Thiele 1983: 71).

Could the Bur-Sagale eclipse be part of the reason why Jonah, when he finally got to Nineveh, found a city that was serious about repentance? This has been suggested by various writers, and if true it would suggest that Jonah's trip to Nineveh took place during the reign of Ashur-Dan III, who reigned from 773 to 755 BC. But the eclipse was not the only calamity during Ashur-Dan's reign. The AEC recounts a plague in 765, the eclipse and a revolt in the city of Ashur in 763, a revolt in Ashur again in 762, a revolt in Arrapha in 761 and 760, and a plague plus a revolt in the city of Guzana in 759. The year 758 was marked by a campaign against Guzana and then "peace in the land," after which the king remained "in the land" for the following two years. Although there were military campaigns in 755, 754, 749, and 748, the AEC does not list any misfortune until the city of Calah revolted in 746 BC, which was the ninth year of Ashur-Dan's brother and successor, Ashur-Nirari V. The Assyrians regarded plagues and eclipses as divine signs of judgment for the whole land (Wiseman 1979: 44). The plague of 765, followed by



http://eclipse.gsfc.nasa.gov/SEsearch/SEsearchmap.php?Ecl=-07620615

NASA graphic showing the path of the solar eclipse of June 15, 763 BC. The eclipse would have been seen as total in the area between the blue lines. The site of ancient Nineveh (the city) is about four miles northeast of the center of the modern city of Mosul, Iraq; the province of Nineveh occupied a considerably larger territory. If this NASA reconstruction is correct, the eclipse would have been observed as only partial in the city, but total just a few miles further north. The fact that modern astronomical programs show the eclipse as only partial in the city itself has led some investigators to surmise that the eclipse mentioned as occurring in the eponym of Bur-Sagale was some other eclipse at a different date. This is usually done to support alternative biblical chronologies that do not agree with the conventional interpretation of the Assyrian Eponym Canon (AEC). However, it is precisely in the eighth century BC that the AEC is most assured of being correct, because various copies of the AEC have been found that overlap this time, and these in turn overlap the reigns of the kings of Assyria and Babylon given in Ptolemy's *Canon*, which begins in 747 BC.

a revolt and eclipse in 763 and then revolts in the following four years would only confirm in the mind of the Assyrians that they were under divine displeasure. It is then appealing to think that the "year of peace" in 758 and the lack of rebellions and plagues in the following 11 years were a consequence of God's mercy because of the repentance of the nation. If so, this would date Jonah's appearance at Nineveh to 759 or 758 BC.

The New Testament: When Did Herod the Great Die?

Such a correlation of Jonah's ministry with the Bur-Sagale eclipse and other events in Assyrian history is speculative. In contrast, the usefulness of astronomy in determining the chronology of two important New Testament events is now on a firm footing. The first of these is the date of Herod's death, for which the lunar eclipse on the night after the burning of Matthias and Judas plays a decisive role. For many years the prevailing opinion was that the eclipse mentioned by Josephus was the one that modern astronomical calculations date to the 13th of March, 4 BC. However, in 1880, F. Riess stated that Herod did not die in 4 BC, "but soon after the eclipse in 1 B.C., because the other data, namely the numerous events that took place between the eclipse and the Passover, could not be squeezed into the four weeks available in 4 B.C." (Filmer 1966: 284). There were only 29 days between the eclipse of March 13, 4 BC and Passover that year, insufficient for the many activities that Josephus relates happened during that time, whereas there were an adequate 89 days between the eclipse of January 10, 1 BC and Passover that year. In addition only about one-fourth of the moon was fully eclipsed in 4 BC, whereas in 1 BC the eclipse was total.[2] W.E. Filmer, writing in 1966, also corrected the notion that Herod died in 4 BC by showing that this date arose because historians did not realize that Herod's sons back-dated their reigns to 4 BC. Herod had assigned them to various posts at that time, although they did not begin their independent reigns until 1 BC when Herod died. Filmer's ideas were accepted in Jack Finegan's *Handbook of Biblical Chronology* (1998: 298–301), and have been expanded and defended by Andrew Steinmann (2009; 2011: 219–54). Steinmann also discusses new research on the Quirinius Census (Lk 2:1–2) that agrees with the 1 BC date for Herod's death. These more recent studies are consistent with the writings of the majority of early Church Fathers, who dated Jesus' birth, which necessarily was before the death of Herod, to sometime in either late 3 BC or early 2 BC. The many considerations that support Herod's death occurring in early 1 BC are therefore in agreement with the dates of lunar eclipses and dates for the start of Passover in the years 5 to 1 BC, as calculated by modern astronomical methods.

Year of the Crucifixion

Astronomy again comes into play in the discussion of the year in which the Messiah was put to death and rose victorious from the grave. The four Gospels relate that the Crucifixion took place on the "Day of Preparation" for the Sabbath, i.e. on a Friday. It was also the 14th of Nisan according to the official Jewish calendar in use in the first century AD. Astronomical calculations allow only two years in the range from AD 26 to AD 36 in which Nisan 14, the first day of Passover, was a Friday. The years are AD 30 and AD 33. The first of these has been advocated by several writers who maintained that the 15th year of Tiberius cited in Luke 3:1 for the start of Jesus' ministry refers to the 15th year of an assumed coregency between Augustus and Tiberius that began sometime between AD 11 and AD 13, rather than starting the 15 years at the death of Augustus in AD 14. However, all extant coins and inscriptions date the reign of Tiberius as beginning in AD 14. The age of Jesus when He began His ministry, "about 30" (Luke 3:23), is also more consistent with the Crucifixion in AD 33 than in AD 30, as

are events related to Roman policy and the actions of Pilate. A full discussion of the issues involved is found in Andrew Steinmann's *From Abraham to Paul*, page 219 n. 329 and pages 257 to 289.[3] Jack Finegan, who previously advocated AD 30 for the Crucifixion and Resurrection, now advocates AD 33 (1998: 340, 368). In these considerations, astronomy narrowed down the possible years to two choices. Other criteria were then employed to decide between the two choices, criteria that rule quite definitely against AD 30 in favor of AD 33. The death of Christ therefore was on Nisan 14 (Friday, April 3), and His Resurrection on Sunday, April 5, AD 33.

The Lunar Eclipse of April 3, AD 33

In 1872, J.R. Hind published a paper in the British scientific journal *Nature* in which he noted that the "moon was eclipsed on the generally received date of the Crucifixion, AD 33, April 3."[4] Bible scholars paid little or no attention to this observation, because the best astronomical calculations available at the time showed that the eclipse would not have been visible from Jerusalem. In the 20th century, however, there was a major advance in the accuracy of historical astronomical calculations, due largely to studies of the change of the earth's rate of rotation over the centuries. Using ancient astronomical observations from Babylon and China, the rate of slowing of the earth's rotation is now known precisely enough so that the timing of events such as the rising of the moon or the sun as viewed from any point on earth and at any time in the last 2000 years can be known within about three minutes (Humphreys 2011: 90).

In 1981, a British scientist who had learned of the improvements in astronomical accuracy thought it might be interesting to revisit calculations for the eclipse of AD 33. Colin Humphreys, who was teaching at Oxford at the time, asked Oxford astrophysicist Graem Waddington to determine whether the lunar eclipse would have been visible at Jerusalem, and if so, at what time it would have been observed. Very fittingly, their findings were published in the same scientific journal that had published Hind's study 111 years earlier (Humphreys and Waddington 1983). The results were as follows. Moonrise in Jerusalem on the evening of Friday, April 3, AD 33 was at about 6:20 p.m., right after sunset. The part of the moon that appeared first was in the full shadow (the umbra) of the earth. After several minutes, the remainder of the moon was seen; this lower part was in the partial shadow of the earth (the penumbra). The eclipse lasted until about 7:11 p.m., at which time the moon was restored to its usual brightness and coloration.

The accuracy of Waddington's calculations has been demonstrated by the acceptance of the paper by *Nature*, a peer-reviewed scientific journal that would not have printed the paper if there was anything wrong with its science. Waddington's calculation is also in general agreement with NASA figures for this eclipse, although the NASA chart[5] suggests that the eclipse would have been visible for several minutes longer than Waddington's estimate that ended the eclipse at 7:11 p.m. Jerusalem time.

In determining what the eclipse looked like, Waddington took into account other phenomena that physicists have studied related to the appearance of the sun or the moon at sunset. These phenomena are well known and may be observed on any clear evening. The first is that the moon or sun appears somewhat oblate due to the refraction of the earth's atmosphere. The second is that, because there is more atmosphere for the sun's or moon's light to go through at sunset, the shorter blue wavelengths are filtered out, resulting in the familiar red color of either celestial body at this time. In the case of an eclipsed moon, there would be the extra darkness of the earth's shadow on the face of the moon. Further, some of the light reflected back from the moon would have passed through the earth's atmosphere twice, adding to the reddening. These considerations for the special case of a lunar eclipse viewed at sunset mean that the fully eclipsed portion would not be just red, but dark red. Blood red. The portion in the penumbra (partial shadow) would show a lighter hue, red or possibly orange/yellow.

This phenomenon (the reddening of an eclipsed moon as seen at sunset) has been observed in modern times, and observers

Steven A. Austin

Dead Sea varves, showing the perturbation caused by an earthquake that geologists date to sometime in AD 31, plus or minus five years. The head of a geologist's pick is shown for scale. According to geologist Steven Austin, the historical accounts in the gospels allow specifying the date as April 3, AD 33, the day of the Crucifixion (Austin 2012), a specification that is more exact than is possible using geology alone. Varves are layers formed by deposition of silt and/or pollen and other organic material at the bottom of lakes. Due to a difference in runoff from the surrounding terrain in the various seasons of the year, a single varve layer usually consists of paired dark and light bands that represent one year's activity. Varves are therefore similar to tree-rings, and the counting of varves can be used to determine the number of elapsed years since a particular varve was formed.

have used just this terminology: the moon appeared "blood red." In January 2001 an eclipse of the moon was visible from Wales at sunset. The front page of *The Times* for January 10, 2001 showed a picture of the moon with a caption underneath reading "The blood-red moon over the Welsh borders last night." The accompanying write-up continued with, "Thousands of people who braved freezing temperatures to watch last night's total lunar eclipse were rewarded with a stunning view of one of nature's marvels: the Moon turned blood-red" (Humphreys 2011: 86). The *Daily Mail* for this date used the same expression: "The first total lunar eclipse of the 21st century turned the moon blood red."

NASA 2011

NASA image of a total lunar eclipse, as viewed at sunset. In this image, the moon is in the full geometric shadow (the umbra) of the earth. That does not mean, however, that no light from the sun was getting through to the surface of the moon and being reflected back to earth. In a total lunar eclipse, some sunlight is bent slightly while passing through the earth's atmosphere and reaches the surface of the moon. It is then reflected back, passing once again through much more atmosphere than when the moon is viewed higher in the sky. The shorter (blue) wavelengths are filtered out on both passages through the earth's atmosphere, resulting in the unusual color of a the umbral part of a lunar eclipse when viewed at sunset, a color described as "blood red" by modern observers.

The day of the AD 33 eclipse—Friday, April 3—must have been a difficult one for the inhabitants of Jerusalem. The city was crowded; Jewish people and proselytes had gathered from all areas of the land and from far countries for the celebration of the Passover. For some, the day had started before dawn with a mob scene before the Roman governor and before their own leaders, in which they had been incited to demand the death of the miracle-worker from Galilee. Mob hysteria is always emotionally taxing, but even more so when the emotions are being manipulated toward putting someone to death. Once the consent of Pilate was obtained, there followed the horrible scene of the crucifixion of the three malefactors. Roman practice was to make crucifixion a very visible event, as a warning against anyone else attempting the crimes for which the victims were being punished. To that end, Jesus and the two thieves were crucified by a public road, outside the city wall, with the charges against them prominently displayed. The Passover in AD 33, intended as a time of rejoicing and thanksgiving over God's great deliverance in the past, had instead assumed an ominous, hateful, and tragic nature.

The Gospel writers describe further disturbances. About noon a darkness overtook the land that lasted for three hours. We are not told whether it was caused by clouds or a dust storm. Then at approximately 3 p.m., when the Figure on the central cross died, there was an earthquake—something that we no longer associate with divine displeasure, but which must have had this significance for at least one individual, a Roman centurion who was stationed near the cross of Jesus. With more insight and acuity than possessed by many modern critics of the Gospel accounts, this soldier concluded that the righteous man who had just died was truly God's Son.

After the earthquake, there may have been a respite from the troubling phenomena of nature. The darkness lifted; the atmosphere became clear again. The terrifying sight outside the city wall came to an end as three bodies were removed from public display and buried. Soon there would be the appearance of the Passover moon. In the wisdom of God, the feast of Passover always took place in the middle of the lunar month, guaranteeing that a full moon would illuminate the nighttime activities of the festival. Everyone knew that the comforting sight of the rising full moon could be expected right around sunset.

Shortly after the sun set in the west, the moon rose in the east. It was dark. Dark red. Bloody red.

If God spoke to people in ancient times, we would not expect Him to use a modern language such as French or English. We would expect Him to use as His medium of communication a language that they would understand. For the Jews, this would be Hebrew or Aramaic. In the modern world, an eclipse of the sun or moon should not convey any message of divine displeasure or coming judgment. We pride ourselves on our scientific knowledge; these are natural phenomena, the cause of which, and the timing of which, are well understood, and their meaning to us is only that the laws of physics are being obeyed. However, that was not the significance that the people of Israel would have assigned to the lunar eclipse in April of AD 33. For them, as for Josephus when writing about Herod, the eclipse was God speaking in

a language they understood. God was revealing His displeasure toward those who had put to death Someone more righteous than themselves.

This then is the problem for the skeptic. The lunar eclipse, especially with the unusual darkening that only occurs in those places on the globe that observe it at sunset, did not happen at an arbitrary time, even an arbitrary time in the earthly ministry of the Son of God. It happened on the day that Christianity has always maintained was the most important day in the history of the world since Creation: the day on which the Lamb of God died for the sins of mankind. The Resurrection, two days later, was God's sign that Jesus was who He claimed to be, the Messiah whose suffering and death were for our sake (Is 53:5,6,8,10,11,12), after which He would rise from the dead (Is 53:10,11; Ps 16:10,11).

Michael Luddeni

A modern reconstruction of the appearance of the moon rising over the Mount of Olives on the evening of April 3, AD 33, as viewed from Jerusalem at approximately 6:22 p.m. The first visibility would have occurred about two minutes earlier. At this time, the upper left section was in the full shadow (umbra) of the earth, while the lower portion was in the penumbra (partial shadow). The color of the upper (umbral) portion would have been similar to what is shown in the previous picture, which shows the case when the entire moon is in the umbra. The lower portion would have been a lighter red, fading possibly to yellow/orange. The eclipse lasted until approximately 7:11 p.m. local time, after which the moon would have appeared in its usual coloration.

Most people today would claim they had never seen a miracle. If at any time they have read the many Old Testament prophecies of the Messiah that were fulfilled in the life of Christ, then they have observed a miracle without recognizing it, because the prediction of these events beforehand, and then their fulfillment, are a miracle. This includes, but is not limited to, the prophecies in Isaiah just cited. The definiteness and clearness with which Isaiah 53 describes the person and ministry of Jesus of Nazareth is testified to by the fact that this portion of Isaiah is not read in the synagogues. Besides these prophecies, the other miracle attesting to the significance of the Crucifixion is the Resurrection two days later. Unbelief has never provided a credible alternative explanation of this event, and the halls of atheism have many unoccupied alcoves where those who attempted to discredit the bodily resurrection of Christ became convinced that the Gospel accounts were true, and so became believers, and, in many cases, fervent evangelists for the truth.

To these two classes of miracles that testify to the meaning of Christ's death—the prophecies beforehand and the Resurrection—there must be added the testimony of the lunar eclipse. It has been customary for skeptics to deny the natural phenomena that the Bible associates with the death of Christ. Modern science cannot prove the darkening of the sun while Christ was on the Cross, so the Gospel accounts are rejected on this matter, with no evidence to the contrary. Neither can we prove from science that an earthquake occurred on that day, and so this also is denied, again with no contrary evidence. Recent reports based on varve samples from the Dead Sea state that there was an earthquake in Judea sometime between AD 26 and AD 36 (Williams et al. 2012), and a more recent examination of varve strata near the Dead Sea concluded that the epicenter of the earthquake was near Jerusalem (Austin 2012). The authors of the first study were objective enough to point out that the Dead Sea varve data are compatible with an earthquake on the day of the Crucifixion, while they also offered two alternatives: 1) that the earthquake was not on that day but the author of Matthew's gospel "borrowed" the earthquake from its actual day of occurrence; or 2) Matthew just invented it altogether as an "allegorical fiction" (Williams et al. 2012: 1226). Some reports of this paper went beyond what was actually said and stated that the varve evidence showed that the Crucifixion could be set at April 3, AD 33, whereas the paper only stated that the data are consistent with this date, while the actual date of the Crucifixion is determined by other means. Stating that the varve data give the actual day, month, and year of the Crucifixion was a regrettable misinterpretation of what can be deduced from considering only the geological data without reference to the historical accounts in the gospels. Worse yet was the approach of some in the secular press and in anti-Christian blog sites who said that although the varve data showed there was an earthquake about this time, it

did not happen at the death of Christ, and therefore Matthew's account was a lie. Since the varve data cannot be used to determine the day on which the earthquake happened, these data cannot be used to say it was not on the day of the Crucifixion any more than they can be used to say it was on that day. By twisting what was actually said in a scientific study, skepticism has once again been diligent in building its case to dismiss the evidence in the Gospel accounts and confirm unbelief based on no real evidence.

But stubborn unbelief cannot dismiss the eclipse. The principles of modern science, which we are told must be believed above any belief in the supernatural (which is not a scientific statement, but a religious statement), now prove that the foreboding eclipse happened just after the death of the Christian (and Jewish, and universal) Messiah, and there is no doubt what the eclipse would have meant to the people of that time.

This was, in a sense, a "natural" miracle. Its miraculous aspect lies in its timing: the timing and trajectory of the moon's orbit around the earth so there was an eclipse at this time, and also the timing of the earth's rate of rotation so that, at the longitude of Jerusalem, the earth's atmosphere would cause the moon to appear with a dark red color when it rose over the horizon. This third testimony to the importance of Christ's death should be especially meaningful to those who say they will only believe what can be proven by science.[6]

The Prophecy of Joel

It gets worse. Worse, that is, for the edifice of unbelief, but better for the household of faith. The physical phenomena associated with the death of Christ were foretold hundreds of years before by the prophet Joel. Before looking at the specifics, Joel's prophecy, as found in Joel 2:28–32, should be examined in light of other Old Testament scriptures that touch on the same theme.

The two verses in Joel's prophecy that deal with signs in the physical realm are verses 30 and 31 (in the Hebrew Bible these are verses 3 and 4 of chapter 3). The preceding two verses that introduce the prophecy have as their subject the pouring out of the Spirit of God on all flesh—men and women, servants, old and young. This will be accompanied by the spiritual gifts of prophecy, visions, and dreams. The coming of the Spirit was foretold by the Lord in his Last Supper discourse (Jn 16:7–15). It is also spoken of in Ez 11:19–20 and 36:26–27, where God says that he will replace the stony heart of His people with a new heart of flesh and put His Spirit in them. It is the subject of Jer 31:31–34, where God promises to bring in a new covenant with His people that will be marked by His speaking directly to their hearts and minds instead of through prophets and priests. Christian doctrine has always been that these prophecies in Joel, Ezekiel, and Jeremiah look forward to the age of the Holy Spirit, that is, the church age, which began with outpouring of the Holy Spirit on the Day of Pentecost, seven weeks after Christ's Resurrection. Verses 28 and 29 of Joel chapter 2, "I will pour out my Spirit on all flesh..." therefore refer to the beginning of the Church age.

These verses are followed by the physical manifestations of verses 30 and 31, and then the closing verse of Joel's prophecy (2:32), which refers to the salvation procured through the death of the Messiah and offered to all who will believe and call on His name. This verse reads, in the NIV translation, "And everyone who calls on the name of the LORD will be saved; for on Mount Zion and in Jerusalem there will be deliverance, as the LORD has said, among the survivors whom the LORD calls." This does not refer to the end time at the conclusion of history. It refers to our present age, an age that began with Christ's atoning death and the coming of the Holy Spirit on the Day of Pentecost. Consequently, the verses that introduce Joel's prophecy and the verse that concludes the prophecy have the same frame of reference. They do not refer to the Second Coming of the Lord.

With this background, let us look at the intervening two verses that speak of physical or natural phenomena. Many commentators have said these marvels refer to the end of the age rather than the time implied by the preceding and following verses, namely the beginning of the Gospel dispensation. The signs are as follows: "I will show wonders in the heavens and on the earth, blood and fire and billows of smoke. The sun will be turned to darkness and the moon to blood before the coming of the great and dreadful day of the Lord" (Joel 2:30-31, NIV). Verse 32 then presents the offer of salvation and a promise of deliverance. The deliverance possibly refers to when Christians escaped death in the fall of Jerusalem to the Romans in AD 70 because they heeded the words of the Savior in Matthew 24:15–18 and Mark 13:14–16 and fled the city.

There is nothing in the verses dealing with the physical phenomena related to the outpouring of the Spirit that must be put off until the end of the age. The sun had turned to darkness on the day of the Crucifixion (Mt 27:45, Mk 15:33, Lk 23:44). Thanks to the advances of modern astronomy and the research of Humphreys and Waddington, we now know that the moon did indeed "turn to blood" in a way that the Jewish people would have understood, and this happened on the evening of the day when their Messiah was crucified. The only question remaining might be about the blood and fire and billows of smoke. It is not clear what these words describe, but casting the prophecy to the Second Coming does nothing to clarify their meaning. We cannot be dogmatic, but a reasonable interpretation is that they refer to the overthrow of Jerusalem by the Romans, at which time many were slain ("blood") and the temple and much of the city were burned ("fire and pillars of smoke").

It is doubtful that anyone understood the import of Joel's prophecy in the time between the darkening of the sun and moon on Friday, April 3 and the outpouring of the Holy Spirit at Pentecost, seven weeks later. During this time, there were unsettling rumors that Jesus, whom many regarded as a prophet, was alive and had appeared to His disciples. What was puzzling about these rumors was that they would be easily extinguished if the authorities could produce Jesus' body; this they could not do. Instead, the official story was that Jesus' disciples had stolen the body. Surely no thinking person could believe that; this would have been a capital offense if it were true, and no one was even trying to arrest the disciples.

The confusion, for many, came to an end on the Day of Pentecost. As the second of the three feasts which all Jewish

men were required to attend, Jerusalem was again crowded with Jews and proselytes from the various nations of the empire. And once again there was a physical phenomenon, this time the sound of a strong wind that was centered on the place where the disciples of Jesus were gathered. This was accompanied by the people hearing various languages in which God's word was proclaimed. The purpose of the wind and the languages was to assemble the people so that they could hear God's explanation of the events that had troubled them, as spoken by His chosen agent for this task, the apostle Peter. When the crowd had gathered, they witnessed the outward signs of the coming in power of God's Spirit, providing a visual and audible affirmation that the prophecies of Ezekiel, Jeremiah and Joel regarding a new dispensation when the Holy Spirit would indwell all His people were now realized. For the disciples, the manifestations were not only outward, but inward; the Holy Spirit had come to indwell them and provide an internal witness to God's reality. Paul later referred to this precious truth in Romans 8:16: "The Spirit Himself testifies with our spirit that we are God's children." Empowered by that Spirit, Peter preached to the assembled thousands, boldly proclaiming that the One they had crucified had indeed risen from the dead and God had made Him both Lord and Messiah. The text he started from was the prophecy of Joel.

As found in Acts 2:16–21, Peter quoted all three parts of Joel's prophecy: the introductory verses about the day when God's Spirit would be poured out on all flesh; the two intermediate verses about the physical manifestations on earth and in the skies; and the conclusion that "everyone who calls on the name of the Lord will be saved." For Peter, Joel's prophecy was being fulfilled, and had been fulfilled, before the eyes of his audience. He did not say, "This is similar to what Joel spoke of," but "This is what (*touto estin to*) was spoken by the prophet Joel." Or, in the memorable first words of the KJV, "This is that." The people were witnessing the outpouring of the Holy Spirit referred to in the first part of the prophecy, just as, seven weeks previously, they had witnessed the sun turning to darkness and the moon to blood spoken of in the middle verses. For Peter and his listeners, Joel's prophecy was for the immediate present, not some distant future time. And for at least three thousand individuals that day his sermon made sense out of the whole ministry of Jesus of Nazareth and the many things they had been puzzling over since His death and reported resurrection. They now understood, and "Those who accepted his message were baptized, and about three thousand were added to their number that day" (Acts 2:41, NIV).

The skeptic can always find some reason to cast doubt on most of these events, even when there is no contrary evidence, and he or she will find an audience among the similar-minded. But it is no longer intellectually defensible to ignore the eclipsed moon that became visible three and one-half hours after the death of the Messiah, and what its blood-red appearance would have meant to those who witnessed the Crucifixion. May God grant that reflection on the timing and science of this event will lead those who value scientific objectivity, and are willing to follow the truth wherever it leads, to a full understanding of this and all other events related to Christ's ministry, death, and resurrection.

Notes

[1] http://eclipse.gsfc.nasa.gov/SEatlas/SEatlas-1/SEatlas-0779.GIF.
[2] http://eclipse.gsfc.nasa.gov/5MCLE/5MCLE-Figs-05.pdf.
[3] The present author has a full review of Dr. Steinmann's book on the ABR website, www.BibleArchaeology.org.
[4] This citation and the following discussion of the scientific findings related to the lunar eclipse of April 3, AD 33 are taken from Humphreys 2011, chapter 6.
[5] http://eclipse.gsfc.nasa.gov/LEhistory/LEplot/LE0033Apr03P.pdf.
[6] To accept as true only what can be proven scientifically rules out the basic tenet of this philosophy, which cannot be demonstrated scientifically. This foolishness was the premise of the old and thoroughly discredited "logical positivism."

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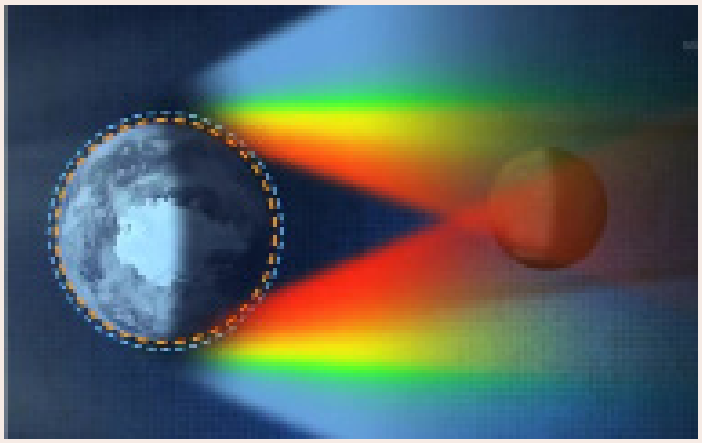
Eclipses: the Science and the Pseudoscience

Eclipses, whether of the sun or the moon, are not rare. There are from two to five solar eclipses that can be viewed from somewhere on earth each year, and every year there is at least one lunar eclipse of one type or another. "Total" lunar eclipses are those for which the entire moon is covered by the earth's full shadow (the umbra) at some time during the eclipse. "Partial" eclipses are those for which only a portion of the moon's surface is covered by the earth's full shadow, and "penumbral" eclipses are those for which no part of the moon is covered by the earth's umbra, but a portion of the moon is slightly darkened by being in the earth's partial shadow, or penumbra. Penumbral eclipses are usually too faint to be observed by the unaided eye. The other two types can be seen by anyone who is on the night side of the earth when the eclipse occurs, unless their visibility is obscured by clouds.



NASA 2011

NASA diagram showing the diffraction of the sun's rays during a total lunar eclipse, whereby the light striking the (otherwise dark) surface of the moon takes on a red color. Observers at the top or bottom of the globe in this diagram would be observing the effect at sunrise or at sunset, and for them there would be a special second reddening as the reflected light returns horizontally through the atmosphere.

It might be thought that during a total lunar eclipse the face of the moon could not be seen at all, since the moon's entire surface is in the geometric shadow of the earth. However, the accompanying graphic from NASA shows how some sunlight is bent (refracted) as it passes through the earth's atmosphere, and thereby reaches the moon's surface. The shorter blue wavelengths are scattered by the earth's atmosphere and the light that does reach the moon during a lunar eclipse therefore takes on a reddish tinge. The reddening becomes more pronounced and deeper when the moon is viewed from those longitudes of the earth where it is just after sunset or just before sunrise. In these cases, the light returning to the earth again travels horizontally through the earth's atmosphere and undergoes further reddening, taking on a dark red color. An additional phenomenon in effect for such observers is that the moon, when observed at the horizon, appears to be enlarged. NASA (2011) states that "For reasons not fully understood by astronomers or psychologists, low hanging moons look unnaturally large when they beam through trees, buildings, and other foreground objects." This phenomenon has been known for a long time, and an explanation was offered by the Christian philosopher George Berkeley (1709) in his insightful book on the theory of vision. These two effects—the apparent enlargement of the moon when seen on or near the horizon, and its reddening during an eclipse—combine to make a lunar eclipse viewed at sunset or sunrise an impressive sight. The accompanying article touches on the psychological effect this must have had on the people of Jerusalem at the time of the lunar eclipse immediately after the death of Christ.

As explained in the associated article, the timing of the lunar eclipse at the death of Christ has only been established since 1981, and the Christian community has not had long to reflect on its significance. Recently, however, there has been an unfortunate misuse of the science of eclipses that can only tend to discredit the genuine science associated with the lunar eclipse of AD 33. A popular speaker has claimed in his television show that there will be blood-red lunar eclipses visible at Jerusalem on April 15, 2014 and April 4, 2015 at the start of Passover in these two years, and on October 8, 2014 at the time of the Feast of Tabernacles in that year. It is then claimed that this is not the speaker's idea, but comes straight from NASA. NASA is also cited as showing there will be a solar eclipse on March 20, 2015. These phenomena are presented as signs of the end times for Israel and the world.

Despite such claims, NASA tables show that Jerusalem will be on the day side of the earth all during the two lunar eclipses of 2014, and hence these eclipses will not be visible from Jerusalem, much less be seen as blood-red from there. The lunar eclipse of September 28, 2015 will be visible from Jerusalem just before sunrise, and will indeed appear blood-red to those who rise early enough to see it. The shadow of the solar eclipse of March 20, 2015 will pass between Iceland and Great Britain in the far North Atlantic. Hardly anyone will see it unless they make a special effort to be in its path. The pseudoscience that has misrepresented these astronomical facts can be a stumbling block to anyone investigating the claims of Christianity. Whereas true science is always on the side of the Gospel, any dishonest or questionable means used to support the cause of Christ will cause skeptics to think that they can also ignore valid arguments that support God's eternal truth.

— Rodger C. Young

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