

BIBLICAL PERSPECTIVES ON THE HISTORY OF SCIENCE

I. THE TIMESCALE FOR THE HISTORY OF SCIENCE IS SHORT.

History is the working of God in the world. A biblical perspective on the history of science begins with the fact that God has governed history by His divine power and is not confined to human methodologies and processes to bring about His will. The conventional perspective, on the other hand, demands that natural processes acting over eons have brought about first cosmic, then geological and biological, and finally cultural development over eons culminating in the most recent millennia, in which it is possible to conceive of such a thing as a "history of science." However, the cosmos is young and therefore the eons of "pre-history" did not exist.

A. Proof Is Lacking for an Old Universe.

Amazingly -- considering the dominance of the conventional view -- there is really no proof that the cosmos is old. Solar expert John Eddy has stated, "I suspect that the Sun *is* 4.5-billion years old. However, given some new and unexpected results to the contrary, and some time for frantic recalculation and theoretical readjustment, I suspect that we could live with Bishop Ussher's value for the age of the Earth and the Sun. I don't think we have much in the way of observational evidence in astronomy to contradict that" (**Kazmann, 1978, p. 18**). Ussher put the date of creation at 4004 BC.

There is really no scientific reason that the entire universe could not be viewed as young. As evolutionary cosmologist **George Ellis (1975, p. 246)** has written: "A modern cosmologist who was also a theologian with strict fundamentalist views could construct a universe model which began 6000 years ago in time and whose edge was at a distance of 6000 light years from the solar system. A benevolent God could easily arrange the creation of the universe. ... It would be impossible for any other scientist on the Earth to refute this world picture experimentally or observationally; all that he could do would be to disagree with the author's cosmological premises."

B. Radiometric Dates Derive from Circular Reasoning.

Ultimately, the main argument for earth's old age is based on arbitrary radiometric assumptions. **Richard Milton (1997, p. 51)** points out that a readiness to reject radiometric dates except those giving "expected values" is why various radiometric methods can be claimed to converge in the "ages" they "measure": "Thus the published dating figures *always* conform to preconceived dates and never contradict those dates. If all the rejected

dates were retrieved from the waste basket and added to the published dates, the combined results would show that the dates produced are the scatter that one would expect by chance alone."

Earth's old age was set by consensus, not by radiometric dating (**Henry, 2003, pp. 176-169**). Evolutionists were "comparing" their opinions "among themselves," which is "not wise" (2 Cor. 10:12). We know this is true because the evolutionary age of the earth was decided before radiometric dating was first used, and even before radioactivity itself was discovered in 1896:

"The basic time scale has remained unchanged since 1879" (**Rowland, 1983, p. 80**); "I wonder how many of us realize that the time scale was frozen in essentially its present form by 1840" (**Speiker, 1956, p. 1803**); "By the years 1830-1833, when the three volumes of Charles Lyell's great classic *Principles of Geology* were published, the system of sequential or relative dating was well established" (**Simpson, 1983, p. 58**).

C. Positive Evidence Exists Of a Young Earth.

Magnetic Field Decay. Magnetic field decay implies an earth lifetime of the order of 10,000 years (**Barnes, 1983, pp. 53-54; Carrigan and Gubbins, 1979, pp. 123, 125**), since much farther back than that, core heating associated with the high level of magnetism would destabilize the earth's interior. Overall, the geomagnetic field has lost about 15% of its energy since the first measurements in the early 1800s (**Humphreys, 2002, p. 1**), with a decay of roughly 1% per decade (**Bloxham and Gubbins, 1989, p. 70**). From 1970-2000, the net loss was about 1.41%, confirming Barnes' earlier claim (**Humphreys, 2002, p. 3**), and contradicting descriptions of the field as "self-sustaining" with no energy loss (**Carrigan and Gubbins, 1979, pp. 119, 120**). "In the next two millennia, if the present rate of decay is maintained, the [strength] of the field should reach zero" (**Bloxham and Gubbins, 1989, p. 71**).

Old age advocates respond that though the field is decaying now, it has been regenerated in the past by "field reversals." These reversals are actually associated with intense seismic activity during the Flood (**Humphreys, 1990, pp. 129**). **Coe and Prevot (1989, p. 292)** and **Coe et al. (1995, p. 687)** confirmed that magnetic reversals have occurred rapidly rather than over hundreds of millions of years. Further, such reversals were superimposed on the secular decay trend studied by Barnes. Evidence for reversals does not change the conclusion that magnetic field decay severely constrains earth's age.

The Seven Day Week. The seven-day week is evidence that the days of creation were literal, consistent with the

position that the Bible can also be taken at face value in its teaching that the creation was recent. Evolutionist **Eviatar Zerubavel (1985, p. 6)** writes: "For those who take the biblical account of the creation both seriously and literally, the length of the seven-day week presents no problem at all. ... It was first practiced by God when creating the universe." **Zerubavel (1985, p. 9)** further points out that the week is not tied to the lunar cycle:

"Those who believe that our seven-day week has derived from the lunar cycle seem to forget that the latter is not really a twenty-eight day cycle" (**Steele, 2000, p. 11**). In fact, the seven-day week is not related to any celestial phenomena. Astronomer and professed atheist **Duncan Steele (2000, p. 73)** notes: "The year, month and day all have clear astronomical bases. Our 7-day week, however, does not have an obvious link with any heavenly cycle." **Zerubavel (1985, p. 11)** speaks of the week as dissociated from nature. Thus the week not only serves as the cycle of work days and rest days, but also commemorates the literal Creation Week itself.

Further, "Many disparate civilizations have, for unknown reasons, assumed beginnings of time occurring a few thousand years B.C.," and even more specifically, "within a few centuries of 4000 B.C" (**Steele, 2000, pp. 135, 40**), echoing solar scientist John Eddy's affirmation of the Ussher chronology quoted above.

The Babylonian King Lists. Berosus, a Babylonian historian of about 300 BC, listed a series of Babylonian kings who lived for *many* years -- the *Sumerian king list*. The Sumerian king list had ten kings spanning time from Creation to the Flood, the same as the ten patriarchs from Adam to Noah in Genesis 5.

Berosus tabulated each kingly reign in a unit called the *sarus*. The astronomical *sarus* was 3600 years, giving the shortest-lived king in Berosus' chronology a 36,000 year life. Liberal theologians have therefore downplayed Berosus' ten kings as mythical, even claiming that the biblical writers "lifted" the Genesis patriarchs from the Babylonian records (**Gibson, 1981, p. 156**). But there was also a civil *sarus* of only 18½ years, giving the Sumerian king list 2,221 years from Creation to the Flood. This agrees remarkably well with the 1,656 years worked out from Genesis 5 (**Rehwinkel, 1951, pp. 166-167; von Fange, 1984, pp. 27-28**).

II. THE BIBLICAL RECORD IS RELEVANT TO THE HISTORY OF SCIENCE.

One component of a biblical perspective on the history of science is the position that history as presented in the Bible is an accurate representation of the past. Otherwise the Bible at best can speak only to abstract spiritual issues but can say nothing meaningful about the work of God in history. Since the 1600s this has been the position of

rationalist and Enlightenment scholars who have labored strenuously to show that the Bible is not a reliable or valid historical record. Genesis 1-11 especially have been singled out as supposedly being at best allegories or fanciful poetic literature. The reason for this stance is simple: these chapters claim the reality of a universal fiat Creation, a global Flood, and the dispersion of all post-Flood peoples from the Tower of Babel, and these scenarios are simply incompatible with secularized history.

A. Genesis Chapters 1-11 Are History, Not Allegory.

The liberal position is that Genesis 1 did not "actually" occur as written (**Gibson, 1981, p. 13**). To progressive creationist Hugh Ross, God is speaking in the language of appearances, "anthropomorphically," for an ancient people ignorant of modern science (**Ross, 2004, p. 159**).

But genuine anthropomorphisms involve a body motion or body part picturing God's senses or actions, and "never take the form of anything like a weekday" (**Kulikovsky, 2002, p. 40; Young, 1964, p. 58**).

Beck (1982, p. 742) claims that the "creation narrative ... is a story without any historical intent." The Clergy Letter Project (**Zimmerman, 2006, p. 1**) maintains that revelation is designed "not to convey scientific information but to transform hearts." This sounds good, until one realizes that science is nothing more than systematically studying the physical world, and the physical world is the one in which Jesus was incarnated. Divorcing divine revelation from any connection to the physical creation ultimately casts doubt on the reality and relevance of Jesus' first advent.

Even if Genesis 1 were poetry, "in the ancient world, devoid of printing, without paper for note-taking or on which to type lectures, the trained memory was of vital importance" (**Yates, 1966, p. 4**). A poetic syntax helped in memorizing concrete content. "Poetry, not prose, was the primitive form for storing the community's memory" (**Boorstin, 1983, p. 563**). **Boorstin (1983, p. 480)** reminds us that, "Before the printed book, Memory ruled daily life ... Memory was an awesome faculty which everyone had to cultivate, in ways and for reasons we have long since forgotten. In these last five hundred years we see only pitiful relics of the empire and power of Memory. ... Everyone needed the arts of Memory, which, like other arts, could be cultivated. The skills of Memory could be perfected, and virtuosi were admired."

Archeologist **W.A. Albright (1957, p. 66)** emphasized that "the verse form is much better adapted for oral transmission than is any kind of prose. The ease with which children learn poetry is well known; lists and recipes were formerly put into verse for mnemotechnic purposes." Thus we cannot truly say that a poetic syntax in Genesis 1 means that it did not convey the factual information intended by the context of its words.

Further, Genesis 1 is not actually poetry after all. The first poetic passage in Scripture is Genesis 4:23, sometimes called "The Song of the Sword" (**Pfeiffer, 1958, p. 27; Sarfati, 2004, p. 95**). Echoing Aalders, an early opponent of the framework hypothesis, **Surburg (1959, p. 64)** asks, "Would the account of Gen. 1 lead the ordinary reader to suspect that the order of created events recorded were not historical?" Also echoing Aalders, **Young (1964, p. 47)**, answers that in Genesis 1, "there is not a single allusion to suggest that the days are to be regarded as a form or mere manner of representation ..." Neither does the inclusion of repetitive phrases in Genesis 1 make it poetry. In the KJV, the phrase "the evening and the morning" and "God saw that it was good" each appear five times, but repetition is not a necessary component of Hebrew poetry.

Repetition is more "characteristic of Biblical Hebrew prose" (**Shackleford et al., 1997, p. 303**), but is sometimes confused with parallelism. "[I]f Genesis were truly poetic, it would use parallelisms throughout," but it does not (**Sarfati, 2004, p. 95**). Thus Genesis 1 is a prose or narrative style which is "a positive record of things as they actually transpired" (**Leupold, 1949, p. 25; Kulikovsky, 2001, p. 242**). Other Scriptures and Jesus Himself cite Genesis 1 as history (e.g., Ex. 20:9-11, 31:17, Ps. 8, 104, Matt. 19:4-6, Lk. 3:38, 2 Pet. 3:5, Heb. 4:4).

B. Pre-Fall Conditions, Not Normal Now, Are Plausible.

An objection to the earliest post-Creation history presented in Genesis chapters 1 and 2 concerns the presence of the Tree of Life and the absence of physical death (Gen. 3:23). If this condition existed, a uniformitarian view of history fails completely and the biblical record is irreconcilable with conventional views of earliest history as a time of death, struggle, and primitivity. Accordingly, advocates in the Enlightenment tradition have sought to show that a death-free world would rapidly have become uninhabitable due to creatures' lemming-like procreation.

But would a death-free pre-fall world become hopelessly over-populated? Such a concern originates partly from the misconception that the earth today is in the throes of a population explosion. How much more severe would this problem be, the reasoning runs, in a world without death? But the earth is far from overpopulated. It could support up to some 50 billion people: "A diet based on 4,000 to 4,500 kilocalories of edible plant material [per day] could be provided for between 38 and 48 billion people," about 7 times the current population (**Revelle, 1974, p. 168; Easterbrook, 1999, p. 28**). Most people need far less than 4,500 kilocalories per day, so the earth's ability to support human life has not been pushed near the limit. **Lal (1998, p. 229)** points out that overpopulation concerns are a recent public phenomenon,

having arisen in the 1950s and 60s when "consensual unions began to be widespread, abortions to be exceedingly common, contraception to be universal." The divergence between overpopulation fears and reality is especially extreme in the West, where "the numbers of births [have fallen] so far that it is now doubtful if many Western populations can maintain their numbers in the long run" (**Lal, 1998, p. 229**).

John Calvin (1554, p. 180) suggested that in the death-free pre-Fall world, people would be translated much like Enoch (Genesis 5:24) in the post-Fall world: "Truly the first man would have passed to a better life, had he remained upright; but there would have been no separation of the soul from the body, no corruption, no kind of destruction, and, in short, no violent change."

Finally, had the world remained sinless, God would have foreknown and met life's needs as surely as He foreknows life's needs now. Genesis 3:16 records that after the Fall God told Eve, "I will greatly multiply ... thy conception ...," signifying that in a sinless world, God may have rendered over-population impossible simply by controlling conception rates.

C. Chinese Writing Embeds Memories of Genesis.

Chinese ideographs provide intriguing evidence of the historicity of Genesis 1-11. Over the millennia since the dispersion from Babel in about 2500 BC, Chinese characters have experienced relatively slight modification (**Kang and Nelson, 1979, p. 5**). Thus the modern pictograph for *garden* is a square intersected by a cross. The square is a plot of land; the cross spreads in four directions, signifying the "four heads" of the river which watered the Garden of Eden (Gen. 2:10).

This example might appear be similar to biblical history only by coincidence, but similarities span the entire spectrum of Chinese characters. The pictograph for *boat* shows eight people in a vessel. This was the number of survivors in the Flood (Gen. 7:7, 10:1; 1 Pet. 3:20). If this symbol is not a memory of Flood history, why couldn't the pictogram show five people, or ten. Why eight? The motif of eight Flood survivors is common in mythology (**Henry, 2006b, p. 6**).

The character for *tower* combines several pictographs and ideographs giving the idea of "men of one speech who united to undertake the building of a tower made of bricks of clay or grass" (**Brammer, 1986, p. 3**). The Tower of Babel was the last such tower attempted by a linguistically unified mankind.

Memory of building the Tower of Babel in Chinese characters is another evidence that this was a real historical event, not a myth or metaphor. It is easy to see why the earliest Chinese symbols would have

incorporated memories of the creation, the Flood, and Babel. These events had affected all mankind and were known to all, making the original symbols immediately intelligible to anyone. With time, the biblical history was forgotten, rendering the information in pictographs and ideographs meaningless, and forcing the change in most places to easier-to-write but more abstract alphabetical systems.

The evolutionary view with its denial of biblical history in Genesis is blind to the original meaning of the Chinese characters. Evolution ridicules pictographs as having no practical use. They are supposed to have been only primitive precursors to alphabets. Precursors they were, but primitive they were not.

D. Flood Legends Are Common to Most Cultures.

Flood legends have characterized virtually every major culture (**Murray, 2003, pp. 21-22**). Lucien, an ancient Roman, wrote that the Graeco-Roman culture of his day celebrated a religious day called the Day of the Dead (**Nelson, 1938, pp. 176-179**). Lucien said this Day of the Dead originated from memory of a time when all people on earth had died. Since the Day of the Dead was around November first, Lucien deduced that this must have been when the great Flood catastrophe happened. The Day of the Dead observance was global (**Rehwinkel, 1951, pp. 169-171**). It was practiced in Britain by the Druids with human sacrifice, and in the New World by the Incas who paraded mummies on stretchers (**Hadingham, 1988, pp. 215-216**). A sanitized Druid version became Halloween. Halloween is ultimately a perverted commemoration of global death in the Flood.

Tacitus, who lived in Rome about 100 AD, said that all people descended from a god who was saved in a boat. He called this god Tuisto and his son, Mannus. The origin of the name *Mannus* is the same as that of the name *Noah* (**Tacitus, 1948, p. 102**). Pre-Christian Anglo-Saxons, Norwegians, Danes, Icelanders, the Irish, and the Miautso people of China likewise traced their ancestry back to Noah (**Cooper, 1995, pp. 84, 98, 108, 244**).

The Gauls, ancient inhabitants of France, said they had descended from three gods, Teutates, Taranis, and Esus. Here in its broad form is the descent of all people from Noah's three sons. The ancient inhabitants of Germany had the same belief (**Tacitus, 1948, p. 102**).

These legends are pre-Christian. They cannot be merely a memory of Bible stories told by missionaries since they have too many facts twisted and corrupted. Where missionaries have gone, they have found peoples already immersed in these legends. Missionaries themselves have testified that these legends, plus a basic awareness of the one true God behind the legendary events, predated their arrival (**Richardson, 1981, p. 33**).

E. Linguistics Shows That All People Lived at Babel.

There is evidence that the different languages of today began at one geographical site, identified in the Bible as Babel. This is especially relevant to the history of science because all cultures and civilizations as we know them originated at Babel. The thousands of languages spoken today have proliferated from a small group of older now extinct languages, and these older precursors came from an even smaller number of primeval languages. In fact, languages belong to one of three groups: (1) the Indo-European tongues; (2) the Semitic tongues; and (3) the Oriental and African languages. These three groups correspond to Noah's three sons who survived the Flood.

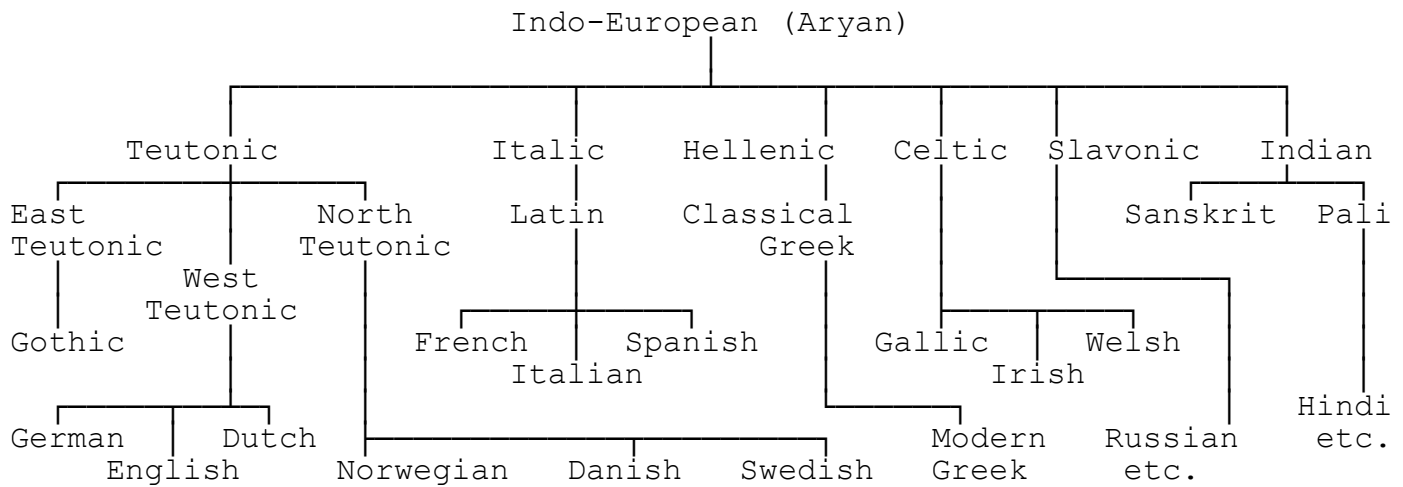
Indo-European tongues were those of Japheth's descendants dispersing from Babel. The term "Semitic languages" shows that these were the languages of Shem's progeny as they dispersed, and Ham's descendants spoke Oriental and African languages.

In other words, common ancestral languages exist for all modern ones. English, for example, comes from the Teutonic tongue which also gave rise to languages including German, Dutch, Swedish, and Danish, a language group called the *Germanic languages*. The now extinct Teutonic came from even more ancient Indo-European roots.

English is thus an Indo-European language with similarities to other Germanic languages. English "sing" is German *singen*, Dutch *zingen*, Swedish *sjunga* (the *j* sounds like *y*), and Danish *synge*. English also has likenesses with non-Germanic languages that are Indo-European. The English "three" is Latin *tres*, French *trois*, and Greek *treis* (**Alexander, 1969, pp. 38, 39**).

Latin, an Indo-European tongue, has in the last two millennia produced the Romance languages French, Spanish, Italian, and Romanian. Other ancient roots besides Teutonic and Latin, all derived from Indo-European, have produced other modern languages. The chart below shows some of the relations (**Alexander, 1969, p. 40**).

Knowledge of these linguistic relations had been lost and was re-discovered in the 1800s. As **Alexander (1969, pp. 37, 39)** says: "One of the far-reaching discoveries of the 19th century was that many languages show resemblances in their structure, and that these features are to be explained, not by a process of borrowing but by descent from a common ancestor. ... It is difficult to say when or where the parent language from which these are descended -- primitive Aryan or Indo-European -- was originally spoken, except that it was some time before 2000 B.C., possibly 3000 or 4000 B.C."



Despite Alexander's ignorance of where Indo-European was first spoken, the timing he suggests agrees with the biblical date of the Tower of Babel. According to the Bible, Nimrod built the Tower of Babel sometime between 3000 and 2000 BC (Gen. 10:8-10, 11:1-9). Not only does the common ancestry of languages point to a single geographic origin, but the timing of this origin agrees with the biblical chronology for Babel.

F. Linguistics Indicates That All Languages Were Once One.

The science of linguistics shows that all languages share a unity of the sort that might be expected if all mankind had once spoken a single tongue.

MIT linguist Noam Chomsky reached a similar conclusion. "Chomsky holds that the grammar of a language is a system of transformational rules that determines a certain pairing of sound and meaning. It consists of a syntactic component [word order], a semantic component [word meaning], and a phonological component [the way phonemes are joined to form words]. The surface structure contains the information relevant to the phonological component, whereas the deep structure contains the information relevant to the semantic component, and the syntactic component pairs surface and deep structures. Hence, it is merely the phonological component [the order of phonemes in words] that has become greatly differentiated during the course of human history, or at least since the construction of the Tower of Babel" (Stent, 1975, p. 1054).

Not all linguists agree with Chomsky's idea that a "syntactic component" links surface structure with deep structure, but there is general agreement that a deep structure exists. This deep structure strongly indicates a common origin for all languages rather than an evolutionary origin of distinct languages at different places and times. Yet Farb (1975, pp. 268-269) and most other linguists "despair of ever finding" the "well-springs of speech," denying the history in Genesis which would unlock the mystery for them. Anthropologist Ralph Linton (1955, p. 9) bluntly said decades ago, "We know absolutely nothing about the early stages in the development of language ..." This self-imposed ignorance continues to prevail. Even to Stent (quoted

above), the Tower of Babel is only a fanciful metaphor for an origin whose details are hidden in the fog of an evolutionary past.

G. Linguists Have Reconstructed Conditions Met by Migrants from Babel.

The tongues closest to Indo-European are archaic languages such as Teutonic, Italic, and Hellenic. From these ancient roots, linguists have attempted to reconstruct Indo-European as a single tongue. Reconstructed Indo-European words reveal details about the lives of the speakers. Words for "oak" or "birch," for example, show that people used these trees. Generally, the reconstructed scenario agrees with conditions that Japhethites dispersing from Babel would have experienced as they settled into Europe.

As Claiborne (1983, p. 34) states: "Not all [Indo-European words] have been reconstructed with equal certainty, but collectively they provide a clear picture of the Indo-Europeans' natural environment: deciduous forest or open woodland, of the sort that stretches in a broad belt between the lands ... from the Atlantic east to the Urals. ... (This description, of course, refers to the *original* vegetation of these regions, which today has mostly been replaced by cropland, pasture, or plantations of fast-growing evergreens such as pines.)"

After the Flood, climate in European latitudes was wetter and warmer for several centuries than now. Milder climate persisted until well after the dispersion from Babel and is revealed by Indo-European vocabulary reconstruction:

"[The Indo-Europeans] began moving north from a region of mixed woodland and grassland into one of dense deciduous forest [i.e., from the south into Europe]. The lowland areas were often boggy (the climate ... was both moister and warmer than at present)" (Claiborne, 1983, pp. 47-48).

As Indo-Europeans migrated into Europe, "they could expand the more easily because over much of

Europe *there was almost nobody to oppose them* - a fact attested to by both ecology and archeology" (**Claiborne, 1983, p. 40**). As the Bible states, the people migrating from Babel were moving into previously unsettled territory, and "of them was the whole earth overspread" (Gen. 9:19).

This is a shocking conclusion for the evolutionary model which claims humans have been evolving and migrating over the globe for the last 3 million years. This is why Claiborne italicized the words "there was almost nobody to oppose them" in the quotation above. In fact, there was actually *no one at all* to oppose the first wave of migrants from Babel.

Linguistic reconstruction of Indo-European words confirms the biblical history of the migration from Babel in a wonderful way. Conditions of moister and warmer climate, a practically empty continent, and dispersion from south to north match the Genesis version of early post-Flood history and Japhethite post-Babel dispersion.

H. Migrants from Babel Traveled Worldwide.

The dispersion from Babel means that there must have been a period of global travel, and there is evidence of worldwide navigation, trade, and commerce in ancient times. Diverse artifacts indicate that global travel persisted throughout antiquity. For example, the Newark Holy Stones, ancient tablets inscribed with the Decalogue, were unearthed from Indian mounds in Ohio in 1860-1867 and appear to be genuine (**Alrutz, 1980, p. 1**). The implication is that global navigation occurred and included Hebrews many centuries before Columbus ever sailed.

I. Ruins of the Tower of Babel Exist.

Of course, the most direct evidence of the reality of Babel would be the existence of the Tower itself, a Babylonian ziggurat traceable back to pre-Abrahamic times. The claim has long been made that the biblical story of Babel is a confused reference to later ziggurats, such as the ziggurat at Ur, which Abraham probably saw and supposedly caused to be incorporated into Genesis 11 (**Saggs, 1971, p. 292**). However, the Tower ruins were unearthed in the 1800s. **Morris (1976, p. 253)** alludes to the archeological recovery of the complex of Nimrodian cities surrounding the biblical Babel with the Tower as its focus. Archeologist **C.W. Ceram (1979, pp. 326-331)** discusses Koldewey's excavation of the Tower in the late 1800s, along with the dimensions and the appearance of the Tower when it was in active use.

It has been suggested that other pyramids and mounds in locations far from Babel are also based on the Tower of Babel as prototype. For example, "the most ancient pyramids of Egypt present a vestige of the same form" as the Tower of Babel (**Maas, 1912, p. 1**).

In Mesopotamia in modern Iraq, the area encompassing the ancient land of Shinar, more than 20 remains of ziggurats exist (**Ghirshman, 1961, p. 69**). Saddam Hussein was confident enough of the location of the ruins of the biblical Babylon near Baghdad that he spent millions of dollars reconstructing it (**Dyer, 1991, p. 144**). The entire city of ancient Babylon has not been reconstructed to date, but Muaayad Saeed, head of Iraq's Antiquities Department "supervised a massive reconstruction in 1987 of the palace at Babylon" (**Barkho, 1998, p. 1**). Significantly, none of the secular scholars cited in this article went on record as doubting the existence of the Tower of Babel. They merely asserted that it is not possible to be certain of the Tower's appearance.

The word "ziggurat" is often said to signify an artificial mountain in the form of a pyramid, but the original meaning of "ziggurat" is the idea of "rising to the sky" (**Ghirshman, 1961, p. 75**). Thus, the term ziggurat as originally used by the Sumerians carried the connotation of a temple built "unto heaven" (Genesis 11:4), i.e., unto the glory or worship of the heavenly bodies. Only later did "ziggurat" become associated with the physical form of a certain type of temple mount.

Like the word "ziggurat," the word "Babel" itself is often misunderstood, supposedly meaning "gate of god." The original meaning of the word is "to confuse" (**Saggs, 1971, p. 292**), recalling the confusion of tongues occurring there. "It was later that those who remained at Babel tried to upgrade the meaning by claiming it meant 'Bab-el,' 'the Gate of God'" (**Morris, 1976, p. 278**), really a secondary meaning indicating the religious significance which the Tower of Babel wielded over people's minds in ancient times.

III. EARLY KNOWLEDGE AND TECHNOLOGY WERE NOT PRIMITIVE.

The biblical teaching of primeval sinless man implies that early human capabilities were advanced, not primitive. Biblical information on the Ark, for instance, implies an advanced ship-building capability in antiquity. **Woodmorappe (1996, p. 50)** notes that, "[T]here is evidence that ships approaching Ark length have in fact existed in ancient times." The legendary ancient Greek ship variously known as *Syracusia* or *Alexandris* is supposed to have rivaled the Ark's size (**Casson, 1971, p. 185**). The *Great Eastern* "was the largest ship afloat when launched" in 1859, and was 692 ft long. It had an iron hull (**Owen, 1970, p. 439**). But some Chinese junks of centuries ago may have matched the *Great Eastern* in size (**Mills, 1960, p. 147**).

A. Ancient Primitivity Is a Myth.

The biblical history of the construction of the Tower of Babel implies a high order of technology in the earliest times. Indeed, Gen. 11:5 quotes the Trinity as noting that at Babel, mankind would be able to do whatever he could imagine! The state of technology at Babel was not primitive. Primitive man is a fiction, a fiction

buttressed by a number of misconceptions bordering on myth.

The Myth That Cave Dwellers Were "Ape Men."

Some people have always lived in caves, but they were not "ape-men." Job 30:3-8 describes "cave-men" living in the wilds after the dispersion from Babel: "For want and famine they were solitary ... To dwell in the clefts of the valleys, in caves of the earth, and in the rocks."

Throughout history, caves have provided safety and security (Gerster, 1970, pp. 866, 867, 860, 882, 883). Some modern cultures live in caves because caves provide protection from weather (Blair, 1970, pp. 126, 129; Jordan, 1977, p. 108; Severy, 1983, p. 737; Edwards, 1980, p. 212). In the loess plateau of China, the people live in "caves cut into banks of easily carved silt. ... [They are] warm in winter and cool in summer" (Cressey, 1951, p. 111; DeBlij and Muller, 1988, p. 535).

Examples of the stunning technological prowess of the ancients can be multiplied almost endlessly (Murray, 2003, pp. 16-18; James and Thorpe, 1994, pp. xix, 56, 61, 66, 122-123, 157-159; Ronan, 1774, pp. 56, 65, 101, 103; Henry, 2006a, pp. 1-11). The pyramids of Egypt and Roman roads and aqueducts, thousands of years old, have endured far longer than any of our modern monuments are likely to stand.

The Myth That Some Languages Are Primitive. All languages are complex; there's no such thing as a simple one: "The facts have been ... unkind to the obviously racist theory that primitive language can be found in 'darkest Africa' or some other equally remote region: every human language that has been studied has a vocabulary in excess of twenty thousand words -- about the number that Shakespeare used, and far more than we find in the Bible" (Claiborne, 1983, p. 26).

The Myth That Ancient Peoples Believed the Earth Is Flat. According to one version of this myth, Columbus proved it is round, and his difficulty getting funding for his first voyage was because everyone else thought it was flat. The truth is that, "Contrary to vulgar legend, [the politicians'] rejection was not based on any disagreement about the shape of the earth. Educated Europeans by [Columbus] time had no doubt about the earth's sphericity" (Boorstin, 1983, p. 226).

The flat earth myth was concocted by rationalists (1) who believed ancient peoples were not highly evolved and were therefore ignorant; and (2) who desired to associate the "flat-earth" belief with Christianity (Russell, 1991, pp. ix-x). In fact, "Medieval thinkers, like the classical thinkers before them, believed the earth was round" (Russell, 1991, p. x). Awareness that the earth is round goes at least back to the fifth century BC (Boorstin, 1983, p. 94).

The Myth of Uniformitarianism. This misconception applies to all of ancient history the same harsh, drought-ridden conditions existing today in the so-called "Fertile Crescent." Supposedly this region was always arid and non-productive. But even the Sahara did not exist until about 2000 BC; before that, there were no deserts:

"Around 2000 BC there began a long and eventually disastrous natural change. The climate gradually became much drier. The Sahara received less and less rain. Its rivers began to fail and, little by little, its farming peoples had to move away and find new homes. ... By about 500 BC the Sahara became the dry and stony wasteland that we know today" (Davidson, 1966, pp. 12-13).

Broad river channels visible via radar under many feet of sand show that the Sahara was once lush and verdant (Hamblin, p. 217). Ancient cities throughout northern Africa and Asia, once heavily populated, are now buried by desert sand (Menen, 1972, pp. 67-86, 173-181, 202-225, 255-259). These cities show that deserts have formed within fairly recent history. Under the more benign climate of distant antiquity, cultures flourished to a degree inconceivable to the uniformitarian mind set. One of the most interesting places to look for high technology is the ancient land of Israel, because the Israelites are often stereotyped as a technologically backward people.

B. The Nomadic Lifestyle in Antiquity Is Over-Rated.

We often think of the biblical Israelites as all nomadic or pastoral. For Israel under Solomon this stereotype is wrong. During Solomon's reign Israel was a great nation, and the capital city of Jerusalem was "the joy of the whole earth" (Psalm 48:2). We think of ancient nations as relatively isolated and bartering only with near neighbors, but this is not the way the Bible describes Israel under Solomon. "And all the earth sought to Solomon, to hear his wisdom" (1 Kings 10:24, 2 Chronicles 9:23). Israel was not isolated.

1 Kings 10 describes the queen of Sheba's visit to Solomon; verse 10 says she gave Solomon 120 talents gold, plus other gifts. A talent was a unit of weight equal to as much as 120 lb (Strong, 1888, p. 34). Other estimates put the talent at 75 lb (Dolphin, 1992, p. 1). At any rate, the queen gave Solomon roughly 12,000 lb or about six tons of gold. At \$400 per ounce of gold, the queen of Sheba's gift was worth about \$100 million. (The price of gold fluctuates; from 1971 to 1996 the low was about \$250 an ounce and the high was about \$800 an ounce.) Solomon's personal income included 666 talents of gold annually from levy and tribute (1 Kings 10:14; 2 Chronicles 9:13), or some \$500 million per year in modern money. In addition, there was additional gold flowing into the country from the activities

"of the merchantmen, and of the traffic of the spice merchants, and of all the kings of Arabia, and of the governors of the country" (1 Kings 10:15); Solomon's navy regularly brought gold and silver as well from Tarshish (1 Kings 10:22-23), geographically identified with possibly Spain or ancient Carthage. Archeology has confirmed the wide reach of Israel's commercial voyages during Solomon's time. Solomon's "ships, made and manned by Phoenicians, used to sail from there to distant Ophir [likely in Arabia] and back (1 Kings 9:26-28)" (**Glueck, 1959, p. 32**).

Solomon "exceeded all the kings of the earth for riches" (1 Kings 10:23, 2 Chronicles 9:22). His throne was so richly appointed with gold that "there was not the like made in any kingdom" (1 Kings 10:20). The country was awash in gold. Israel under Solomon had more gold pouring into it than fabled colonial Spain of the 1500s, when golden galleons delivered a continuous stream of wealth to Madrid. Under Solomon silver, normally a precious metal, was considered worthless. As the Bible puts it, Solomon made "silver to be in Jerusalem as stones" (1 Kings 10:27, 2 Chronicles 9:23). All of Solomon's drinking vessels were gold; "none were of silver; it was nothing accounted of" (1 Kings 10:21, 2 Chronicles 9:20).

C. Solomon's Temple: The Most Costly Building Ever?

Solomon's temple was an eighth wonder of the world. 1 Kings 6-7 describe the building of Solomon's temple; 1 Chronicles 28:1-19 and 2 Chronicles 2-4 also give construction details. Its dimensions were ample but not vast. The floor plan was 60 cubits by 20 cubits (2 Chronicles 3:3). With a cubit equal to 1.719 ft, or about 1.5 ft (**Strong, 1888, p. 16**), the temple covered about two football fields. Among the Seven Wonders of the Ancient World, the Hanging Gardens of Babylon and the Temple of Artemis were comparable in size, and the pyramids of Giza were much larger. Many modern buildings have more floor space than Solomon's temple.

What set the temple of Solomon apart from other wonders was its incredible expense: "This temple was probably richer in its ornamentation and more costly than any [other ancient temples], because of the large amount of gold used in its construction" (**AGS Consulting, 2004, p. 1**). All the gold in Solomon's temple would make up a cube six meters on a side (**Dolphin, 1992, p. 2**). This is about one-thirtieth of all the gold ever mined up to the present. In other words, only thirty buildings like Solomon's temple would contain all the gold in the world today. In Solomon's time much less gold had been mined, and the temple contained a much larger fraction of the global store of gold then available.

Construction of the temple included 100,000 talents of gold and 1 million talents of silver, worth respectively \$77 billion and \$10 billion today, at 120 lb/talent, and gold at \$400 per ounce and silver at \$5 per ounce. Including the cost of cedar wood and other

construction materials, the wealth of Solomon's temple was about one hundred billion dollars. There is no building in today's world of comparable value. But even this astronomical value may be grossly understated.

In recent decades, as the world's financial systems have moved increasingly toward exclusive use of paper as money rather than precious metals, the price of gold has been suppressed (**Murphy, 2000, p. 117**). Indeed, most of the world's "money" now consists of outstanding loans called "derivatives" made primarily among international banks and multinational corporations. The entire world gold supply is about one-half of one percent of global derivatives (**Commodity Numbers FAQs, 2004, p. 1**). Though unlikely to happen, if the derivatives market collapsed, the price of gold could explode to 200 times its current level. Then the wealth of Solomon's temple would be equivalent to 20 trillion dollars, or several times the annual budget of the U.S. federal government.

No wonder that **Nelson Glueck (1959, p. 150)**, one of the foremost archeologists of the mid-1900s, wrote, "Almost everything [Solomon] touched turned into the glittering gold of accomplishment." This assessment, of course, overlooks the fact that Solomon had God's blessing because of his humble plea for godly wisdom early in his reign (1 Kings 3:9, 12-13; 2 Chronicles 1:11-12). As Israel turned away from God, they were plundered again and again, culminating in Titus' demolition of Jerusalem in AD 70.

D. Solomon's Copper Smelter: Largest in Antiquity?

Archeologists in the early 1900s discovered that Solomon's government supervised one of the largest copper mining operations in history. His government also designed and managed the largest metal smelting operation known in antiquity. These discoveries moved archeologist **Glueck (1959, p. 31)** to say:

"[I]t may be stated categorically that no archaeological discovery has ever controverted a Biblical reference. Scores of archaeological findings have been made which confirm in clear outline or in exact detail historical statements in the Bible. And, by the same token, proper evaluation of Biblical descriptions has often led to amazing discoveries."

The accuracy of the biblical record, overlooked by others, made Glueck's discoveries possible. In **Glueck's (1959, pp. 31-32)** own words, "The whereabouts of Solomon's long-lost port city of Ezion-geber was for centuries an unfathomable mystery, because no one paid attention to the Biblical statement that it was located 'beside Eloth, on the shore of the Red Sea, in the land of Edom' (1 Kings 9:26; 10:22). And that is exactly where we found it, in the form of the small, sanded-over mound of Tell el-Kheleifeh on the north shore of the Gulf of Aqabah, which is the eastern arm of the Red Sea. Memory of its location had been snuffed out like the flame of a gutted candle. Assuming, however, as we did, that the Biblical statement was

literally correct, it was not too difficult to rediscover it." This discovery "verified completely the sometimes questioned description of the Promised Land as being in part a land „where stones are iron and out of whose hills you can dig copper' (Deuteronomy 8:9)" (**Glueck, 1959, p. 32**). The novel *King Solomon's Mines* (1885) by Briton H. Rider Haggard placed Solomon's copper mines in Africa, the location assumed before Glueck's discoveries. Smelting operations at Ezion-geber were sophisticated, using the "Bessemer process," a technique re-discovered in the 1800s for refining large amounts of metal.

Glueck (1959, pp. 163-165) elaborated on this process: "What puzzled us greatly when we first commenced operations at Tell el-Kheleifeh was what seemed to us to be the particularly unfortunate location of the site. Situated in the center of the Arabah rift, which is banked on either side by high hills leading, respectively, into Arabia and Sinai, it is open to the full fury of the almost constant winds that blow fiercely down the Wadi Arabah, as if forced through a wind tunnel. ... The architects of Ezion-geber could not possibly have chosen a more inclement site along the entire shoreline. ... Their seeming madness, however, was soon explained.

"The very first building brought to light at the northwest corner of the mound turned out to be the largest and most elaborate smelter ever discovered in antiquity. Each of the walls of its rooms was pierced by two rows of carefully constructed apertures, which could only be flues. The upper rows opened into a system of transverse air-channels, utilizing the winds blowing almost constantly from the north and north west to fan the flames in the furnace rooms. The lower rows were intended to permit the gases formed in one chamber to penetrate into the second and so on and preheat its contents. ... The ores were given a preliminary 'roasting' at the individual mining sites in the Wadi Arabah, and then brought for further smelting and refining to Ezion-geber. Layers of ore were placed between layers of lime in large, thick-walled, pottery crucibles.

"Piles of charcoal from the wooded hills of Edom were packed all around them in the open furnace rooms of the smelter, with the fires being ignited in successive order at proper intervals of time. No hand-bellows system was necessary, because with brilliant calculation, Solomon's engineers had harnessed the winds to furnish a natural draft. The Bessemer principle, discovered less than a century ago, was, in essence, already familiar some three millennia back. So well had the smelter been constructed, that when it had been completely exposed, we could place our hands on the flue holes in the wall at the south end of the structure and feel the air emerging, which had entered through the flue holes on the north side, a number of rooms away."

Aside from the technological need for wind currents to power the Bessemer process, the geographical location of Ezion-geber was critical to Solomon's plans for global trade:

"It was first under Solomon's reign that the Negev [southern Israel] assumed its proper place in the make-up of the burgeoning state. David's victories had made this possible. It had become evident that the kingdom of Israel could not long endure, let alone thrive, without the Negev. It was the key to Egypt and Arabia. It barred or opened the way to India and Africa. ... It was inevitable that Solomon should have built the famous seaport and great copper smelter and industrial center at Ezion-geber on the north shore of the eastern arm of the Red Sea. It was natural that his ships should have carried its finished products to distant Ophir and brought back in exchange the frankincense and spices

and gold and other precious goods of Arabia and India and Africa" (**Glueck, 1959, pp. 149-150**).

Israel remains a rich source of metal and minerals today: "The mining operations extensively carried on in former times at Timnah [in the Arabah rift] by Solomon's men are being repeated on a much larger scale today. A modern smelter has been erected there to process the ore. We had found its equivalent in Ezion-geber, where Solomon's engineers had, about 3000 years ago, erected an elaborate smelter. It utilized the principle of the Bessemer blast furnace process. Flues were provided in its walls through which the strong and constant winds from the north were admitted to furnish the draft necessary for the charcoal-fueled flames in the furnace rooms (**Glueck, 1959, p. 36**).

In the later 1900s, the Bessemer process was replaced by even more efficient methods of metal refining, but for more than a century it was the mainstay of the metal refining industry.

E. "Primitive" Peoples Had Widespread Technology.

The largest known ancient mining operation was the removal of up to 50 million pounds of copper (25,000 tons; cp. 6000 tons of gold used in Solomon's temple) from shafts near the coast of Lake Superior. These were the mines of Kitchi-Gummi which were worked for about 1200 years beginning around 2500 BC. Most of this copper apparently disappeared from the New World, implying that merchant vessels from the Old World shipped it to Europe, Asia, and Africa (**Jewell, 2000, pp. 1, 19, 121**). Solomon's merchant marine may have been involved. By comparison, the Old World was relatively poor in copper except for sites such as Solomon's mines. **Bailey (1994, p. 23)** proposes that there was a global copper industry before the onset of the iron age. At least at first, the post-Flood iron age was therefore a set-back, not an advance. Neither the iron age nor the bronze age were pre-historical, and in fact pre-Flood peoples had used iron (Gen. 4:22).

F. Are We Really More Capable Than the Ancients?

It is a common cliché that we live in the information age, as if no one has before us. But so has everyone else who ever lived, since we are communicators made in God's image. This point is worth considering at some length because of the widespread misconception that "[computerized] 'information' is something new and different" (**Rosenfeld, 1982, p. 22**). **Albert Rosenfeld (1982, p. 16)**, a geneticist and information specialist, emphasizes that, "[No one can] point out ... an age in human history that was *not* an age of information, or an economy that was other than an information economy. ...

"In all past ages, monarchs and high priests have maintained their power through the manipulation of information. Scribes and accountants, artists and

craftsmen, even the most humble hewers of wood and tillers of the soil have lived in information economies and have survived in accordance with their adeptness at handling information.

"In fact, we have lost much of the information they possessed ... In many ways we have *less* information to deal with than our ancestors ... Certainly we need much less information to keep ourselves fed, clothed, sheltered and in reasonably good health than people did in past ages. Our current 'information economy' *frees* most of us from having to deal with enormous amounts of information people in previous centuries couldn't live without (Rosenfeld, 1982, p. 22).

"As for the increasing percentages of the working population calculated to be engaged in 'information handling,' what are the rest of us handling if not information? When you come right down to it, information is all there is." (Rosenfeld, 1982, p. 16).

"... [T]he foregoing was not intended to lend a mystical aura to the word 'information,' but rather to *demystify* it, to counteract the notion that information is a magical new presence somehow sprung newborn into the world. If we recognize ... that we have been dealing with information throughout human history, we are less likely to be intimidated by announcements that we have now entered some strange new 'age of information'." (Rosenfeld, 1982, p. 20).

IV. GAINS IN KNOWLEDGE ARE OFFSET BY LOSSES.

Conventional wisdom says that man's accumulation of knowledge has been more or less continuously upward. A biblical view implies otherwise. Newly created sinless man better able to accomplish acquisition of knowledge than peoples who lived after the Fall.

Sin darkens man's knowledge. Yet even after the Fall and Flood, human prowess at Babel was so great that, as mentioned previously, God acknowledged "now nothing will be restrained from them, which they have imagined to do" (Genesis 11:6). The brilliant achievements of prodigies such as Amadeus Mozart, who at age six gave virtuoso public piano performances and composed some of the world's greatest music before he died at 35 (MacLeish, 1984, p. 71), may have been within reach of the average person before the Fall. The history of science is littered with forgotten discoveries which were heralded as new knowledge when re-discovered. But there is nothing new under the sun (Eccl. 1:9). Ecclesiastes 1:11 refers to the forgetfulness of human memory -- "There is no remembrance of former things," the verse says, "neither shall there be any remembrance of things that are to come with those that shall come after." Examples of this fact are the astronomical discoveries of Galileo from the early 1600s – most of which were really re-discoveries.

A. Galileo's Re-Discovery of Sunspots.

In 1609 Galileo focused his telescope on the sun, and announced the discovery of sunspots. Sunspots appear to

be small black blemishes on the sun, though even the smallest visible sunspot is several times the size of the earth. Galileo's sighting of sunspots was not the first knowledge of them. The ancient Chinese recorded sunspot sightings. Thus "Galileo was not the discoverer of sunspots, as is sometimes claimed ..." (Snow, 1984, p. 31; Gribbin, 1980, p. 124). Furthermore, "sunspots were known to the ancient Greeks, but this knowledge was lost in the West and the spottiness of the Sun only rediscovered by Galileo in the early seventeenth century" (Gribbin, 1980, p. 117). Yet Galileo claimed to be the first discoverer of sunspots: "These spots have never been observed by anyone before me" (Boynton, 1948, p. 33). Presumably he was ignorant of earlier knowledge.

B. Galileo's Re-discovery of Lunar Craters.

During a total solar eclipse, in the final seconds before totality, the moon does not cover the sun smoothly. The last sliver of the sun's disk splits into spots of sunlight that astronomers call "Bailey's beads." Ancient peoples recognized the existence of Bailey's beads, and from them they deduced that the moon must have a rough surface with mountains and valleys. The lunar mountains must cover the sun first while shafts of sunlight continue to penetrate the lunar valleys. By Galileo's time, however, the moon was believed to be perfectly smooth and incorruptible, like the sun (Snow, 1984, p. 30). Galileo claimed he had discovered the mountains of the moon, not knowing he had actually *rediscovered* them.

C. Galileo's Re-discovery of the Phases of Venus.

Venus exhibits noticeable phases as it orbits the sun. Venus is smallest when it is farthest away from the earth, on the opposite side of the sun, and this is when it is seen in its full phase, fully illuminated by the sun's light. When Venus is on the same side of the sun as the earth, it shows its crescent phase. Around 1610 Galileo announced his sighting of the Venusian phases seen through his telescope. However, the ancients knew of the phases of Venus. The crescent phases were dubbed "the horns of Venus."

Babylonian texts describe the horns of the planet Venus. "[T]he cuneiform texts ... speak of the right or the left horn of Venus. ... [T]he phases of Venus were observed already by the Babylonians ... Galileo, in the [1600s], was not the first to see them" (Schaumberger, 1935, p. 302; Henry, 2006a, p. 3).

D. Was Galileo's Sighting of the Galilean Moons a Rediscovery?

Galileo focused his early telescopes on Jupiter and announced his discovery of the four largest Jovian moons, to this day called the "Galilean moons" -- Io, Europa, Ganymede and Callisto. There is evidence that ancient peoples knew of these moons, making Galileo's announcement another rediscovery.

"In theory, Galileo's discovery could have been made long before the telescope. All four moons -- Ganymede, Callisto, Io, and Europa -- are bright enough to be seen with the naked eye ... [And] people have seen them. According to a manuscript unearthed ... in China, the astronomer Gan De noticed a 'small reddish star' attached to Jupiter in 364 B.C. It is believed he saw Ganymede, the brightest moon. To test that possibility, an astronomer in Peking recently asked half a dozen college students to look at Jupiter each night without a telescope and

draw what they saw. All six located Ganymede, and three saw Europa as well" (**Dunkle, 1982, p. 78**).

CONCLUSIONS

The biblical perspective on the history of science is that God created man with the ability to accomplish high technological feats early in history rather than evolving from primitivity. The degraded state of various cultures past and present is due to regressive factors and is not a vestige of an earlier evolutionary state. A biblically oriented philosophy of science must build on a biblically oriented history of science to answer, What are these factors? How have they operated historically? How have some cultures at some times escaped their malignant influence?

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