THE LONGEVITY ACCOUNTS IN ANCIENT HISTORY

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The longevity accounts in the Bible, mostly in Genesis, were contested by some, but nevertheless were accepted as valid by such persons as Josephus in the 1st century, Augustine in the 5th century A.D. and the Puritan scientists in the 17th century A.D. WHY was subject not to doubt, but to varying speculations.

Recorded in the Bible, especially Genesis, are: (1) greatly extended lifespans, and (2) also delayed sexual maturation; and both must be related. Also in the Bible are: (3) an abatement or decline of lifespans after the flood, and (4) yet a phenomenal vigor in the lives of the patriarchs. Observed in nature are: (5) great normal size for most fossil animals, and (6) an abatement or decline in the size of animals in the Pleistocene, which is equated to the post-ice-age, post-flood era.

It is theorized here that before the flood the atmosphere was like the present atmosphere in constituents for oxygen, nitrogen and argon, but was different in humidity or water vapor, and especially in carbon dioxide. Contemporary CO_2 levels are 330 parts per million, partly due to burning of fossil fuels in our age of petroleum. At the turn of the century it was 290 ppM. However, before the flood atmospheric CO_2 is considered to be 5000 ppM, some 15 times the current concentration.

The decline in atmospheric CO_2 is considered parallel to, and caused by, a decline in temperatures of the oceans. Cold oceans will absorb CO_2 out of the atmosphere like a blotter; and it is believed that oceans have dropped in average water temperature from a preflood 60° F. to a current 38° F. This is the physical cause for the depletion of atmospheric CO_2.

A decline in CO_2 physiologically results, (specific only to the skin and the brain), in a vasodilation of blood vessels, and hence in oxygenation of the brain cells. The progressive decline of CO_2 and hence the decline in oxygenation of the brain cells, especially of the cells in the hypothalamus in the mid brain, is considered the cause of the accelerated aging.

Accelerated aging is believed caused by a more rapid breakdown of the suppression system of the hypothalamus. A more active hypothalamus causes the diseases of aging. This is the hypothalamus disregulation theory.

Besides the decline in lifespans as seen in Genesis after the flood, there was also a decline in the age of patriarchs at the time of their firstborn son, hence a decline in age of arrival at sexual maturity, and presumably skeletal maturity. Hence the smallness of contemporary animals compared to fossil ones.

The numerical ages of the patriarchs are one class of data. The phenomenal vigor of the patriarchs is seen as supplying a strong internally consistent additional data base, indicating that the data are reliable. Examples are taken in the lives from the 5th, 10th, 15th and 20th generations after the flood in the person of Joktan, Sarah, Job and Caleb.

Yet another corroboration in the hypothesis of atmospheric decline in CO_2 is seen in the change of ancient climates. North China and Palestine are given as illustration, further underscoring the theory.

General History and our Hypothesis

Modern science originated at the same time, in the same locations in Northern Europe, where the Protestant reformation took hold, and especially in those areas where Calvinism was strong.[1] Simultaneously capitalism, like science, developed in these same societies according to Max Weber, Robert Merton, Joseph Needham and others.[2,3,4] These areas included Prussia and the other independent North German states, Holland, Switzerland, to some extent France, and, somewhat later, Scotland and England.

The Puritans of England arose a little later than did the Calvinists in the other aforementioned areas; and their society was blessed with more peace and less war. As the Puritans became prominent, they also developed a considerable interest in science.[5,6] Their broad and intense academic interests included both the Word of God and the works of God; in Biblical laws and in natural laws, or principles in natural science. In fact, they considered both science and nature had one and the same divine author.

The Puritans, not questioning the veracity of the long lifespans as recorded in Genesis, Job and Joshua, did, however, wonder how and why. Many Puritan scholars repeated and endorsed the view which Josephus proposed, circa 90 A.D., namely that the patriarchs were long-lived because of their virtuous behaviour and their diet.[7] Martin Luther attributed ancient longevity to a higher level of wisdom which the ancients had attained, and suggested that after the flood man could no longer acquire deep knowledge.

Thomas Browne (1605-1682) suggested that lifespan was shortened to prevent overpopulation. Thomas Burnet (1635-1715) correlated decreasing lifespan with increasing population, and supposed that one caused the other in some way. Count Buffon (1707-1788) postulated as late as 1749 that there was a causal relationship between gravitational attraction and aging, and that in antiquity the earth had less gravitational attraction and hence there was slower aging.

In our essay it is proposed that it was indeed a difference in diet of the ancients which caused their greater lifespan. However, it was not as Josephus supposed, a diet of food which would undergo digestion. Rather it was the diet of air taken in by respiration (and the corresponding blood acidity) and in brain oxygenation which was different.

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This essay proposes, as a basic assumption, that at the time of the flood, circa 2400 to 2500 B.C., the earth's atmosphere contained approximately 1/2% carbon dioxide, which is 5000 parts per million. The current concentration of CO_2 in the atmosphere is 330 ppM: and this is increasing due to burning of fossil fuels in our age of petroleum at a rate of about 0.7 ppM per year.[8] The atmosphere is estimated to have contained 290 ppM as recently as 1900.

Figure 1 illustrates our view of the concentrations of atmospheric CO_2 throughout history and especially the postflood decline. It also implies that the flood included a planetary ice dump over the magnetic polar regions, a very sudden phenomenon of celestial origin.[9]

If the atmosphere lost great amounts of CO_2, to where did it go? It is well known that warm soda pop will quickly lose its fizz; its CO_2 rapidly evaporates. This is much slower with cold soda pop even with high concentrations of CO_2 in the pop. This illustrates that the oceans absorb CO_2 out of the atmosphere and return some of it in a deep and complex interaction. Cold oceans will absorb enriched CO_2 out of the atmosphere rapidly.

If the earth had 5000 ppM of CO_2 in the preflood era, this caused a very effective greenhouse effect, which in turn kept and maintained high temperatures and high humidities even in the polar regions. Based on the examples of fossil redwoods and other flora, much of it subtropical in Iceland, Greenland, Siberia, Spitzbergen and elsewhere, an estimate of surface temperature in the high latitudes of 60° F. is reasonable, and defensible.

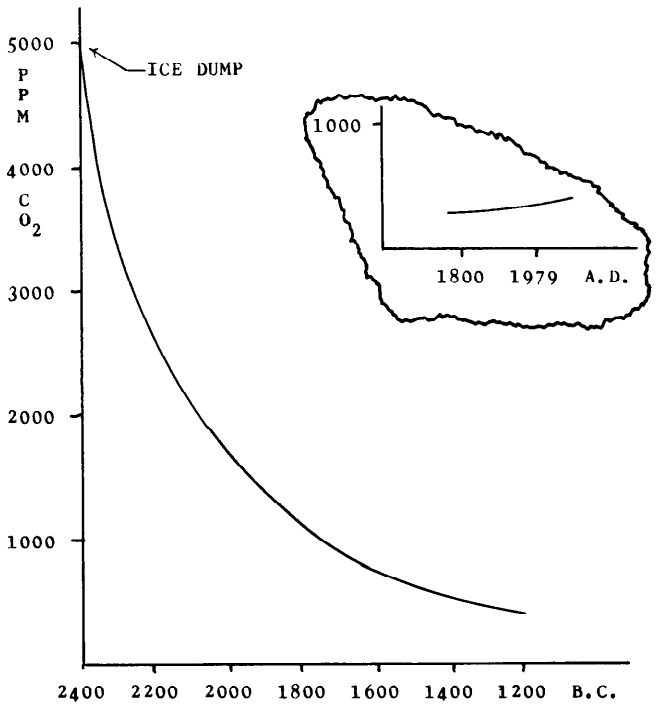

Figure 1. This shows the way in which, it is suggested, the concentration of carbon dioxide in the atmosphere decreased, from a previous figure of about 5000 parts per million. The inset shows how in recent times the concentration has begun to increase. It is suggested that, at the time of the Flood, ice from an extraterrestrial source was dumped onto the Earth.

Table 1: Distribution of carbon dioxide in the biosphere and elsewhere; pre-Flood (pre-ice-age) era and the present compared.

	Pre-Flood	20th Century
In the Atmosphere	21%	1½%
In the Terrestrial Biosphere	8%	2½%
In the Marine Biosphere	8%	7%
In the Oceans	63%	89%

Assumption 1 Living and dead organisms are included in the marine and terrestrial biospheres.

Assumption 2 Average temperatures of ocean water in the two eras is 60° F. and 38° F. respectively.

Conclusion 1 In the preflood era with warm temperatures, high humidities and enriched CO_2 there was far more mass flora than the in the current scene with deserts, tundras and depleted CO_2.

Conclusion 2 Even more than in the terrestrial biosphere, out of the atmosphere came most of the CO_2 which the colder oceans ultimately captured.

Conclusion 3) The time span for the new low plateau of CO_2 to be achieved was 1200 to 1500 years.

Our study of solubility charts for both fresh and saline water indicates that at 60° F., the oceans will absorb about 70% as much CO_2 as at present temperatures.[10] In the current scene, the average temperature of all sea water is a chilly 38° F.[11]

Table I illustrates our judgment concerning the distribution of CO_2 in the pre-flood (pre-ice age) era as compared to the current 20th century scene. This is not to imply that the volumes of circulating carbon throughout the biospheres of the two eras were the same.

Hypercapnia and Physiology

Hypercapnia is an enriched atmosphere in CO_2 above the 20th century norm of 330 ppM. Hypocapnia is depleted CO_2. When hypercapnia occurs in laboratory conditions, the blood in vertebrate animals automatically becomes more acidic. One result of a more acid blood is a superior retention of calcium and zinc and other trace elements, except copper which zinc flushes out. Another possible effect should be an elimination of arthritis caused by alkaline blood.

A more important effect of enriched CO_2 is an expansion, or dilation, of blood vessels in the brain (and in the skin but not in other tissues). For example, Sokoloff reports,

> It is generally agreed that CO_2 exerts more powerful effects on the cerebral circulation than any other means of physiological or pharmacological significance . . . The carbon dioxide normally present in blood exerts a tonic vasodilator action on the cerebral blood vessels, and a fall in arterial $P(CO_2)$ normally results in cerebral vasoconstriction and reduced cerebral blood flow.[12]

In another essay, we postulate more completely the hypothalamic disregulation theory of aging.[13] Briefly, it is believed that with more CO_2 and vasodilated blood vessels, there would be more oxygen available to the brain cells, as there was in the preflood era. The greater oxygenation of brain cells results in better retention of

cell electrosensitivity. In the hypothalamus, a small gland in the mid-brain orchestrating aging for the neuro-endocrine system, the loss of electrosensitivity of hypothalamic cells results in a breakdown of the suppression system of the hypothalamus.[14] When the suppression system breaks down, the hypothalamus becomes increasingly active, and this results in the diseases of aging. This occurs prematurely with hypocapnia and low atmospheric CO_2 levels.

Animals in the fossil record are larger than contemporary animals, but not because they grew faster. Rather, the reason is that they grew at the same rate for longer; they had an extended period for arriving at sexual maturation and for arriving at skeletal maturation.

From one viewpoint, the preflood atmosphere was enriched in CO_2 to a level about 15 times that of the current scene. From another the entire human race and all animal and plant life have existed in an abnormal, CO_2-depleted, hypocapnic environment for some 4000 to 5000 years. Which is normal, the current 330 ppM, or the pre-industrial 290 ppM, or the preflood estimate of 5000 ppM? It depends on from which perspective one views hypercapnia and hypocapnia. Most view it from the current level of 330 ppM merely because they are not really aware of the prehistorical condition.

The Biblical Data 1: The Numerical Data

We assume the preflood patriarchs, like the postflood patriarchs, are real persons, not mythological persons. We view the books of Genesis and Job as viable history —and as viable medicine consequently. Some medical theories on aging only allow room for very minor adjustments in man's life potential; Genesis and Job are otherwise. And the hypothalamic theories for aging (including the hypothalamic disregulation theory which we favor) also allow for major changes in aging rates, both faster and slower, depending on the success of the suppression mechanism of the hypothalamus.

This raises a good many questions. One is. "Could conditions similar to the preflood era, with approximately 5000 ppM of CO_2, be used experimentally on 20th century animals with telling effect?" We think so. Another question might be, "Under conditions of enriched CO_2 in a micro-climate such as a home or an office building could 20th or 21st century man's lifespan be significantly extended?" We think so. Yet a third question might be, "What are the predicted levels for atmospheric CO_2 expected to be reached due to burning fossil fuels and limestone kilning?" Probably 400 to 450 ppM by 2050 A.D. And a fourth question might be, "Is the recent increase in atmospheric CO_2 in any way related to the increase in height of recent generations and/or the increase in lifespan?" We think so. Experimentation, both hypercapnic, control and hypocapnic is imperative.[15]

We are asking questions which nobody has hitherto thought to ask, or at least not since the time of the Puritan scientist-theologians 200 and even 300 years ago. Our view of Genesis and Job is in sharp contrast to mainstream modern academia (nourished on Lyellianism and Darwinism) which considers Genesis to be roughly equivalent to mythology, and considers Job roughly equivalent to Shakespeare, figurative rather than historical as we do.

Our view is also in sharp contrast with too much of modern evangelical thought which considers science an alien and possibly even an irrelevant area, and often approaches it defensively. And such modern evangelical/fundamentalist thought will tend to regard these great accounts of longevity in Genesis of Job as true, but beyond understanding. Therefore we pose these great questions to both modern science, especially modern medicine, and to the Christian/Jewish theological arena.

Can enriched CO_2 in laboratory conditions produce extended or delayed sexual maturation, and its associated delayed skeletal maturation (gigantism)? Can this principle—not new but 5000 years old, but nevertheless newly noticed—be applied to alter mankinds' longevity in the direction of enhancement? And can this new understanding of an old principle relate to an enhancement of a revised or envigorated greenhouse effect for earth's climate?

Will the reader allow us, kindly, to indulge in three or four rhetorical questions? Did Adam live 912 years? Did Methuseleh, Noah and Seth live 969, 950 and 912 years respectively? Are these figures of speech and not real persons (as one respected learned correspondent affirms)?

Isaac Asimov (a prominent modern writer on science and the history of science) has brushed aside this issue with a quick suggestion that the counting was done in months, not years. Is this quick suggestion too quick? How does Asimov explain Abraham's lifespan of 175? (Did he live 14.58 years?) Or Jobs' lifespan of 210 years or thereabouts? Or Arphaxad's of 438 or Sarah's of 127 or Peleg's of 239? He doesn't address this interrelated issue. What could he say?

We shall meet similar scepticism, or cynicism, concerning these ancient lifespans in the days of Josephus and of Augustine, and see how these two men, affirming the ancient accounts, handled their responses.

Numerical Data

The "beget and begot" chapters of Genesis are somewhat repetitive, more than somewhat amazing, and to some uninteresting. However, they indicate not one but two things. One is a delayed senescence or long lifespan and the other is a delayed physical or sexual maturation with its correlated issue of delayed skeletal maturation. Both are important, and perhaps equally so. Table 2 illustrates delayed physical or sexual maturation.

Now that delayed maturation has been observed and noted with reasonable carefulness, our attention shall be turned toward the long lifespans. This information could be presented in tabular form easily. However when it is plotted on a graph, a new relationship appears which may escape attention in a tabular presentation. This is the curve of abatement or declining of lifespans after the flood. This curve is very similar to the curve of CO_2 abatement seen in Figure 1.

Figure 2 embraces 28 patriarchs of whom 9 were entirely preflood, 17 were entirely postflood and 2 (Noah

Table 2: the recorded ages of the Genesis patriarchs at the birth of their heirs.

Pre-flood and Pre-Ice Age Category	
Adam	130
Seth	105
Enos	90
Kenan	70
Mahaleel	65
Jared	162
Enoch	*65
Methusaleh	187
Lamech	182
Noah	*500
Average, omitting (*) the highest and the lowest ages: 124 years	
Post-flood and Post-Ice Age Category	
Araphaxad	35
Selah	30
Eber	34
PELEG	30
Reu	32
Serug	30
Nahor	*29
Terah	38
ABRAHAM	*86
Isaac	60
Average, omitting (*) the highest and the lowest ages: 36 years.	

Assumption 1	All twenty of these names are real persons.
Assumption 2	Textual transmission down through the centuries has been essentially faithful and accurate.
Conclusion 1	Physical maturation in the postflood era occurred 3.4 times faster than in the preflood era.
Conclusion 2	The lives of the first ten postflood patriarchs heavily overlapped.

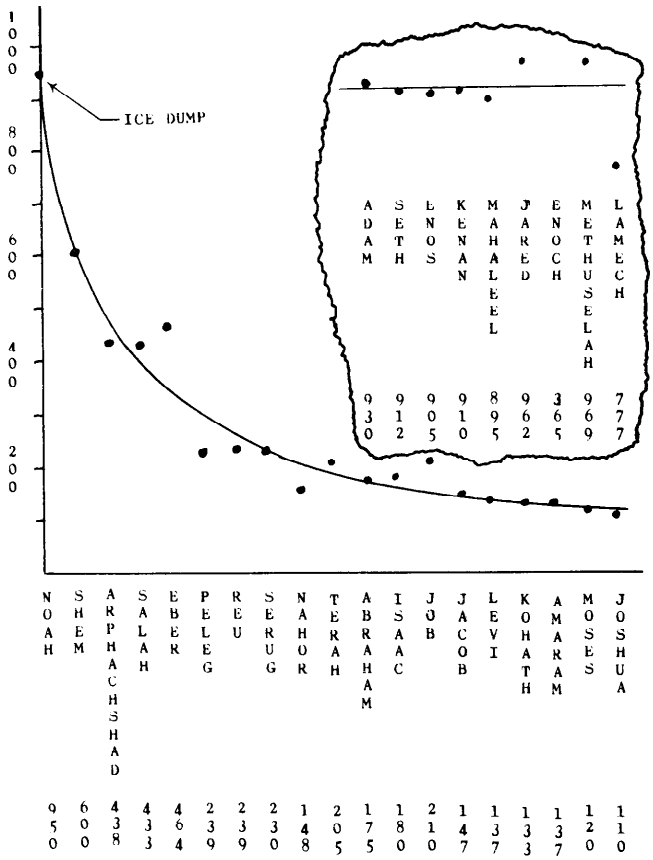

Figure 2. This shows the ages to which the patriarchs, and some others, lived. The mean curve is a sort of best fit to the individual points. The inset, to the same vertical scale, shows the antediluvian patriarchs. The point for Enoch, who did not die but was translated at age 365, is not shown. Again, the dumping of ice onto the Earth from outside is indicated.

and Shem) lived in both eras. These data in Figure 2 (far more than those in Table 2) are what causes so much amazement, bewilderment and perhaps curiosity among Biblical believers. Because these same data (if they are data and not mythology) are so alien to modern, or even medieval experience, they have caused cynicism and skepticism among academics who profess no commitment to a Biblical faith. Nor are these people to be blamed. If they ask questions about these matters, answers need to be given for the questions; and the "show me" attitude is most appropriate.

In this article, the Biblical data will be stressed. To do so is by no means to suggest that the climatological, geochemical and medical aspects of the matter are unimportant.

The Biblical Data II: Internal Consistency of Reports of Vigor

In Figure 2, perhaps some noted that "Peleg" and "Abraham" were capitalized in contrast to the other names and wondered why. Peleg was in the 5th postflood generation, a grandson of Shem's grandson (Selah). The sequence is Shem, Arphaxad, Selah, Eber, Peleg. Abraham is in the 10th postflood generation. Job is around the 15th and Caleb (not in the Figure) is approximately the 20th. These are representative generations, about every 5th, after the flood. How internally consistent is the account of, not their length of life alone, but also their vigor in life?

JOKTAN. Joktan was recorded as being Peleg's brother. Peleg's age at his death is recorded as 239. It is presumed that Joktan lived about as long as his brother; Genesis is silent on that. Joktan's great-grandfather (Arphaxad) was born 2 years after the flood, "Yoktan" is derived from the prime root *gaton* meaning to diminish or abate. According to a Hebraist, our correspondent and publisher, Marvin A. Luckerman,[16] Joktan or Yoktan in Hebrew means "shortening".

Joktan and his brother Peleg lived during the era when, if Figure 2 accurately describes the ancient scene, the curve of declining lifespan was precipitously dropping. Some of the ancients of that era must have become alarmed about something involving shortness or declining. Perhaps it was shortness of lifespan, but perhaps it was also the increasing shortness of the period of time required for coming to sexual/skeletal maturation. Consequently this kind of meaning was imparted to Peleg's younger brother by his alarmed parents, one of whom was Eber.[17]

The Book of Jasher, of disputed origin, treats the material in Genesis but in an expanded form; and it is in general harmony with both the Biblical and the Talmudic accounts concerning the abatement of lifespan at that time. Jasher is quoted as follows:

> And to Eber were born two children; the name of one was Peleg for in his days the sons of men were divided and in the later days, the earth was divided. And the name of the second was Yoktan, meaning that in his day the lives of the sons of men were diminished and lessened.[18]

The Tamudic tradition is similar in viewpoint:

> The brother of Peleg was called Joktan, because the duration of the life of man was shortened in his time.[19]

It is presumed that Joktan lived approximately as long as his older brother, Peleg. The Bible does not record his lifespan; neither does Jasher or the Talmud. But what is recorded is that he had 13 sons (Gen. 10:26-29). Probably he had a similar number of daughters. And possibly some children who did not survive infancy or childhood were not counted. At the very least it is presumed Joktan had 20 children, and 25 is reasonably likely. To say the least, one must consider patriarch Joktan to be an example of vigor.[20]

SARAH.[21] Sarah is the only woman in Genesis whose age was recorded at the time of her death, 127 years (Gen. 23:1). Sarah lived 63% longer than the average contemporary American woman, who has a life expectancy of, surprisingly, 78 years. Sarah's father-in-law (Terah) is recorded to have lived 205; her husband (Abraham) to 175, her only son (Isaac) to 180 and one grandson (Jacob) is recorded as having lived to be a ripe age for today of 147, but this was not considered a ripe old age for that era.

At the age of 89 years, when most modern American women are residing at the cemetery in body, Sarah had a surprise baby: laughably, her first. Apart from the element of divine intervention and/or miracle/surprise, this barren woman became pregnant. In her ovaries there must have still been at least one of her complement of 512 eggs, or ova. We presume that she was in or approaching menopause. Today in America, 95% of the women have completed menopause by the age of 53.[22] Sarah, when she became pregnant, was 68% older than nearly all modern American women when they have completed menopause.[23]

Yet another feature of Sarah's life reflects a slower rate of aging. While Sarah was in her 80's, she and Abraham encountered an Amorite sheik, the king of Gerar. Sarah was viewed as a fair woman, still attractive and beautiful at least to an extent. At modern rates of aging, this is inconceivable.

When Sarah died at the age of 127, Abraham, about 10 years her senior, became a widower at about the age of 137, perhaps 138. Soon he remarried. He maybe elevated one of his servant-women, Keturah, to become his third wife. By Keturah, this twice-over septaugenarian (2×70) had a third family. Keturah bore Abraham six sons (Gen. 24:1-2) possibly plus an unrecorded number of daughers.

Sarah seems to have been aging at about 60%, possibly 55% the rate of modern American women. Her husband, who sired at least six children after the age of 140 (and who lived to be 175) was aging at a similar rate. Beyond the basic numerical data, the late beauty of Sarah, and her age at the time of Isaac's birth, and Abraham's record of double-septaugenarian paternity, all argue for vigor, a remarkable vigor, if the Biblical account is to be accepted at all (along with Josephus, the Talmudic tradition, etc.) Vigor was noted in the case of Joktan also.

JOB.[24] Job's trial by Lucifer occurred in the approximate year 1660 B.C.[25], probably in March of that year. Job's age at that time was not recorded. What was recorded is that he had 10 children; but apparently there were no grandchildren. All were suddenly destroyed by a "*ruwach*", a bolidic or meteoritic explosion, mistranslated a "whirlwind". The occasion for the gathering of the children has occasionally been guessed at by commentators, and the guess has been a birthday party. If Job was about 70 years old; which is in harmony with Table 2, perhaps his children, ten in number, were gathering for an engagement party; Job's oldest son must have been approaching the time for marriage.

Several commentators on the Book of Job suggest that Job was 70 years old at the time of his trial. Their theological reason is that after the trial, Job's ample herds of 11,000 live stock (including asses, camels oxen and sheep) all were doubled in each category. And his lifespan thereafter, doubled or otherwise, was recorded, another 140 years.

> So the Lord blessed the latter end of Job more than his beginning . . . After this lived Job a hundred and forty years, and saw his son, and his sons' sons, even four generations. So Job died, being old, and full of days. Job 42:12a, 16, 17.

Job saw 4 generations in his last 140 years. Roughly, this suggests about 35 years per generation although this could be made somewhat higher. This agrees with the tradition that Job was about 70 when his trial befell him, and this reason, rather than the doubling of Job's possessions, is why this essay is in agreement that Job was about 70 years old at the time Lucifer's diabolical intervention in his life occurred.

It has been observed that Joktan's recorded very ample paternity is an example of vigor. Abraham's third family is a similar record. And after Job's trial, after the age of about 70, Job had another 10 children, again an example of ample vigor.

Sarah's late beauty, and her probable delayed menopause were also cited. What are other characteristics of aging? Gray hair is of course one. When Job underwent the Luciferian trial, neither he nor his three good friends understood the unseen spiritual conflict. They were sympathetic with Job, but they soon began to differ, to contend and to argue with Job, becoming miserable comforters. One of these friends was Eliphaz, Esau's son, Jacob's nephew, Joseph's cousin.

Eliphaz, in the course of remonstrating with Job, made the following casual but very significant comment:

> With us are both the grayheaded and very aged men, much elder than thy father. (Job 15:10)

It has been established that Job was about 70 years old at the time of the trial. This is based on his first 10 children, and the delayed maturation which was experienced in that era. Our view, and hence our assumptions, needs stating. We assume that the Book of Job has historical veracity[26]. It was undoubtedly presented in a dramatic-type of presentation originally. But this drama is not as one today might view Shakespeare, which was substantially non-historical (or history re-written.) We see the Book of Job as historical, and the literal interpretation inherently seems substantial. In this context review the above-cited quotation, Job 15:10. This one casual sentence brings forth three age-related issues:

1. Job, age about 70, was not yet gray-haired.
2. Job, age about 70, had a yet living father, perhaps 120 or so.
3. Job's living father, perhaps 120 yers old, was nevertheless not yet in geniune old age.

Within the last century Isaac had died at age 180 and Jacob at 147.

Here again, in the case of (1) Job's childrens' delayed maturation, (2) Job-the-septaugenarian's second and very ample family, and (3) Job's lack of gray hair at age 70, vigor appears. The principle of vigor lends internal consistency to the numerical data concerning the veracity of the extended lifespans, and the delayed maturity which is repeatedly observed. Job seems to have aged at a rate of about half that of modern American males. More technically, his early maturation was at about 60% as fast as modern American men and his later record suggests after the trial he was aging perhaps only 40% as quickly as modern American men.

CALEB.[27] Caleb, an Israelite general, circa 1400 B.C., was in approximately the 20th generation after the flood, as compared to Job in the 15th, Sarah in the 10th and Joktan in the 5th. Caleb led the Israelite army in the conquest of Southern Palestine. At 85, he was an acting field commander, possibly wielding battle ax and shield like his subordinates. In today's American army, field commands are denied to generals at the age of 55 or over, on the precise grounds of a lack of vigor. Caleb maintained, perhaps with some bravado, that he was as vigorous at 85 as he had been at 40.[28,29]

DATUM EXCEPTION. Biblical data are unified and internally consistent concerning long lifespans, and the decline thereof after the flood. There may be one exception. A collective rather than an individual case. This is referred to both in Deut. 2:14 and Josh 5:4. All of the Hebrew men of war who left Egypt (Caleb and Joshua excepted) were dead by the time the Hebrews crossed the Jordan, 40 years after entering the wilderness. Allowing that males 30 years and younger were not counted as men of war, this clearly means that all men who crossed the Jordan, Caleb and Joshua excepted, were 70 years old or under.

JOSEPHUS. Beyond the authors of Job (perhaps Joseph) and Genesis (clearly Moses), another historian/author is cited. He lived some 1500 years later than Moses and 1700 years later than Joseph and Job. Flavius Josephus (37-100? A.D.) lived at a time when the new low levels of lifespan, and, we believe, atmospheric CO_2 had been reached. These two low plateaus were reached between 500 B.C. and 900 B.C. The society of Josephus did not experience longevity in any way remotely similar to that of earlier times.

Josephus recognized, and no doubt respected, the reluctant and cynical opinions of those who tended to disregard the ancient accounts due to the great lifespans, never experienced in their later times. Nevertheless, Josephus came down hard in favor of those ancient accounts of longevity for some intriguing reasons. We quote:

> Now when Noah had lived 350 years after the Flood, and all the time happily, he died, having the number of 950 years, *but let no one, upon comparing the lives of the ancients with our lives and with the few years which we now live, think that what we have said of them is false or make the shortness of our lives at present an argument that neither did they attain so long a duration of life . . .*[30] (Italics ours.)

Josephus seems to have been a judge, or a Levite, before the Jewish revolt of 66 A.D. He became a military general, then a refugee, and finally a historian. Observe how he anchored his defense for his decided opinion favoring ancient longevity. His mind-set was not so much canonical or theological, but rather was historical and linguistic. He relied in part on the Jewish writings but also in part on then extant sources that were from various languages and various provinces (or today, various countries.) Again we quote:

> Now I have for *witnesses* to what I have said all those that have written Antiquities, both among the Greeks and barbarians, for even Manetho, who wrote the Egyptian history, and Berosus, who collected the Chaldean monuments, and Mochus, and Hestiaeus, and beside these, Hieronymus, the Egyptian, and those who composed the Phoenician history, agree with what I here say: Hesiod also and Hecataeus, Hellanicus, and Acusilaus, and besides Ephorus and Nicolaus relate that the ancients lived a thousand years; but as to these matters, let every one look upon them as he thinks fit.[31] (Italics ours.)

Josephus well understood the natural human tendency to doubt or disbelieve something one has not seen, experienced or heard about from a reliable immediate source; or the "show me" outlook. This of course is particularly so when a story is far beyond the scope of human experience, such as living 10 to 15 times longer than most contemporaries.

However, Josephus and his colleagues had read widely throughout the antiquities of the Mediterranean world, at that time under Rome. His mind-set was based in part on the collage of ancient international sources and their unanimity. There were no contradictions. The ancient longevity accounts with which he was acquainted extended far beyond the borders of his native Palestine. His sources came from no less than three continents. Such sources, when in unison, to Josephus far outweighed the contemporary rationalizations and cynics, however reasonable and well-intentioned. His sources came from areas which today include Africa, Asia and Europe, three continents.

Africa was represented by the Egyptian historians, Hieronymus and Manetho. Neither of these, certainly,

wrote in Hebrew or Aramaic. Africa (Egypt) also in another perspective, is represented by Moses, and perhaps by Joseph if he is indeed the author/patron of *The Book of Job.* Joseph was not a native Egyptian, but an immigrant; but Moses, author of the Book of Genesis as well as the other four books comprising the Pentateuch, was born and raised in Africa; ancient Egyptian was his native language.

Asia was represented by a variety of historians from no less than four countries, nationalities and original languages, although the historians wrote in Greek. Chaldean sources are represented by Berosus, a Babylonian priest of the 3rd century B.C., who wrote the history of Babylonia in Greek. Syria is represented in Nicolas of Damascus, the oldest continuously occupied city on earth. Nicolas, a historian of the 1st century B.C., was a friend of Emperor Augustus and Herod the Great.

A minimum of two unnamed Phoenician (Punic) historians are cited, likely drawing from ancient Punic sources. Palestine is represented by the ancient Jewish prophets and priests, who drew so heavily from the African, Moses, who led the Israelites out of Africa and back to Israel. The Book of Job is also a literary heritage of Palestine. These are a minimum of four Asian sources, two Egyptian sources and two who were Egyptianized Semites, a total of eight sources.

Europe is represented by five or six different Greeks including Hesiod of the 8th century B.C. Augustine considered Homer to be yet another ancient source attesting to ancient longevity. Thus one can sum up a total of 14 or 15 ancient sources, coming from three continents and at least 6 different ancient languages. Of these ancient sources familiar to Josephus other than the Biblical sources, only a few fragments and a few manuscripts survive. This may be one reason why modern academia is less impressed with this ancient tradition than was Josephus.

AUGUSTINE. Augustine, (354-430) A.D.) like Josephus, considered the accounts of ancient longevity to be valid, however surprising and however far beyond the experience of his era. As in Josephus' day, there were cynics and doubters who suggested the counting was done by months or whatever.

Augustine's mind-set was different from that of Josephus. While Josephus thought in Aramaic, Hebrew, and perhaps Greek, Augustine thought in Latin; and his thinking was more canonical, or theological compared with Josephus, whose thinking was more historical. Thus Augustine's confidence in the ancient Hebrew records was an issue of creed and faith. Note Augustine's different rationale in his discussion of the ancient lifespans:

> ". . . observed how prolonged were the lives of men, unless some skeptic take exception to this very length of years which our authors ascribe to the antediluvians and deny that this is credible. And so, too, they do not believe that the size of men's bodies was larger then than now . . .
>
> But the large size of the primitive human body is often proved to the incredulous by the exposure of *sepulchres*, either through the wear of time or the violence of torrents or some accident, in which bones of incredible size have been found or have rolled out . . .
>
> Homer in his poems often lamented the same decline; and this he does not laugh at as a poetical figment, but in his character of a recorder of natural wonders accepts it as historically true. But, as I have said, the bones which are from time to time discovered prove the size of the bodies of the ancients, *and will do so to future ages*, for they are slow to decay. But the length of an antediluvian's life cannot now be proved by any such monumental evidence.[32] (Italics ours.)

Did Augustine actually see gigantic mammal bones and mistake them for human bones? Such a mistake is possible, though we think not probable. Certain 17th century pre-geologists found ancient gigantic mammoth bones and thought they had found the remains of some of Hannibal's elephants. However, note that Augustine did say giant bones were found in ancient sepulchres, among other places. In sepulchres is indeed where one would expect to find human bones.

Secondly, observe that Augustine seemed to forecast or predict that the very size of these ancient bones would convince some future generation of whatever era that ancient gigantism, if not ancient longevity, would be proved. Augustine linked gigantism with longevity for the ancients. This essay will briefly discuss gigantism also.

Gigantism

Table 2 indicated that it took longer for ancients to come to sexual/skeletal maturation than medieval or modern men. The logic therefore is that if the ancients (including animals) took longer to arrive at skeletal maturation, while growth rates were more or less constant and the same as now, they would be larger. They grew not faster but for a longer period of time.

Table 3 illustrates world gigantism as it occurred before the Pleistocene age, or in our view, the pre-flood era. Gigantism occurred on an intercontinental and on an inter-species basis. Six-foot beavers are found, as are fifty-one foot crocodiles, nineteen-foot mammoths (at the shoulders) and birds with wingspans varying up to seventy feet in length. Mostly, for mammals, their size in terms of height or length, was 30% to 40% greater than in today's zoological world.

Figure 3 illustrates an easily-documented but little known fact, which is, that after the Pleistocene or the ice age, all around the world, simultaneously, there is found a successive abatement or decline in animal size. For instance, there is found a bison sequence in North America. The ancient *Bison latifrons*, stood 7½ feet tall at the shoulder. Successively smaller sizes follow, modern bisons being between 4½ and 5 feet tall at the shoulder.

There is a moa sequence in New Zealand. These birds diminsh from an ancient size of 12 feet tall down step by step to 3 feet, and then extinction. In the Caribbean region, in the Pleistocene, there is a sloth sequence from 20 feet long successively down to 10 feet long. In Palestine, Figure 3 cites the successive decline in size of seven mammals. Figure 3, illustrating decline in size of

Table 3: World gigantism as shown by various fossil animals. The use of terms such as "Pleistocene" does not imply that the author subscribes to the uniformitarian ages associated with those names.

Order	Latin Name	Era Found In	Size	Size of Modern Relative
		Class Mammalia		
		Infraclass Marsupials		
Macropodiae	Palorchestes	Pleistocene	11½ ft.	Kangaroo
Diprotodontidae	Phascolonus	Pleistocene	5 ft.	Vombatis platyrhinus (wombat—3 ft.)
		Infraclass Higher Mammals (Eutheria of Placentalia)		
Edentates	Megatherium	Pleistocene	20 ft.	Sloth
Edentates	Glyptodont	Pleistocene	12 ft.	Armadillo—3 to 4 ft.
Hyracoidea	Phiohyrax	Pleistocene	5 ft.	Hyrax
Rodentia	Trogontherium cuvieri	Pleistocene	6 ft. long	Beaver
Artiodactyla	Gigantocamelus	Pleistocene	11 ft	One-humped camel
Cerfidae	Giant deer	Pleistocene	Height 10 ft.; antler spread 12 ft.	Deer
Artiodactyla	Bison latifrons	Pleistocene	10 ft. horn spread; 7½ ft. at shoulders	American bison— horn spread 2 ft; height at shoulders 4 ft.
Carnivores Felidae	Panther leo spelaea	Pleistocene	1/3 to 1/2 times larger than modern relative	Lion
	Panthera cristata	Pleistocene	"	Panther
	Panthera tigris	Pleistocene	"	Asiatic tiger
	Panthera atrox	Pleistocene	"	Jaguar
	Puma concolor	Pleistocene	"	Puma
Hyaenidae	Crocuta crocuta spelaea	Pleistocene	"	Cave hyena
Usdidea	Ursus spelaeus	Pleistocene	"	Cave bear
		Class Aves (Birds)		
Aseriformes	Cnemiorhis	Pleistocene	3 ft.	Goose
Sphenisciformes	Pachydyptes	Miocene	5 ft.	Emperor penguin—3 ft.
Falconiformes	Teratornis merriami	Pleistocene	17 ft. wing span	California condor
Struthioniformes	Aepyornis maximus	Pleistocene	10 ft.	Ostrich—6½ ft.
Dinornithiformes	Diornis giganteus	Pleistocene	11½ ft.	Moa—3 ft. (subrecent)
		Class Reptilia		
Chelonia	Miolania	Pleistocene	14 ft. length	Turtles
Squamata	Palaeophis	Lower & middle Eocene	20 ft.	Sea snake
Crocodilia	Deninsuchus	Tertiary	51 ft.	Gavial
Saurischin	Magalania priscus	Pleistocene	23 ft.	Giant Monitor—11 ft.

animals after the flood/ice age, should be compared to Figure 2, illustrating decline in lifespan after the flood/ice age, and also compared to Figure 1, illustrating our theory of decline in atmospheric richness of CO_2 after the flood/ice age.

The traditional explanations for this decline in ancient size have centered around either (1) a sudden shift in genetic pools favoring smallness, or (2) the hunter hypothesis. The hunter hypothesis, that hunters killed the larger animals and left the smaller, is weak. For one thing, what hunter would want to attack a 7½ foot high (at the shoulders) buffalo if smaller game were available? And if he did, and were successful, how would he carry the carcass back to camp? Clearly ancient hunters would have tended to do the opposite, and spare the large animals. A change in the richness in CO_2 or any other atmospheric constituent other than water vapor has not been considered by geologists heretofore, for whatever reason. Undoubtedly an adoption of a uniformitarian philosophy of earth history is part of the reason.

In East Asia, Franz Weidenrach, who dug and researched in the region in the 1930's, before the Japanese invasion, came to some interesting conclusions. For instance, ancient man in Asia was much larger than at present, up to 9½ feet tall. In post-ice-age times the size declines gradually to that of the modern Asian.[33]

This information further strengthens the thought which Augustine had, that gigantism and longevity were correlated. Indeed, there are one or two indications in Genesis of early gigantism. For instance, in Genesis 6:4 the Bible speaks of there being giants in the

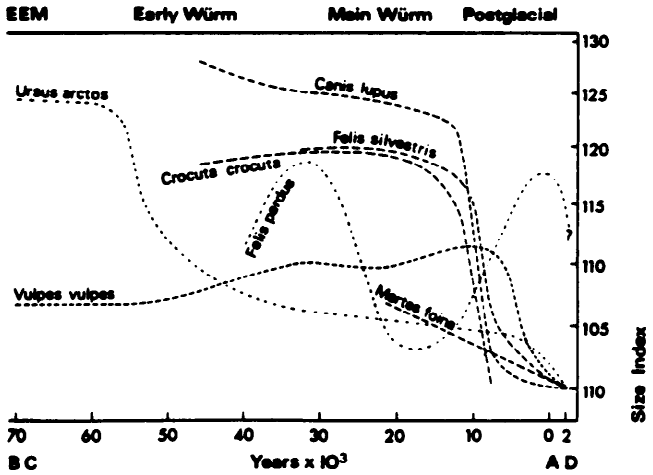

Figure 3. This shows how the sizes of many animals has decreased from what it was formerly. In Creationist terms, the left will indicate antediluvian times, but not 70,000 B.C. Then comes the flood and ice age; and it can be seen that present sizes are considerably less than those which were formerly common, and can be told from fossils.

After Patten, Donald W., and Phillip A. Patten, 1979. A comprehensive theory on aging, gigantism, and longevity. *Catastrophism and Ancient History* II (1):13-60. See p. 21.

world in those days, the context being disputed to be sure. In Genesis 7, the Bible speaks of the decks of the ark being 15 cubits high, similar to a modern gymnasium ceiling. Somebody must have been "thinking big". And in the Greek ancient mythology, the tradition of the titans again bears a similarity.

The Bible and Paleoclimatology

In Genesis and Job, where strong and repeated indications of ancient longevity are found, one can also see evidence of an ancient climate which was not so arid and not so extreme in temperature as today. One example, circa 1900 B.C. occurs in the Book of Genesis, where an observation of hydrology and floral density is discussed:

> . . . And Lot lifted up his eyes, and beheld all of the plain of Jordan, that it was well-watered everywhere, before the Lord destroyed Sodom and Gomorrah, even as the garden of the Lord, like the land of Egypt, as thou comest to Zoar. Gen. 12:10.

This reference alone is not strong, but it will be coupled with brief bits of other data. Today, the Jordan Valley and the Dead Sea region (where Sodom and Gomorrah were located) are among the drier of the regions on earth. Here an annual rainfall of 2 to 4 inches occurs.[34] The rainfall is somewhat greater on the adjacent hills and mountains, but there it is still scant. And today, in this region which includes the lowest place on the surface of the earth (the Dead Sea), there is an evaporation potential exceeding 80 inches per year.[35]

The region of northwestern Arabia, opposite the Sinai Peninsula, is where it is presumed Job lived. Today this area is similarly arid and a desert. But some floral observations occur in the Book of Job as to the vegetation there circa 1660 B.C. A semi-humid backdrop is seen in a variety of ways.

Snow is mentioned 5 times. River/rivers are mentioned 4 times, and water/waters are mentioned 28 times. Flora references include vineyards, green trees, shady trees, wheat and barley. Job's herds of over 10,000 animals, and later of over 20,000 livestock (asses, camels, oxen and sheep) all indicte a more humid, grassland type climate. Some additional irrigation may have been needed for the oxen, and was no doubt derived from a then-existent river.

Time and space forbid much discussion of parallel drying, termed dessication, in North America, where Lake Lahontan once covered over 100,000 square miles in Nevada and Utah. Today its remainder, Great Salt Lake, is but a puddle in size compared to its former extent.

In Inner Eurasia, the Caspian Sea formerly was so large that it merged with both the Aral Sea and the Black Sea, farther to the east and west respectively. Today the Caspian Sea has withered to a point where it no longer has outlet drainage to the Black Sea, and no longer has incoming water from the Aral region. The Gobi Desert of North China is another example; formerly it was not merely semi-humid, but was also somewhat thickly forested.[36]

The subject of the ice age keeps arising in one way or another. It is important to point out, without going into a detailed explanation, our view that the flood and the ice age are one and the same catastrophe. Briefly, it is viewed as a certain kind of astronomical catastrophe. A small icy body approached within 15,000 miles of earth's core, 11,000 miles from the earth's surface. Here, due to tidal stresses, it broke up.

Some of the ice fragments enter the earth's atmosphere like meteors, vaporized like meteors, and their water vapor promptly recondensed as a global, sudden, intense rain. Other ice particles began to revolve around the earth like the icy rings of Saturn; but shortly they became influenced by the earth's geomagnetic field, which was strengthened by the flyby condition. The ice in rings, redeployed by the geomagnetic field, gradually and slowly settled in over the earth's magnetic polar areas. This may well have occurred in a period of 30 to 50 days. Hence the ice age was sudden; and its source of frozen waters was not evaporated ocean water, its source was ice from the distant realms of the solar system, where icy comets are occasionally observed today.[37,38]

Trapping of Infra-Red Radiation, and CO_2

The earth receives the sun's radiation in a wide variety of wave-lengths from the very short X-rays and ultraviolet rays, to medium wave-length perceived by the human eye, (3000 to 8000 Angstroms) to the longer wave-lengths of infra-red and radio. The earth also radiates heat into deep space, in order to maintain a balance. But the heat that the earth re-radiates is in the deep (i.e., long) infra-red spectrum.

This is precisely where carbon dioxide is remarkably efficient at radiation capture. Thus a ½% (5000 ppM) richness of CO_2 in the atmosphere would capture much of the reradiation from the earth's surface continents and oceans. This characteristic of CO_2 is the basis for the earth's ancient greenhouse effect, whereby the

earth's climate was moderated from pole to pole, and the polar areas were both frost-free and humid.

A fossil forest 100 miles from the South Pole, which Byrd discovered in 1933, suggests this. So also do fossil redwood trees found in Alaska, Iceland, Spitzbergen, Greenland, Siberia and Europe. Redwood trees require a humid climate wherein the daily temperature range is small and the annual temperature range is also small. This is precisely what enriched CO_2 would achieve. In fact, fossil redwoods in Colorado are found having rings three times as far apart as modern California redwoods. Faster growth rates and photosynthesis come to mind. This also reflects an enriched CO_2 in the atmosphere, allowing plants to thrive both from greater CO_2 availability and greater H_2O availability. Evaporation rates were much lower at that time, and the effect of nocturnal dewpoint probably was profound.

A Glimpse Into the 21st Century

Perhaps laboratory testing of animals under appropriate conditions will indicate that indeed enriched CO_2 will result in delayed sexual/skeletal maturation and enhanced size. Perhaps similar experimentation will produce artificially extended lifespans for cats, mice, lemmings or some other appropriate test animal.

What kind of testing should be considered? Among the testing should be the following:

1. Differing levels of CO_2 including hypocapnia, control and hypercapnia atmospheres. An ideal mix would include 100 and 200 ppM (hypocapnia testing), 330 ppM (the control) and 500 ppM, 1000 ppM, 2000 ppM, 4000 ppM, 8000 ppM, 16,000 ppM and 32,000 ppM or similar ranges.
2. Differing types of animals should be considered for testing including mammals, insects (arthropods), mollusks, reptiles, birds and fish. Perhaps a komodo dragon would revert to the ancient dinosaur dimension under appropriate conditions, and wouldn't that by itself make a zoo famous?
3. A hypercapnic zoo, while admittedly expensive, would be an international center of scientific as well as public interest.

If testing results, carefully planned, monitored and recorded, would prove that man's lifespan under conditions of 500 ppM to 900 ppM could be extended like Job's to 120 years, or even 210 years, there would be an immediate demand of industry for practical application to such theoretical scientific achievement.

Hypercapnic bedrooms, at first, then hypercapnic homes, office buildings and cars would have a prompt and massive demand. Architecture for the 21st century, and especially the air circulation phase of architecture, would be revolutionized, at the least, strongly affected.

Insurance companies writing term life insurance would be good investments. Actuarial tables would be revolutionized when and where hypercapnic environments were installed.

Radical environmentalists who oppose the utilization of coal, natural gas and petroleum might become reversed on this particular issue. Under current conditions, atmospheric CO_2, already risen to 330 ppM, is expected to rise to 385 ppM by the year 2000, by Macha.[39] Keeling and Bacastow expect more.

What would happen if the natural environment (not an artificial environment like a hypercapnic home or office building) could be enriched by intentionally adding CO_2 at rates far above the current experience? There is a snowball effect, however poorly understood. It is a chicken-and-egg proposition. When the atmosphere is enriched in CO_2, it becomes warmer, especially in polar regions. A warmer atmosphere will reduce the cooling of polar waters, which will in the long run increase the average temperature of ocean waters, top to bottom (and not just surface temperatures). A warming of the oceans will cause them to evaporate a portion of their CO_2, which will in turn further add to a greenhouse effect. It could be like a snowball beginning to roll downhill.

In such an event, what would happen to the world's fauna? In the fossil record, mammals mostly were 30% to 40% larger in height/length than in the contemporary scene. But with birds, they were in many cases 3 to 6 times larger than contemporary birds. And with reptiles, the 3 to 6 times factor is also suspected. Remember the 51 foot fossil crocodile. Remember the tyrannosaurus, of which the komodo dragon is a miniaturization. One fossil dinosaur recently discovered in Colorado could look over a 5-story building.

And what would happen to the world's flora? Obviously if there were more CO_2 available for photosynthesis, and there were more H_2O available due to a reduced evaporation level, plants would thrive and compete vigorously. Tundras and taigas of Canada, Alaska and Siberia would disappear as forest would replace them. Deserts of Africa, Asia, Australia and the Americas might also experience a rejuvenation, not unlike the climatic scenario gleaned from the Book of Job.

Climatology, paleoclimatology, and futuroclimatology are very complex matters. There is frankly nobody alive today who can predict with confidence what would happen to the wind systems and the rainfall regimes of North Africa or the Gobi Desert. But we will adventurously assert there would be more humidity, more nocturnal dew, less evaporation, reduced wind velocities, reduced daily temperature ranges and reduced seasonal temperature ranges. We also suspect there would be a change in the direction of the prevailing winds.[40]

Close

The subject of ancient longevity and enriched CO_2 is in fact a part or a segment of a vaster and more exciting mosaic of topics. These topics include:

anthropology and Gigantopithecus
atmospheres and ancient CO_2 levels
archaeology and ancient planet observations
Biblical accounts of longevity and vigor
climatology and Hadley cell/Rossby cell circulations
Chinese accounts of ancient gigantism/longevity
Greek accounts of ancient titans and Babylonian longevity stories
greenhouse effects and re-radiation trapping at enriched levels

glaciology and icy ring fragmentation and deposition

laboratory experimentation for hypercapnia and hypocapnia

lakes and interior seas (such as the Dead) and ancient shorelines

medicine and the hypothalamic disregulation theory for aging

medicine, neuro-endocrinology and hypthalamic regulation

oceans and ancient drowned continental shelves

oceans and solubility charts for CO_2, N_2 and O_2

Pleistocene and pre-pleistocene fossil dimensions

photosynthesis and effects of enriched CO_2[41]

carbon-14 dating and adjustments for enriched CO_2[42]

Augustine, some 15 centuries ago, predicted that gigantism (if not longevity also) would be understood by some future age, and wrote with rare insight the following:

> But, as I have said, the bones which are from time to time discovered prove the size of the bodies of the ancients, and will do so to future ages . . . But the length of an antediluvian's life cannot now be proved by any such monumental evidence.[43]

Augustine felt that ancient gigantism and ancient longevity were intertwined. He felt that some future generation would put the pieces all together. When (if ever) will that generation arise?

And if Augustine was a kind of dreamer, so were Isaiah and Ezekiel. The subject was regional climatology, and the new heavens and the new earth in Isaiah's eyes. He forecast a coming age when the desert would blossom as the rose, and when the parched ground would become a spring and indeed, a time when mankind would tend to outlive his furniture (Isaiah 35:1, 2, 65:20).

And Ezekiel forecast a coming day when the orchards of Palestine would be ubiquitous, and there would be so much fresh water that the Dead Sea would become enfreshened. And even more amazing and exciting, that dreamer maintained that an enfreshened "Dead" Sea, more of an Edenic Sea, would be a channel or waterway for anadramous (migratory) fish, such as Pacific Northwest salmon, migrating and returning to their spawning grounds (Ezek. 47:10-11). What dreamers these three were!

References

[1]Patten, Philip, 1978. Protestantism and the rise of science. Available from the author at Pacific Meridian Publishing Co., Seattle.

[2]Weber, Max, 1958. The Protestant ethic and the spirit of capitalism. Trans. Talcott Parsons. Chas. Scribner's Sons, New York P. 249.
"The favourite science of all Puritan, Baptist or Pietist Christianity was thus physics, and next to it all those other natural sciences which used a similar method, especially mathematics. It was hoped from the empirical knowledge of the divine laws of nature to ascend to a grasp of the essence of the world, which on account of the fragmentary nature of the divine revelation, a Calvinistic idea, could never be attained by the method of metaphysical speculation."

[3]Merton, Robert, 1970, Science, technology and society in seventeenth-century England. Howard Fertig, New York.

[4]Needham, Joseph, 1969, The grand titration. Allen and Unwin, London.

[5]When the Royal Society was formed in 1662 in London for the purpose of scientific inquiry, approximately 65% of the founding members were Puritans. Isaac Newton is the greatest example of Puritan scientists who were also interested in theological laws of God. Science followed Newton, and world scientific leadership came to London in the aftermath.

[6]Clark, Robert E.D., 1972. Science and Christianity: a partnership. Pacific Press, Mountain View, California.

[7]Flavius Josephus, The antiquities of the Jews, Chapter 3, pp. 9.
"But let no one upon comparing the lives of the ancients with our lives, and with the few years which we now live, think that what we have said of them is false; . . . and *because their food was then fitter for the prolongation of life*, might well live so great a number of years." (Italics ours.)

[8]Ekdahl, Carl A., and Charles D. Keeling, 1973. Atmospheric carbon dioxide and radiocarbon in the natural carbon cycle: quantitative deductions from records at Mauna Loa Observatory and at the South Pole. U.S. Atomic Energy Commisson. Carbon and the biosphere.
"The concentration of atmospheric CO_2 in the Northern Hemisphere increased by 6.8 ppM from 1959 to 1969, according to a long series of measurements at the Mauna Loa Observatory. Hawaii. In the same period the Southern Hemisphere concentration increased by 6.7 ppM, according to an even longer series of measurements of South Polar air. These increases, when averaged, correspond to 2.34 percent of the presumed preindustrial CO_2 concentration of 290 ppM and imply that approximately 49 percent of the contemporary production of CO_2 from combustion of fossil fuel and kilning of limestone remained airborne."

[9]Patten, Donald W., 1966. The Biblical Flood and the ice epoch. Pacific Meridian Publishing Co., Seattle.

[10]Yuan-Hui Li and Tien-Fung Tsui, 1979. The solubility of CO_2 in water and in sea water. *Journal of Geophysical Research, 2403-2407, 20 June 1979.*

[11]Cross, M. Grant, 1972. Oceanography: a view of the Earth. Prentice-Hall, Englewood Cliffs, New Jersey. P. 195.
"The average temperature of the entire ocean is 3.5° C, in contrast with the average ocean surface temperature of about 17.5° C".

[12]Sokoloff, Louis, 1960. Effects of carbon dioxide on cerebral circulation in normal man. *Anesthesiology.* Volume 21.

[13]Patten, Donald W., and Phillip A. Patten, 1979. A comprehensive theory on aging, gigantism and longevity. *Catastrophism and Ancient History* II(1):13-60 and 65-68. Copies are available from the authors, at Pacific Meridian Publishing Co., Seattle, as long as they last.

[14]Nahas, Gabriel, and Karl E. Schaefer, 1974. Carbon dioxide and metabolic regulation. Springer-Verlag, New York, P. 182.
"Concerning the nervous centers of the brain, CO_2 at concentrations of 5 percent to 7 percent increases the cerebral circulation and the oxygenation of the cortex provides an excitation of the subcortical formation, particularly of *the hypothalamus*, of the reticular activator system, while it depresses, in a general way, the activity of the cerebral cortex . . . On monkeys, the inhalation of 10 percent, 15 percent and 30 percent CO_2 diminished the threshhold of the electrical stimulation of *the hypothalamus* and of the reticular substance." (Italics ours).

[25]We ran a computer search for CO_2 research on newly born animals in July 1979, for the last 5 years of scientific research at the University of Washington Health Sciences Library. Of the many experiments done with CO_2 on man and various animals, we could find no experimentation recorded on the issue that concerned us, which is long term exposure to enriched CO_2 for newly born, or newly hatched animals. Further, one researcher indicated that to his knowledge this kind of CO_2 experimentation had never been done. This is a slightly stronger statement than saying we found nothing. We may have missed something, either beyond the last 5 years, or in another language than English. The kind of experimentation we would like to see is described in more detail in our essay cited in reference 13, pp. 57-60.

[16]Marvin Arnold Luckerman is a Docent at the Skirball Museum of Hebrew Union College, Los Angeles and he is also executive editor of *Catastrophism and Ancient History.*

[17]Some scholars suspect that it is from Eber that the term "Hebrew" was derived.

[18]*The Book of Jasher.* New York: Hermon Press, 1972. Chapter VI vs. 19b and 20, p. 16. This is not the Book of Jasher mentioned in the Book of Joshua.

[19]Ginzberg, Louis, 1978. The lengends of the Jews, Vol. 1. Philadelphia: Jewish Publication Society of America, p. 172.

[20]To the extent that Figure 1 describing the decline in atmospheric CO_2 is true, that is to the extent that the assumptions and the conclu-

sions are good therein, this figure indicates that atmospheric CO_2 was dropping during Peleg's 239 years, and during Joktan's parallel lifetime, from 3100 ppM down to 1600 ppM. And the decline continued after their deaths though at an even slower rate. This was the 5th post-flood generation.

[21]According to Figure 1, atmospheric CO_2 was abating from approximately 2000 ppM down to 1500 ppM. A strict chronology would dictate that Pelegs' dates from the flood were 101 to 340 and Sarah's dates were 270-397. Their lives overlapped, as did so many of those in the early post-flood generations.

[22]Heilman, Joan Rattner, 1980. Menopause: myths are yielding to new scientific research. *Science Digest* 87(3):66-67.
"The usual age for menopause is between 45 and 55. But about 8 out of every 100 women have it before 40. Five per cent continue menstruating after the age of 53 . . ."

[23]Assuming (1) the hypothalamic disregulation theory for aging is valid, assuming (2) aging occurs more slowly with enriched CO_2, and assuming (3) each woman begins the child-bearing period with precisely 512 ova, or eggs, this leads directly to a suspicion that during Sarah's era, the menstrual period was between 40 and 50 days, probably over 45, compared to the current 28.
This aspect of our theory, like several other aspects such as delayed skeletal maturation, delayed sexual maturation and delayed senescence, should be testable under appropriate laboratory conditions. Results should apply to women as well as to such female mammals as mice, cats, rabbits, etc.

[24]According to Figure 1, the richness in atmospheric CO_2 was dropping during Job's lifetime (1733 B.C.-1523) from approximately 950 ppM down to 600 ppM.

[25]Patten, Donald W., 1973. The long day of Joshua and six other catastrophes. Pacific Meridian Publishing Co., Seattle. Pp. 200-208. A method of dating is developed which involves cyclic astronomical catastrophes for that era.

[26]The Book of Job is a form of drama, and may well have been orginally presented at the theatre. Dramatic presentations and theatre are products of cities and civilization, with actors, writers, prop crews, audience and theatre facility. Talmudic sources sketch some of the travels of Eliphaz, shuttling in and out of Arabia and Egypt. By this time, Eliphaz' first cousin, Joseph, was premier of Egypt.
Egyptian civilization fits the requirements for theatre and dramatic presentation. Joseph is seen as having a taste for the dramatic in Genesis 46 and 47. It is herein proposed that Joseph was either the author or the patron of the Book of Job, and Egypt was the locale of the original presentations.

[27]Caleb's approximate dates are 1485 B.C.-?. During his first 85 years, if Figure 1 is correct, atmospheric CO_2 had diminished from about 500 ppM down to 450 ppM. This compares to our pre-industrial level of 280 to 290 ppM and the current (1980) level of 330 ppM. Caleb would seem to be aging at a rate of 30% to 35% more slowly than modern American men; the atmosphere in his era was enriched in CO_2 between 35% and 45% more than the current scene.

[28]Attributed to Caleb as recorded in the Bible, Joshua 14:10-11 is the following example of vigor:
"And now, behold, the Lord hath kept me alive, as he said, these forty and five years, even since the Lord spake this word unto Moses, while the children of Israel wandered in the wilderness: and now, lo, I am this day fourscore and five years old. As yet I am as strong this day as I was in the day that Moses sent me: as my strength was then even so is my strength now, for war, both to go out, and to come in.

[29]Moses (*circa* 1525-1405 B.C.) lived to be 120, as compared to Joshua's 110. Moses was in approximately the 19th generation after the flood; Joshua in the 20th. During his lifetime Figure 1 suggests atmospheric CO_2 dropped from about 600 ppM down to 450 ppM. Ages and lifespans were continuing to decline, although the rate was flattening.

[30]Josephus, *loc. cit.*

[31]*Ibid.*

[32]St. Augustine, The City of God. Book XV, Chapter IX.

[33]Weidenreich, Franz. 1944. Giant early man from Java and South China. *Anthropological Papers of the American Museum of Natural History.* Volume 40.
p. 12. "The latest finds in Java also prove that the pygmian types cannot be considered as immediate progenitors of modern man. On the contrary, the newest discoveries reveal that the most primitive hominids now known were gigantic forms which surpassed all anthropoids and hominids, living and fossil, in size and robustness of mandibles and teeth.
p. 108. The following list is given for the sizes of mandibles from Gigantopithecus, clearly a hominid in Weidenreich's view, down to modern man.

Fossil Man	Height of the Mandible Root
Gigantopithecus	23.7mm
Meganthropus	20.6mm
Pithecanthropus	15.0mm
Sinanthropus	15.5 mm
Heidelberg Man	14.5mm
Modern Man	12.9mm

"The Gigantopithecus mandible is, therefore, 75 per cent higher and 100 per cent thicker than the average mandible for modern man."
Weindenreich viewed these fossil men as being dated within the traditionally-accepted evolutionary framework, over the last 100,000 years. We, as catastrophists, and not as uniformitarians, insist this traditional time framework needs severe condensing or collapsing.
Weidenreich did question the evolutionary premise of that time that modern man arose from smaller forms. And he did question an additional premise that modern man arose from inner Asia and migrated from a nuclear region outward into the periphery of Asia.

[34]Atlas of Israel, 1970. Elsevier, Amsterdam, Section IV.

[35]*Ibid.*

[36]Kang-chih Chang, 1977. The archaeology of ancient China. Yale University Press, New Haven, Pp. 32-34.
"The decline of the moist climatic conditions in North China was accompanied by the disappearance of a thick vegetational cover in areas that are now barren and semiarid, as indicated by a black-earth horizon at some localities in the north . . .
This black-earth layer, marking the transition from the semiarid loess stage of the terminal Pleistocene to the semiarid condition of the present day, probably represents an ancient forest cover. The existence of a thick forest in the river basins of North China and on the Manchurian plains is further indicated by such cultural remains from prehistoric sites as an abundance of charcoal and woodworking implements (ax, adz, chisel, etc.), and by the frequency of bones of wild game. Some of these bones are definitely from forest-dwelling animals such as tigers and deer.
Of even greater importance is the fact that there were, in the woods of that time, certain faunal and floral forms indicating a climate warmer than that of present-day North China. At the Upper Case of Chou-d'outein, which dates from the terminal Pleistocene, there appeared such warm-climate species as *Cynailurus* cf. *Jabatus* and *Paguma larvata*. According to the reports of some early post-glacial geological deposits and Neolithic and early Bronze Age archeological sites, there is evidence of the following "warm" species:

Bamboo rat	Water buffalo	Squirrel
Elephant	Water deer	Warmth-loving
Rhinoceros	Pere David's deer	mollusks
Bison	Menzies' deer	Rice
Tapir	Porcupine	Bamboo

[37]Reference 9, chapter VI. The flood/ice age is viewed as being sudden (coming in a day), short (ten to fifty weeks), recent (circa 2500 B.C.), tidal (including a fly-by by a planet as well as an icy fragmentation), and astronomical.

[38]*Op. cit.*, Vol. I. p. 126.
That the flood was an astronomical catastrophe is attested in Talmudic material. That it was a complex astronomical catastrophe involving not one but two planetary bodies is also attested in Talmudic material. If such is to be taken in any literal sense, it would suggest a binary system intertangled with the Earth-moon system. The account reads as follows:
"The flood was produced by a union of the male waters, which are above the firmament, and the female waters issuing from the earth. The upper waters rushed through the space left when God removed *two stars* out of the constellation Pleiades.
Afterward, to put a stop to the flood, God had to transfer *two stars* from the constellation of the Bear to the constellation of the Pleiades . . . There were other changes among the celestial spheres during the year of the flood." (Italics ours.)
The upper waters are believed to be the vaporization of meteoritic ice entering the earth's atmosphere, part of the fragmentation of an icy visitor. The lower waters are the earth's oceans in heavy tidal surges.

[39]Macha, Lester, "Prediction of CO_2 in the Atmosphere", *Carbon and the Biosphere.* pp. 25-26. He reports:
"When this fossil-fuel CO_2 is added to the atmosphere via the model, we obtain a prediction of the changes in CO_2 content from 1860 to 2000. This prediction appears in Fig. 4, using the Mauna Loa con-

centration of about 322 ppM in 1970 as the base. The concentration of CO_2 will be about 385 ppM in the year 2000 and was about 290 ppM at the beginning of the industrial area (*sic*).

In the same volume, p. 86, Bacastow and Keeling suggest something considerably more radical. "On the assumption that industrial CO_2 production continues to increase at the rate of the past 20 years and that the ultimate increase in biomass of the land biota is no more than twice the present biomass, the atmospheric CO_2 concentration will reach a value six to eight times the preindustrial value in 100 years.

[40]Fermor, John H., 1978. Paleoclimatology and infra-red radiation traps: Earth's antediluvian climate. *Symposium on Creation VI*, pp. 15-27. Pacific Meridian Publishing CO., Seattle.

There would be a disintegration of what is known as Rossby cell circulation for planetary wind systems. This applies especially to the midlatitudes where westerly wind systems prevail, and bring as the case may be, rains or lack thereof.

The Rossby cell which predominates above the Tropics of Cancer and Capricorn would be replaced by a Hadley cell circulation. This system today is typical of the tropics, and is characterized by trade winds, which are easterly and more gentle than the typical midlatitude wind system which is westerly and more blustery.

A Hadley- type cell circulation for winds would extend from the equator to both poles. This is our analysis of climatic change.

[41]When the atmospheric CO_2 concentration was increased by 27% (from 315 ppM to 400 ppM), there was an increase of 7 to 7% in net photosynthesis using the partial stomatal closure model. Simulations of plants that do not close stomata in response to CO_2 gave a 21% increase. Furthermore, increases in diffuse radiation which may accompany climatic changes often gave larger predicted net photosynthesis rates. See Ekdahl and Keeling, "Atmospheric Carbon Dioxide and Radiocarbon", *Carbon and the Biosphere*.

[42]Carbon-14 dating scenarios require an adjustment to be made for the recent industrial enriching of CO_2 in the atmosphere; otherwise there would be a built-in error. This adjustment is known as the Suess effect. The Suess effect also needs analysis and application for the era prior to 1000 B.C. when, if Figure 1 is a reasonable approximation, the ratio of C-14 to C-12 was also diluted, and very much diluted.

[43]St. Augustine, *loc. cit.*

LANGUAGE WAS CREATED, NOT EVOLVED

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During the preparation of a graduate thesis in the area of comparative linguistics, the author found that practically all linguistic theory is based on the evolutionary hypothesis. But there is no sound reason for basing it thus; it is merely a presuppositon. The Biblical teaching, that language was brought into being fully developed at the Creation, and that it was miraculously diversified at the time of the Tower of Babel, is in better accord with the facts.

Historically, the controversy between the creationist and the evolutionist explanation of origins has focused in the biological and geological realms of science. This is understandable, since it is here that the two theories come into the sharpest contrast, and it is here that the interpretation of the data has been most disputed. As a result, however, other areas also affected by the differing presuppositions of the two theories have been neglected, and some virtually ignored. One such area would seem to be that of linguistics.

For most people, language is a given, something taken for granted. To a certain extent, this is not invalid, since one of the first rules a beginning language student must learn is not to ask why a language does something, but to accept the arbitrariness of it, and to learn it as it is. Even in one's native language, 'rules of grammar' are but a systematic observation of how specific groups of fluent speakers of that language handle the normal exigencies of verbal expression.

Yet, for all of the 'rules' (at times to the consternation of grammarians), language is not a constant. It changes through both temporal and geographical dislocation. It does not take much reflection to observe how rapidly and drastically it can change. The literary specimens of *Beowulf* and Chaucer contrasted with modern English serve as excellent examples with the English language. Perhaps less dramatic, but equally clear are the works of Shakespeare or even the King James translation of the Bible. Even more recent is the development of a technical 'jargon' during the technological explosion of the past several decades, much of which has been assimilated into general usage.

It has not been questioned, however, whether or not this observed change is 'evolution.' Of course, someone with evolutionary presuppositions would reply in the affirmative. Unfortunately, there has been either no reply, or merely a tacit acquiescence from the creationists. This silence apparently stems from several factors.

One such factor would seem to be a dichotomy between linguistic and scientific studies. Since linguistic studies fall under the broad category of the 'liberal arts,' while, as noted above, the evolutionary controversy has focused in the 'hard sciences,' it is hardly surprising that there might be a lack of personnel trained in linguistics who were also adequately trained in the overall creation/evolution issue to apply investigative principles in this area. On the other hand, those who are in the heart of the debate normally don't deal with language except in a secondary or practical sense.

A second factor would seem to be the fact that the field of linguistics developed amidst the swelling popularity of the evolutionary hypothesis. Comparative linguistics can be traced no further than Franz Bobb's *On the Conjugation System of Sanskrit Compared With That of the Greek, Latin, Persian, and Germanic Languages*, published in 1816.[1] However, it was not until the second half of the nineteenth century with such men as Saussure and von Humboldt that it became an integrated science.

The discovery that modern languages could be traced back to and could be shown to have developed from earlier languages which may or may not be defunct pro-

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