

CURRENT ISSUES IN CREATION STUDIES

According to the major media, conservative Christianity is outmoded, and new developments in chronology, biology, and cosmology support evolution. Not so! These issues are all live ones, as even non-creationists and non-Christians admit.

ISSUE #1: ATTEMPTS TO DISCREDIT FUNDAMENTALISM HAVE FAILED.

Historically, a conservative or "fundamentalist" Christianity has been the main voice for recent special creation and the main buttress against evolution. Despite attempts to associate fundamentalism with violent versions of Islam and Judaism, unbelievers recognize that biblical Christianity is fundamentalist.

Gerd Lundemann, liberal theologian and professor at Gottingen University, declared that he is an atheist and that liberal Protestant theologians are really "closet atheists." He said, "I don't think that Christians know what they mean when they proclaim Jesus as lord [sic] of the World. That is a massive claim. If you took that seriously, you would probably have to be a fundamentalist."¹ In other words according to Lundemann, fundamentalism -- far from being outmoded -- is consistent with what Christians say they believe about the Lordship of Christ.

Glorifying God means praising Him for Who He really is. When we open prayer by praising God for "Who You are," do we think about what we are saying? Who is God? Genesis 1 presents Him as the Creator Who created by His spoken word alone, not by natural processes. Christians who claim that God needed to resort to a form of evolution to "create" diminish the power of God in their minds.

Many outside the household of faith have chosen not to believe the Bible, resulting in the displacement of fundamentalism by evolution. One effect of evolution has been an explosion of activity in "higher critical" studies, in which the Bible is merely another man-made, error-filled book.

One historian has summarized this process of displacement: "If the biologists, the geologists, the astronomers, the anthropologists had not been at work, I venture to think that the higher critics would have been either non-existent or a tiny minority in a world of fundamentalists."² Thus fundamentalism has not been discredited, but merely replaced by beliefs based ultimately on evolutionary philosophy.

ISSUE #2: ATTEMPTS TO CONFIRM EVOLUTIONARY AGES HAVE FAILED.

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 [emphasis in original]."³

Ussher put the date of creation at 4004 BC. Eddy is saying that nothing in solar data overturns this date.

There is really no scientific reason that the entire universe could not be viewed as young. As evolutionary cosmologist George Ellis 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."⁴

If it is possible to view the universe as 6000 years old or so, what is keeping many scientists from doing so? Clearly, not scientific data, but evolutionary beliefs.

These evolutionary beliefs include the ideas that (A) many independent evidences show the cosmos to be old; (B) radiometric dating shows the earth is old; (C) radiometric dates are based on scientific evidence; and (D) little or no evidence exists that the creation days were literal or recent. Non-creationist non-Christians have questioned these beliefs.

A. EVOLUTIONARY AGES ARE BASED ON THE PRESUMED AGE OF THE EARTH.

This is generally true. Tracing the rationale for virtually any evolutionary age leads back to the assumption that the earth is old. For example, the sun is claimed to be old because the earth is old. Solar scientist Arthur Eddington wrote, "On such an important question [as the age of the sun] we should not like to put implicit trust in [astronomical arguments] alone, and we turn to the sister sciences for other and perhaps more conclusive evidence. . . . The age of the older rocks [of the earth] is found to be about 1,200 million years . . . The sun, of course, must be very much older than the earth and its rocks."⁵

Two generations ago, science popularizer George Gamow described the same dependence of solar dating on the evolutionary age of the earth: "Our sun is now only about 3 or 4 billion years old . . ." And the reason for this age? - "... since the estimated age of our earth is of that order of magnitude."⁶

More recently, astronomer John Fix claimed: "Geologists have found rocks 3.5 billion years old that contain fossils of marine organisms. These discoveries clearly demonstrate that the Sun has warmed the Earth for at least 3.5 billion years and probably for as long as the Earth has existed."⁷

B. EARTH'S OLD AGE IS BASED ON ARBITRARY RADIOMETRIC ASSUMPTIONS.

Richard Milton 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":⁸

"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 [emphasis in original]."⁹

C. EARTH'S OLD AGE WAS SET BY CONSENSUS, NOT BY RADIOMETRIC DATING.

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";¹⁰ "I wonder how many of us realize that the time scale was frozen in essentially its present form by 1840";¹¹ "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."¹²

D. THERE IS EVIDENCE THE DAYS OF CREATION WERE LITERAL AND RECENT.

Evolutionist Eviatar Zerubavel 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."¹³ Zerubavel 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."¹⁴ In fact, the seven-day week is not related to any celestial phenomena. Astronomer Duncan Steele 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."¹⁵ Zerubavel speaks of the week as dissociated from nature.¹⁶ Indeed, 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."¹⁷ The straightforward explanation is that the world began only a few thousand years ago, not scores of thousands, let alone millions or billions.

ISSUE #3: EVOLUTION IS SHIFTING AWAY FROM DARWINISM.

Modern evolution is changing. Scientists recognize that even with long ages evolution is untenable. They are rejecting Darwinism -- evolution by mutations assisted by natural selection -- realizing that neither mutations nor natural selection can explain evolution. "Anti-Darwinians" are claiming that "design requires a designer." Biblical creationists rejoice at this trend, but the rejoicing is premature. For instance, Michael Behe, in his otherwise excellent anti-Darwinian book *Darwin's Black Box*, refuses to say who the Designer is.¹⁸ This leaves the role of Designer an empty one, to be filled possibly by a New Age Hindu-type of "force."¹⁹

Other evolutionists, seeing the hopelessness of atheistic Darwinism, are converting to Hindu-style evolution, which has a designer "force", coexisting life-forms (e.g., dinosaurs living with man), and intelligent (not primitive)

ancient man, and which agrees with Biblical creationists that data disagreeable to Darwinism have been suppressed. Unwary Christians see these positions as a return to biblical creation and as uniquely biblical, but they are not. Hinduism believes them all.²⁰ Indeed, a major New Age magazine promotes Noah's ark as possibly real, yet also promotes UFO's, remote viewing, the kabbalistic "Bible code," and the wisdom of the (Hindu-like) ante-diluvian Atlanteans.²¹

But there is one belief unique to Biblical creation -- the teaching of "recent creation" and a young earth.²² Christian parents and educators need to teach the whole truth about Biblical creation, including young age. Some Christians claim that the age of creation is irrelevant,²³ but without young age, we have a version of creation compatible with Hinduism.²⁴ Neither is it sufficient to teach merely "intelligent design" by an undefined "god" or "force."

Darwinism is a kind of "half-way house" transitioning between the theistic creation popular before Darwin, and the pantheistic evolution which our culture is slowly approaching. As much as the intelligent design (ID) theorists should be admired for their work, there are New Age influences, more powerful than they appear to perceive, that may eventually take the ID movement in directions they don't intend.

ISSUE #4: ATTEMPTS TO CONFIRM BASIC COSMIC EVOLUTION HAVE FAILED.

Years ago Christian accommodationists accepted biological evolution as a matter of course. Many still do, but increasingly there is a tendency to reject biological evolution as flawed yet to insist that solar, stellar, or cosmic evolution is well grounded in scientific fact. All of these start with the presupposition of a Big Bang, a universal explosion some 14 billion years ago, followed by nucleosynthesis. Nucleosynthesis theory (NST) postulates progressive build-up of all elements ultimately from primordial hydrogen, a concept negating the biblical teaching that God made a finished creation (Gen. 2:1).

Other than fusion of hydrogen into deuterium (an isotope of helium), scarcely any of the presumed nucleosynthesis reactions have been observed. Thus if the Big Bang had really happened, we should not be here because the entire universe would have only hydrogen and deuterium. With virtually all post-Big Bang nucleosynthesis in question, it is fitting to question the Big Bang as well, since it is perceived as merely the precursor to further nucleosynthesis which in fact never occurred.

As an example of widely believed but never observed nucleosynthesis reactions, we consider the so-called CNO reaction sequence. This is a key series of nuclear reactions involving carbon, nitrogen, and oxygen (the CNO elements), which is believed to have led to production of all elements heavier than boron in stellar interiors over billions of years. The following may seem technical, but our problem as Christian workers is that there are Christian students who believe that these processes have happened. We need to be able to answer them or at least be able to tell them where they can find sound information.

In 1939 Hans Bethe made a proposal of nucleosynthesis by solar fusion. He believed the CNO reactions provided most solar energy.²⁵ However, stellar NST was encountering problems until 1953 when astrophysicist Fred Hoyle, working with William Fowler, successfully predicted a resonance for ^{12}C in the CNO sequence which would allow it to occur under solar conditions.²⁶ Later, the CNO sequence was recognized as less and less likely to occur in the interior of the sun or any normal star.²⁷ Fowler et al.²⁸ then proposed that C, N, and O reactions happen on the surfaces of stars due to local heating by magnetic fields. After this, the CNO reactions were ruled out as significant in solar-type stars.²⁹ C, N, and O reactions have been postulated for very hot, massive stars,³⁰ or supernovae.³¹ Evidence (as opposed to theory) fails to confirm that the CNO sequence occurs significantly anywhere.

Further, reaction rates for C, N, and O reactions are some of the most uncertain quantities in stellar NST.³² This has long been acknowledged.³³ The LUNA Collaboration recently revised the rate for onset of CNO burning down by about 50 percent, thus changing the estimated ages of globular clusters by ~ 1 Gyr,³⁴ and decreasing more the potential significance of CNO reactions in the sun and other stars.

Yet occurrence of CNO reactions is believed to be essential for stellar nucleosynthesis of elements above boron (B).³⁵ CNO burning "is central to the idea that the heavy elements are formed by nuclear processing in stars during their late stages of evolution."³⁶ It has been invoked theoretically to drive helium (He) synthesis³⁷ in He stars³⁸ or novae³⁹ as well as white dwarfs and neutron stars.⁴⁰ In the sun most excited boron ($^8\text{B}^*$) is supposed to decay into two alpha (α) particles at presumed solar core conditions, though the overall reaction $^8\text{B}^* + ^{12}\text{C}$ would hypothetically provide ^{12}C to feed into the CNO sequence.⁴¹ According to NST, conditions in certain other stars allow the triple alpha (3α) process, "the collision of three α -particles"⁴² to form ^{12}C via a ^{12}C resonance;⁴³ the ^{12}C thus synthesized feeds into CNO reactions.

Fowler, Cook et al., and Salpeter⁴⁴ reported what has been characterized as "experimental discovery" of the ^{12}C resonance Hoyle predicted.⁴⁵ This claim has led to the belief that the CNO sequence is based on observation. This belief needs correcting. Despite Hoyle's successful prediction, solar/stellar NST has not answered basic questions about how the elements originated:

"In spite of the past and current research in experimental and theoretical nuclear astrophysics ... Hoyle's grand concept of element synthesis in stars [is not] truly established. ... It is not just a matter of filling in the details. There are puzzles and problems in each part of the cycle which challenge the basic ideas underlying nucleosynthesis in stars."⁴⁶

^{12}C synthesis with Hoyle's predicted resonance has not been observed; the actual "experimental discovery" was of ^{12}B decaying to an excited ^{12}C state ($^{12}\text{C}^*$), followed by decay to three particles.⁴⁷ Thus decay into 3α was observed, not the inverse 3α process; "by reciprocity [^{12}C] could be formed from 3α ,"⁴⁸ but the required three-body process is problematic.⁴⁹ In fact, the inverses of three-body decays "cannot be observed, because three particles must be brought together."⁵⁰

Thus formation of 3α by decay is irrelevant to putative ^{12}C synthesis, and the process leading to ^{12}C remains

unobserved. Confusing decay processes with putative synthesis is endemic in conventional astronomy.⁵¹ It may be objected that reciprocity guarantees occurrence of the 3α process, but in fact the very mechanism of ^{12}C synthesis is disputed.⁵² There may not be a 3α interaction: "Despite the long history of investigations it is yet unclear to what extent the three-body picture accounts for the real [process]. . ."⁵³

Lack of cosmic nucleosynthesis leaves the Big Bang as a precedent without a conclusion. With virtually all NST being imaginary, it would appear reasonable to view the Big Bang as imaginary, too.

Notes

- 1 Gerd Lundemann, quoted in Moody Adams, *How the Clinton Clergy Corrupted a President*, Olive Press, 1999, pp. 193-194.
- 2 F.M. Powicke, *Modern Historians and the Study of History: Essays and Papers*, Odhams Press, London, 1955, p. 228.
- 3 Raphael G. Kazmann, "It's About Time: 4.5 Billion Years," *Geotimes*, Vol. 23 no. 9, 1978, p. 18.
- 4 George F.R. Ellis, "Cosmology and Verifiability," *Quarterly Journal of the Royal Astronomical Society*, Vol. 16, 1975, p. 246.
- 5 A.S. Eddington, *Stars and Atoms*, Macmillan, 1929, p. 96.
- 6 George Gamow, *One, Two, Three ... Infinity*, Mentor, 1953, p. 301.
- 7 John Fix, *Astronomy*, WCB/McGraw-Hill, 1999, p. 386.
- 8 Richard Milton, *Shattering the Myths of Darwinism*, Park Street Press, 1997, p. 49. **9** *ibid.*, p. 51.
- 10 Stephen Rowland, "A New Shirt for Carl," *Science* 83, Vol.4, May 1983, p. 80.
- 11 Edmund M. Speiker, "Mountain-Building and the Nature of the Geologic Time-Scale," *Bulletin of the American Association of Petroleum Geologists*, Vol. 40, August 1956, p. 1803.
- 12 G.G. Simpson, *Fossils and the History of Life*, Scientific American Library, 1983, p. 58.
- 13 Eviatar Zerubavel, *The Seven Day Circle: The History and Meaning of the Week*, Free Press, 1985, p. 6. **14***ibid.*, p. 9.
- 15 Duncan Steele, *Marking Time*, Wiley, 2000, p. 73.
- 16 Zerubavel, *op. cit.*, p. 11.
- 17 Steele, *op. cit.*, pp. 135, 40. Steele is in fact an atheist (p. 111) with no interest in showing that the universe is young.
- 18 M. Behe, *Darwin's Black Box*, Free Press, 1996. Behe states on p. 196: "Inferences to design do not require that we have a candidate for the role of designer." On the next page, Behe says again, "The conclusion that something was designed can be made quite independently of knowledge of the designer. ... The inference to design can be held with all the firmness that is possible in this world, without knowing anything about the designer."
- While such statements contain an element of truth, Biblical creation requires that we affirm with the apostle John that the God of the Bible is the Designer (John 1:1-3). Behe elsewhere claims that belief in a designer does not require any other belief consistent with Biblical creation, such as recent creation (p. 227): "The belief that the designer had to have made life recently ... is not a part of intelligent-design theory" [emphasis his].
- 19 Besides Behe's book, others have written anti-Darwinian books in recent decades. A sampling includes M. Denton (*Evolution: A Theory in Crisis*, Adler & Adler, 1985); W Fix (*The Bone Peddlers: Selling Evolution*, Macmillan, 1984); and M. Cremo and R. Thompson (*Forbidden Archeology*, Bhaktivedanta Institute, 1993). These authors span a wide spectrum of religious beliefs. Behe is a Catholic, Denton an agnostic, Fix a pantheist, and Cremo and Thompson converts to Hinduism. All of them say that Darwinism is wrong, but none of them gives credit to God for designing His creation. Intelligent-design theory without a return to God is not Biblical creation. See H. Morris, "Neocreationism," *Acts & Facts*, February 1998, pp. 1-4.

20 Hindu beliefs about origins often sound like Biblical creation, as Cremona notes in *Forbidden Archeology's Impact*: (1) On the coexistence of life-forms, p. 463: "What we see is a pattern of co-existence, rather than evolution ... just as today we see that human beings of various levels of civilization and culture co-exist with apes and monkeys." (2) On the high intelligence of ancient man, pp. 464-465: "If you were to predict what archaeologists might find ... they would tend to find a ... mixture of anatomically modern human fossils ... crude stone tools, [and] articles indicative of a higher level of culture ..." (3) On the suppression of data disagreeable to Darwinism, p. 51: "Orthodox scientists have often employed silence as the most effective way of responding to evidence that challenges an established doctrine."

An end sheet in *Forbidden Archeology's Impact* which advertises another book published by the Bhaktivedanta Institute says, "It documents hundreds of anomalies found in the archeological record that contradict the prevailing theory and shows how this massive amount of evidence was systematically 'filtered' out. ... You can then judge for yourself how objective the scientific community is in its pursuit of knowledge!"

Biblical creationists would find much to agree with here. Yet Cremona says of himself (pp. 22, 23) that "I am an agent of Gaudiya Vaishnavism [a large Hindu sect with centers worldwide] ... with an assigned project of [challenging] some fundamental concepts of Western science." Later (p. 122) he reveals that "*Forbidden Archeology* is designed to demolish the case for [conventional] biological and cultural evolution and to advance the cause of a Vedic alternative [i.e., New Age evolution]."

21 *Atlantis Rising*, September/October, 2004, pp. 42, 35, 19, 38, 32. The connection among these and other apparently disparate beliefs is the Hindu/New Age search for revelation outside the Bible. The New Age sees the ante-diluvians not as wicked (cp. Genesis 6:5), but as valued teachers of revelation now lost, so the ante-diluvian world -- equated with Atlantis -- and associated items such as Noah's ark, are seen as a mine of knowledge to be sought out.

It is significant to compare the emerging New Age acceptance of Noah's ark with the old liberal rejection of it: "An ancient wooden structure high on a mountain in Turkey, even if boat-shaped and five thousand years old, is not automatically to be associated with the biblical Noah [emphasis in original]" (L.R. Bailey, *Where Is Noah's Ark?*, Abingdon, 1978, p. 12).

22 Hinduism believes in billions of years (ibid., pp. 5, 148). Cremona notes that the Hindu time scale agrees with that of traditional Darwinism (ibid., p. 6).

23 Christian author Philip Johnson claims that age is unimportant: "Many people assume that anyone who advocates 'creation' endorses the 'young earth' position and attributes the existence of fossils to Noah's flood. ... Persons who believe that the earth is billions of years old, and that simple forms of life evolved gradually to become more complex forms including humans, are 'creationists' if they believe that a supernatural Creator not only initiated this process but in some meaningful sense controls it in furtherance of a purpose" (P.E. Johnson, *Darwin On Trial*, InterVarsity, 1991, p. 4).

Without intending to, Johnson has here made a statement of key Hindu beliefs about origins, except that in Hinduism, the Creator is not the God of the Bible. Such a statement does not fit biblical creation. Unfortunately, Johnson has been preceded by a long line of Christian academic thought which chooses to belittle Biblical claims of recent creation. For example, scholar Edward J. Young in his otherwise excellent book, *Thy Word Is Truth* (Eerdmans, 1957, pp. 169-170), says, "The long ages of geology may indeed have occurred ... We incline toward the view that the days [of creation] were periods of time longer than twenty-four hours. We do this ... upon exegetical grounds." Yet he nowhere says what these "exegetical grounds" might be.

However, Edward J. Young held a high view of Scripture compared to influential scholars such as Bernard Ramm (*The Christian View of Science and Scripture*, Eerdmans, 1954) and Russell L. Mixer (*Evolution and Christian Thought Today*, Eerdmans, 1959). Ramm and Mixer placed the modern views of "science" (i.e., evolution) before the Bible and no doubt shaped the views of many.

24 This Hindu version of creation has been dubbed "Krishna creationism" in a review of *Forbidden Archeology* by K.L. Feder in *Geoarcheology*, Vol. 9, pp. 337-340; in M.A. Cremona, op. cit., p. 101.

25 J. Bahcall, M. Gonzales-Garcia, and C. Pena-Garay, "If Sterile Neutrinos Exist, How Can One Determine the Total Solar Neutrino Fluxes?," *Physical Review C*, Vol. 66 article no. 035802, 2002, p. 1.

26 G. Wallerstein, I. Iben Jr., P. Parker, A. Boesgaard, G. Hale, A. Champagne, C. Barnes, F. Kappeler, V. Smith, R. Hoffman, F. Timmes, C. Sneden, R. Boyd, B. Meyer, and D. Lambert, "Synthesis of the Elements in Stars -- Forty Years of Progress," *Reviews of Modern Physics*, Vol. 69, 1997, p. 999; Salpeter, E., "Stellar Nucleosynthesis," *Reviews of Modern Physics*, Vol. 71, 1999, p. S220.

27 F. Hoyle, "On Nuclear Reactions Occurring in Very Hot Stars: I - The Synthesis of Elements from Carbon to Nickel," *Astrophysical Journal*, Vol. 1 (supplement), 1954, p. 146.

28 W. Fowler, G. Burbidge, and E. Burbidge, "Nuclear Reactions and Element Synthesis in the Surfaces of Stars," *Astrophysical Journal*, Vol. 2 (supplement), 1955, pp. 167, 180.

29 G. Caughlin, and W. Fowler, "The Mean Lifetimes of Carbon, Nitrogen, and Oxygen Nuclei in the CNO Bi-cycle," *Astrophysical Journal*, Vol. 136, 1962, p. 453.

30 R. Wagoner, W. Fowler, and F. Hoyle, "On the Synthesis of Elements at Very High Temperature," *Astrophysical Journal*, Vol. 148, 1967, p. 3.

31 R. Arendt, E. Dwek, and S. Moseley, "Newly Synthesized Elements and Pristine Dust in the Cassiopeia A Supernova Remnant," *Astrophysical Journal*, Vol. 521, 1999, p. 234.

32 Wallerstein et al., op. cit., p. 999; Salpeter, 1999, op. cit., p. S220.

33 A. Khairozzaman, A., "Screened Triple-Alpha Reaction Rate to Produce Carbon in Stellar Interiors," *Astrophysics and Space Science*, Vol. 95, 1983, p. 179.

34 LUNA Collaboration, "The Bottleneck of CNO Burning and the Age of Globular Clusters," *Astronomy and Astrophysics*, Vol. 420, 2004, pp. 625, 626.

35 W. Fowler, "The Quest for the Origin of the Elements," *Science*, Vol. 226, 1984, p. 922.

36 I. Fushiki, and D. Lamb, "S-Matrix Calculation of the Triple-Alpha Reaction," *Astrophysical Journal*, Vol. 317, 1987, p. 368.

37 E. Salpeter, "Nuclear Reactions in Stars Without Hydrogen," *Astrophysical Journal*, Vol. 115, 1952, p. 326.

38 J. Oke, "Model for a Helium Star of 1 Solar Mass," *Astrophysical Journal*, Vol. 133, 1961, p. 166.

39 A. Cameron, "Pycnonuclear Reactions and Nova Explosions," *Astrophysical Journal*, Vol. 130, 1959, p. 916.

40 S. Schramm, K. Langanke, and S. Koonin, "Pycnonuclear Triple- Fusion Rates," *Astrophysical Journal*, Vol. 397, 1992, p. 579.

41 Salpeter, 1952, op. cit., p. 327. **42** Fushiki and Lamb, op. cit., p. 368.

43 R. Pichler, H. Oberhummer, A. Csoto, and S. Moszkowski, "Three-Alpha Structures in ^{12}C ," *Nuclear Physics*, Vol. 618, 1997, p. 55; Salpeter, 1952, op. cit., p. 326.

44 W. Fowler, "Element-Building Reactions in Stars," *Proceedings of the National Academy of Science*, Vol. 42, 1956, p. 173; C. Cook, W. Fowler, C. Lauritsen, and T. Lauritsen, " B^{12} , C^{12} , and the Red Giants," *Physical Review*, Vol. 107, 1957, p. 508; E. Salpeter, "Nuclear Reactions in Stars: Buildup from Helium," *Physical Review*, Vol. 107, 1957, p. 516.

45 Fushiki and Lamb, op. cit., p. 368. **46** Fowler, 1984, op. cit., p. 934.

47 Cook et al., op. cit., p. 508. **48** Fowler, 1984, op. cit., p. 923.

49 D. Fedorov, and A. Jensen, "The Three-Body Continuum Coulomb Problem and the 3α Structure of ^{12}C ," *Physics Letters B*, Vol. 389, 1996, p. 631.

50 J. McGervey, *Introduction to Modern Physics*, Academic, 1973, p. 517.

51 J. Henry, "Using Care in Defining Evolution As Mere Change in Astronomy and Biology," *Creation Research Society Quarterly*, Vol. 40 no. 2, September 2003, p. 124.

52 S. Hong, and S. Lee, "Alpha Chain Structures of ^{12}C ," *Journal of the Korean Physical Society*, Vol. 35, 1999, p. 46.

53 Fedorov and Jensen, op. cit., p. 631.