EARTH'S YOUNG MAGNETIC AGE: AN ANSWER TO DALRYMPLE

THOMAS G. BARNES*

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Abstract

Dalrymple's attack on the decay of the earth's magnetic field and the resulting young earth concept is found to be flawed.

Desperation of the Evolutionists

G. Brent Dalrymple, research geologist with the U.S. Geological Survey, is spearheading the American Civil Liberties Union all-out attack upon the publications of creation scientists. He acknowledges review assistance from thirteen other noted anti-creationists, such as Carl Sagan, Preston Cloud, and Richard Docll. This is, no doubt, associated with his mission as a technical witness in the ACLU's court efforts to prevent a balanced treatment of origins in the public schools.

Dalrymple's primary concern appears to be with the scientific case that creationist scientists have developed for a young earth-age. That is not surprising because the game is up for evolutionists if the earth is young. This author's publications on the decay of the earth's dipole magnet have been of particular concern to Dalrymple because it is based on rigorous physics and appropriate data. In his article, "Radiometric Dating and the Age of the Earth,"[1] he uses the usual anti-creationist cliche that associates a young earth with "a belief in a flat earth." Working at the same level of intellectuality, the response would be "A hit dog always howls." But creation scientists do not need to resort to ridicule. Their case rests on science itself.

Dalrymple contends that the earth's age can be *accurately* obtained from radiometric dating. However, his own statements illustrate that a multitude of judgments have to be included in radiometric dating.

> Not all rocks have remained closed systems since their formation, some rocks contain daughter isotopes at the time they form, there are instrumental corrections to be made, and not all methods work on all types of rocks under all circumstances. Geologists have learned the circumstances under which each method can be relied on, have developed techniques and categories for circumventing most of the difficulties, and have learned to design experiments so that the data are verifiable. (pp. 3033-3034)

This reminds one of the geology lecturer who, when confronted with a discrepant date, replied: "One must be very careful about which rocks one picks up."

Dalrymple claims that the earth's age has been radiometrically dated to an accuracy of two percent or better.

> How old is the earth? . . . The answer is, between 4.5 and 4.6 billion years. How well do we know the age of the earth? Within about 2% or better. How long have we known the age of the earth? For more than 25 years. (p. 3035)

Dalrymple does not use the oldest radiometric dates on earth rocks, 3.6 to 3.8 billion years. He considers those ages too young. He uses the oldest radiometric dates on moon rocks and claims that it is the earth's age. "The oldest meteorites and moon rocks give radiometric ages between 4.5 and 4.6 billion years." (p. 3035) That is how he got the 4.5 to 4.6 billion year earth age. Where he got the two percent accuracy and 25 years knowledge is not detailed.

Problems with Their Dates

There is a fundamental problem with the aforementioned moon age. It can be shown from celestial mechanics that the moon cannot be 4.5 billion years old. The moon is receding from the earth and would be much farther away if it had been moving away for 4.5 billion years. There is an additional constraint on the time of recession. The moon never was close to the earth. A body the size of the moon would have been ripped apart by the gradient of the tidal forces if the moon had ever been within a distance of about 11,500 miles of the earth, the Roche limit. Celestial mechanics proves that the moon cannot be as old as 4.5 billion years. Using Dalrymple's own claim, that one can date the earth by the date of the moon, it follows that the earth cannot be as old as 4.5 billion years. It has been known for more than 25 years that the earth-moon system cannot be that old. MIT Professor Louis B. Schlichter's celestial mechanics paper (1963) implies that fact: "The time scale of the earth-moon system still presents a major problem."[2]

Once evolutionary geologists "decide" how old something is, they will find a multitude of ways to interpret data to fit that age. None of their means of dating the earth have anything like the credibility of celestial mechanics. So one should not have to waste his time with their manipulative schemes to confirm an erroneous date. When straightforward radiometric dating does not work, the so-called isochron age dating is employed. Dalrymple resorts to isochron dating of meteorites to give support to the age he has assigned to the earth. The problem is the unreliability of isochron dating. Russell Arndts and William Overn have shown that one can use the isochron dating and obtain either an old date or a young date with that method depending on the postulates one uses.[3] Numerous additional problems with isochron dating have been brought to light by Randal Mandock in his Master of Science thesis *Scale Time Versus Geologic Time in Radiosotope Age Determination.*[4]

Decline in Scientific Integrity

Evolutionary doctrine, whether it relates to geology or biology, is fraught with *pretense.* W. R. Thompson, F.R.S., points that out in his scholarly *Introduction* to the centennial edition of Darwin's *Origin of Species.* After documenting a massive amount of pretense, he concludes: "The success of Darwinism was accompanied by a decline in scientific integrity."[5]

That degradation in scientific integrity is evident in censorship of facts that support a young earth age. Not

*Thomas G. Barnes, D.Sc., Professor Emeritus of Physics, University of Texas at El Paso, receives his mail at 2115 N. Kansas St., El Paso, TX 79902.

one article or book ever mentioned *both* Sir Horace Lamb's 1883 theory of the earth's decaying magnetic field and the extensive real time data that confirm it, until my 1971 article.[6] In fact there was very little mention of either that theory or the data except in highly specialized publications, outside the public's view. The reason for this exclusionary practice is that Lamb's theory and the confirming data refute the old earth age, so essential to evolutionary theory.

Dalrymple claims that Lamb's paper did not apply to the earth's magnetic field. Dalrymple quotes Barnes' statement:

> In 1883 Sir Horace Lamb proved theoretically that the Earth's magnetic field could be due to an original event (creation) from which it has been decaying since. . . .

Then Dalrymple states:

> Barnes seriously misrepresents Lamb's work. Lamb's papers are concerned solely with theoretical behavior of electrical currents in a spherical conductor. The earth's magnetic field is not even mentioned by Lamb. Lamb also does not mention either an original event or creation.[7]

Dalrymple is wrong. It appears that he has not read Lamb's paper. Since Lamb's paper is quite complex, he could have at least read the elementary article by J. A. Jacobs in the Society of Exploration Geophysicists' *Mining Geophysics* entitled "The Earth's Magnetic Field."[8] Jacobs is well aware of the fact that Lamb's theory yields a young earth age. He finds no electromagnetic flaw with this theory itself, only with the result, a young earth age. On page 430 Jacobs states:

> H. Lamb showed in 1883 that electric currents generated in a sphere of radius a, electrical conductivity σ and permeability μ, and left to decay freely would be reduced by electric dissipation by Joule heating to e^{-1} of their initial strength in a time not longer than $4\sigma\mu a^2/\pi$. This time is of the order of 10^5 years, whereas the age of the earth is, more than 4×10^9 years.

When the appropriate observational data are applied to Lamb's equation the time constant is about 2000 years, not 10^5 years. But in any case it demolishes the entire theory of evolution.

To refute Dalrymple's claim that Lamb "does not mention an original event or creation," one needs only to go to Lamb's original paper. The following quote is from page 520 of Lamb's 1883 paper.[9] "In paragraph 4 I discuss the case of electric currents *started anyhow* in the sphere and left to themselves." [Italics added] That clearly means a starting event of unknown origin. On page 530 Lamb gave an illustrative calculation of the decay time for the current and associated magnetic field of a conducting sphere the size of the *earth*. Like Jacobs' calculation, it was rough and not based on the observational data now available. But it showed that his theory provided the mechanism for explaining the earth's magnetic dipole field. Had he known the conductivity and radius of the earth's conductive core, he could have accurately computed the decay time from his equation.

Lamb developed the theory, others provided the appropriate historical values of the magnetic dipole moment after years of worldwide measurements and data reduction. Together they provide the only theoretically valid explanation of the earth's dipole magnet and the confirmational data. Only a decrease in scientific integrity must be the answer as to why this *combination* of theory and confirmational data had never been published, or even mentioned in any publication, before this author's 1971 article.

Applying Lamb's Theory

If Dalrymple had established his contention that Lamb did not provide a theoretical solution for the earth's dipole magnet, I would have been happy to accept all of the credit. But, having gone through Lamb's lengthy theoretical derivation and having understood it and seen the potential of that great work, I insist that Lamb be given credit for his original work. However, I have redone the derivation in updated terminology, using a more appropriate system of coordinates, extended the derivation to give additional solutions to properties of the core of the earth, and applied the data to make the applicable evaluations.[10]

The present value of this freely decaying electric current circulating in the core of the earth is about six billion amperes. The rate of consumption of energy is about 800 megawatts. The only source of energy from which that power is drawn is the present energy in the magnetic field. Its energy half-life is about 700 years.

Faith In a Nonexistent Dynamo

It takes real faith in the evolutionary dogma for a geologist to think that this energy drain has been going on for billions of years and that it will continue to do so for billions of years to come. This is particularly true in view of the fact that there has still not been a single scientifically valid theory of a dynamo to generate the current or energy source to run it. The burden of proof is up to the evolutionary geologist.

Like the other evolutionary geologists, Dalrymple clings to the dynamo theory. He imagines this dynamo to be some type of mechanism associated with some kind of motion in the molten core of the earth. Although there have been hundreds of dynamo theories proposed, not one of them has been shown to be scientifically valid. Here are some comments made by Dalrymple in his *Journal of Geological Education* article, "Can the Earth be Dated from the Decay of its Magnetic Field?"[11]

> Barnes criticizes the dynamo theory because of the absence of a definitive solution. . . . Even though there is near universal agreement that a dynamo exists in the earth's core, the exact mechanism . . . is not known. (p. 130)

Because Dalrymple can not really come up with a known energy source to power the hypothetical dynamo, he uses a "scatter-gun" approach.

> At present, scientists do not know which of several sources actually drives the dynamo; in fact, it may be some combination of sources. (p. 131)

Prior to that he stated: "At present it seems that gravitation may be the most plausible source of energy . . ." (p. 131) That is nonsense and completely unsupported. After all these years there is nothing to support the dynamo theory, a necessary link in the doctrine of evolution.

Signal vs Noise

In the language of the engineer, Dalrymple fails to distinguish between the *signal* and the *noise*. The earth's dipole field is the signal. The noise is the superposition of all the other magnetic fields, from whatever magnetic sources. There are literally billions of sources of magnetic noise and ordinarily their location and energy content are not known. For example, magnetic storms may be so intense that transatlantic radio communication is totally disrupted. Magnetic noise is as fickle as the wind.

Dalrymple's failure to distinguish between signal and noise can be seen in his statement:

> Barnes' hypothesis also does not fit the facts. Freely decaying currents cannot explain the existence, configuration, movement, or changes of the nondipole field . . . (p. 130)

Dalrymple does not seem to understand that the nondipole field is the noise, not the signal. The dipole field is the signal. The dipole field is decaying in accordance with known theoretical physics equations. That is the signal which Gauss separated from the noise when he made his historic evaluation in the early 1830's.

Dalrymple objects to Barnes' statement: "As of now there is no physical evidence, seismic or otherwise, that there is any motion within the core." (p. 131) His point is to justify the claims of fluid motion as part of the mechanism for the dynamo. That is not relevant, because no dynamo theory has been shown to be valid with whatever type of motion one might have. However, this demonstrates his failure to understand the nature of magnetic noise, the nondipole field. No one knows the location of the source of that noise. Without knowing the location of the sources of noise one can hardly claim to use noise as evidence of motion in the core. Similarly Dalrymple is in error when he claims that the nondipole field is gaining the energy lost by the dipole field. That is nonsense because the loss of energy in the dipole field goes into heat.

The evolutionary geologists are missing the boat by trying to associate noise, which may be of a regional nature, with the symmetrical dipole field magnet. It is the nonconformities that should be of interest to an exploration geologist or geophysicist if they are interested in finding beds of minerals and the like. The dipole field is the clear signal that represents the central magnet.

Additional Fruits of the Theory

Stanley Stanulonis, in his Master's thesis, *The Mechanism Responsible for the Precession of the Geomagnetic Dipole with Evaluation of the Earth's Core Charge Density and Its Implication*,[12] took the data of the type which Gauss and others have provided for the history of the earth's dipole field. He was able to evaluate the charge density in the core of the earth. He was not dealing with noise. The westward drift of the earth's magnetic dipole field was available in the dipole data. He developed the electromagnetic theory which accounts for this, namely the interaction between the rotating earth's magnetic dipole field and the solar wind. This westward drift of the dipole field is due to a shifting of the electric currents in the core of the earth, not a movement of the massive molten metal in the core. There is a great deal of difference between shifting the position of an electric current and shifting the whole core of the earth. The data employed by Stanulonis are the same basic data which show the decay of the earth's dipole magnetic field. That is the signal not the noise.

Phenomenal Decay Implies Young Age

The basic data substantiating the decay in the earth's dipole magnet are the historic evaluations of its *dipole moment*. The dipole moment is a vector quantity that specifies the state of the magnet, both its strength and its direction. One does not know the state of a magnet unless he knows the dipole moment. Claims to the contrary notwithstanding, the earth's dipole moment can not be accurately evaluated from any amount of rock or archeomagnetic data. One of the most complete tabulations of the historic values of the earth's dipole moment is given in D. Russell Humphreys' paper, "The Creation of the Earth's Magnetic Field."[13] They cover the period from 1829 to 1890. His analysis yields an exponential decay with a decay time constant of 2049 ± 79 years, which is within the error range of this author's 1971 and later publications. Extrapolating the magnetic dipole field back in time, one obtains a maximum earth age of approximately 10,000 years. That is based on the postulate that the earth's magnetic field was never as large as that of a magnetic star.

The present process of a rapidly decaying magnetic dipole field cannot be glossed over. Sidney Chapman emphasized its importance with this statement in his book, *The Earth's Magnetism*:

> When the great scale of the phenomenon is considered, this must seem a remarkably large and rapid secular change, not paralleled for any other worldwide geophysical property.[14]

The present process is readily explained by Lamb's theory of freely decaying electric currents circulating in the core of the earth. In fact the theory predicts what is now observed. The evolutionary geologists have no valid theory to support their hypothetical dynamo, much less a dynamo that would predict this decay process or maintain the dipole field for a few billion years.

Flaws in the Reversal Theory

Dalrymple contends that the dipole magnet has reversed its polarity many times, at irregular intervals, while maintaining approximately the same value of dipole moment through about three billion years. We have already shown that his radiometric method of dating moon rocks and earth rocks is invalid. But there are two additional reasons why his reversal theory is fatally flawed: 1) There is no valid theoretical mechanism to produce a reversal. Physics is against him. 2) The magnetization in rocks is not the kind of data from which one can determine the state of the earth's dipole magnet, neither its direction nor its magnitude.

Scientists know that all of the efforts to come up with a physically plausible reversal mechanism have failed. That is well documented in the literature. For example: C. R. Carrigan and David Gubbins in a lengthy *Scientific American* article, while attempting to justify some type of dynamo theory, acknowledge:

> No one has developed an explanation of why the sign reversals take place. The apparent random reversals of the earth's dipole field have remained inscrutable.[15]

One well-known problem with the rock data is that there can be *self-reversal of the magnetization* in the rock that is independent of the earth's field. Furthermore, there may be local anomalies producing magnetic noise. Richard Doell and Allan Cox, in attempting to defend the reversal hypothesis against the obstacle of self-reversal, state:

> The reversed magnetization of some rocks is now known to be due to a self-reversal mechanism. Moreover, many theoretical self-reversal mechanisms have been proposed . . . However, in order definitely to reject the field-reversal hypothesis it is necessary to show that all reversely magnetized rocks are due to self-reversal. This would be a very difficult task since some of the self-reversable mechanisms are difficult to detect and are not reproducible in the laboratory.[16]

It is interesting to note that these authors attempt to shift the burden of proof to the opponents of the reversal hypothesis, but in so doing they demolish the reliability of the very data upon which they depend.

Still another example of the unreliability of the type of data that is supposed to support the reversals can be seen in this statement by J. A. Jacobs:

> Such results show that one must be cautious about interpreting all reversals as due to a field reversal and the problem of deciding which reversed rocks indicate a reversal of the field may in some cases be extremely difficult. To prove that a reversed rock sample has been magnetized by a reversal of the earth's field, it is necessary to show that it can not have been reversed by a physico-chemical process. This is a virtually impossible task since physical changes may have occurred since the initial magnetization or may occur during certain laboratory tests.[17]

Criteria for a Valid History

To know the history of the earth's dipole magnet one must have accurate evaluations of its magnetic moment. The earth's magnetic moment cannot be measured directly. The process of evaluating the magnetic moment includes: 1) Measurements of the raw data on the magnitude and the direction of the magnetic field strength over an extensive portion of the globe. 2) Knowing the time of each measurement of field strength to an accuracy of about a year, because the field is decaying. 3) Employ extensive data reduction to extract the signal (magnetic moment) from the noise in the raw data.

These conditions have been met in the magnetic moment evaluations employed in the confirmation of the decay theory. Those conditions have never been met in the presumed evaluations from rock or archeomagnetic data.

The lack of credibility of the evolutionary data can be seen in Figure 1. The credible evaluation is the top curve. The meaningless evaluation is the bottom curve. It is the archeomagnetic data for the same period of time. The top curve is obtained from magnetic moment evaluations, such as that made by Gauss. The bottom curve is the first 165 years of the presumed magnetic "history" for the last 8,500 years. These archeomagnetic data are from a Russian paper that was supposed to have included all the available archeomagnetic data over the last 8,500 years.[18] Note that

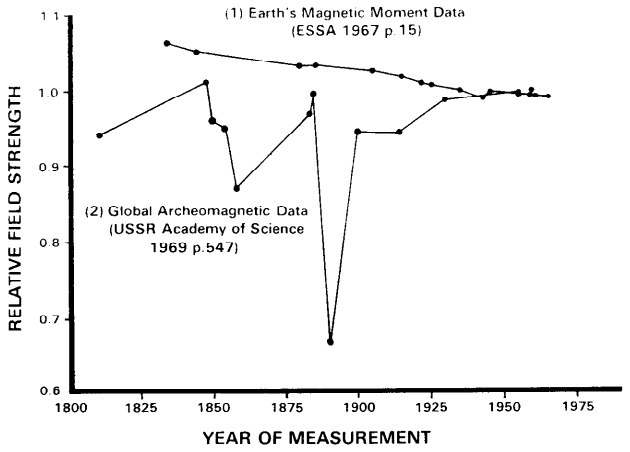

Figure 1. Archeomagnetic data fail to show the decay in the earth's dipole magnet during the period when the decay was known from evaluations of the earth's magnetic moment.

the archeomagnetic data do not show any of the known decay of the state of the magnet. Since those data are meaningless for this 165 years of most recent data, it is nonsense to claim that it is good for 8,500 years.

Independent Check

An independent check on the decay theory has been made by the author.[19] According to the decay theory the only source of energy to perpetuate the earth's dipole magnet is the energy in its magnetic field. As the magnetic field decays it induces the circulating current in the earth's core. The circulating current in the earth's core dissipates energy in the form of heat. The energy transformations are:

Magnetic energy → Electric energy → Heat energy

The author made a confirmational check on his decay theory as follows: 1) The total energy to be lost in heat from now on was evaluated, by integrating the exponential power loss from the present to infinite time. 2) According to the law of conservation of energy, that value of heat energy must equal the present value of magnetic energy. 3) This value of magnetic energy was compared with the magnetic energy in a "standard" reference magnet, a permanent magnet of the same size as the earth's core and having the same magnetic moment. The two values checked to within the accuracy of the equivalence of these dynamic and static magnets.

These two values would not have checked if there were a dynamo running the earth's magnet. It has to be a freely decaying electromagnet of the type to which Lamb's solution applies.

Conclusion

The author's theory of a young magnetic age for the earth is the only theory of the present process in the earth's dipole magnet that is supported by the following facts:

(1) A rigorous mathematical physics solution.
(2) A history of real-time evaluations of the state of the magnet (its magnetic moment).
(3) A clearly identified source of energy (its own magnetic field energy).

(4) A definitive predictive value.
(5) A means of computing its source energy and subjecting that value to an independent check that would falsify the theory if there were no check.

On the other hand, the presumed dynamo theory has no substantive theoretical basis. It has no predictive value. Evolutionary geologists themselves cannot agree on any particular dynamo theory; nor can they agree on any particular source of energy to drive the dynamo if there were one. The presumed reversal mechanism has remained an inscrutable problem. Their presumed age dating from radiometric data is fraught with problems and has to be continually amended to take care of known discrepancies. Their presumed magnetic reversal data is fraught with noise problems.

Realizing that it takes but one proof of a young earth age to refute the whole gamut of evolution, it is no wonder that the doctrinaire evolutionary geologists have found that they must fight with all their might, fair or foul, against all evidences of a young earth-age.

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QUOTE

Assuming that the reader has some knowledge of gnostic thought of the beginning of our era, let us now try to suggest here the theses of the new gnosis. Such a list is nowhere nailed to doors of cathedrals, nor announced in the writings of scholars. The representatives of gnostic thought do not always know or recognize that they are renewing an old tradition; they are most often convinced of having formulated something entirely new. This is the case particularly today when scientists are taking the lead in such a formulation. They believe that the philosophical conclusion they have reached originated from scientific premises according to the logic of their disciplines; it is hard for them to imagine that they have returned to former centuries' wisdom, particularly as this wisdom, in fact a *gnosis*, may prove fecundating for new developments.

1. The first thesis is, albeit unformulated, that the *universe is uncreated.* In spite of the now fashionable "big bang" hypothesis—which, by the way, is no answer to the problem of creation, and in fact reinforces the Great Cycles theory of repeated renewals on a cosmic scale—the firm agnosticism of modern science finds it repugnant to postulate a super-intelligent, personal being as the absolute beginning. Moreover, for all their confusion as to the reality of matter and spirit, the new scientists are inheritors of enough materialism from past ages to assume that matter possesses such potentialities by which it can evolve into an infinite variety of forms. The ultimate question concerning the origins is thus ruled out as "unscientific." As Etienne Gilson has written, and the diagnosis is still valid, scientists prefer to get entangled with a meaningless universe, one whose probability of emerging approaches zero, than to postulate the work of an intelligent agent, God.

2. Matter spiritualizes itself as a result of its own potentialities. This is our reading of the papers presented in Cordoba, and it is also explicitly stated in the works of Teilhard de Chardin. It is of little importance that the latter accepted God as a creator; this creator must have sat back after the initial effort *(deus otiosus)*, and entrusted matter and its built-in mechanism to produce whatever was needed, out of itself. In due course matter brought forth *man* (Teilhard's Darwinism), who then took over the demiurgic role and produced culture and morality. . . .

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