so implies the creation of the moon independently of the notion that its creation might account for the Pacific Ocean being so large. As to the Earth solidifying, that would begin to occur as the gaseous matter rapidly deionized and as the Earth cooled upon moving well away from the sun. As to the processes regulating those atomic transmutations necessary to build the heavy atoms of the Earth's composition, that has to remain a matter of speculation, though such processes could well be activated during the many successive crossings of space domain boundaries over eons of time, possibly hundreds of millions of years, before the Earth assumed its present form. Meanwhile the sun itself would remain immune from such transmutation activity, because its tremendous physical size would, by its strong gravitational pull, keep its hydrogen atoms in close enough contact to remain ionized. Note that the ionization condition, if in accordance with what is outlined in Appendix IV, will preclude direct contact of the protons of adjacent atoms and so make atomic transmutation into heavier atoms less likely.

Moving on, we come now to our next 'Eureka' exclamation as we find the answer to that k=1 or k=2 dilemma. The answer, it seems, depends on whether the astronomical body in question has a spinning aether of larger or smaller radius than the body itself.

The Ionospheric Aether

Upon crossing a domain boundary there is a transition between space and 'anti-space', analogous to the transition between matter and antimatter, meaning a reversal of charge polarity in the aether itself. So our sun with its proton charged positive core, as compensated by a negative charge induced by aether spin and charge displacement to the spherical surface, will, in crossing a domain boundary, suddenly find that the core charge polarity induced by aether spin is reversed. There will then,

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according to whether the aether spin radius lies outside the sun or inside the sun, be an effect as defined by equation (8.14), where k is 1 or 2. This action is depicted in Fig. 8.2 where the full circles represent the bounding contour of the astronomical body and the broken circles the bounding contour of the associated spinning aether.

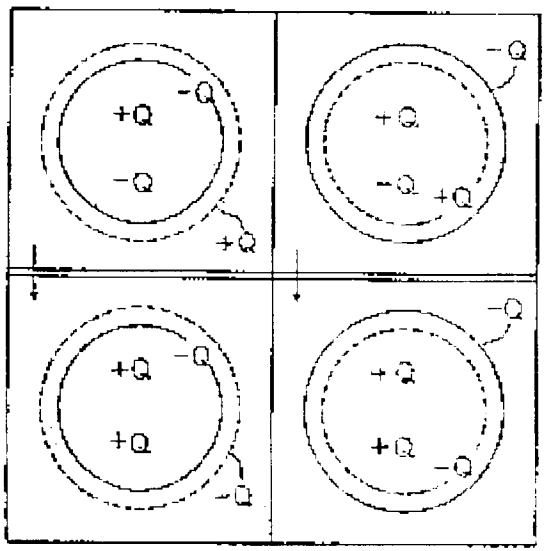


Fig. 8.2

The two alternatives are illustrated in the upper part of Fig. 8.2 and one can see that the electric field effects of the core charge plus aether spin charge cancel in both cases to leave a charge Q, negative in one case and positive in the other, sitting within the outer charge Q of opposite polarity. Remember that we are discussing circumstances that apply in the very early stages of Creation.

When the space domain boundary is crossed the lower part of Fig. 8.2 represents the charge deployment. The core charge Q

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of the body remains as before, but the aether spin, being sustained in direction by angular momentum conservation, involves quons and charge continuum the polarities of which have reversed and so we have a charge 2Q sitting within a negative charge Q at the body surface in one case but 2Q as offset by a negative aether surface charge Q sitting within a negative charge Q at the body surface in the other case. Here is the explanation of how k can be 2 or 1. We can conclude that the sun has, or at least had during the planetary creation phase, an aether spin that was of larger radius than the sun itself, whereas Earth, for which k is 1, had an aether spin bounded within what was effectively its physical surface.

The story unfolding from this is that our sun was created by an onset of gravity accompanied by an inflow of protons ahead of electrons and by an inflow of aether angular momentum. This was a one-off event occasioned by aether structure crystallization which introduced the synchronous dynamic state and allowed gravitons to form and so introduce the action of gravity. Since Creation, our sun has shed much of its initial angular momentum to form planets, but its inherent core charge is maintained by gravity acting on its ionized atoms in a preferential sense focussed on free protons. In its turn, this core charge sustains aether spin at a rate of spin that is unrelated to the actual spin of the matter comprising the sun, but an aether spin which, over time, must reverse in direction to adapt to the normal state where core charge is compensated by a neutralizing charge displacement.

The conditions prevailing for a short period during and after crossing a space domain boundary are therefore exceptional and are in no way representative of what we observe today as our sun moves through space well within the confines of the local space domain.

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As to our Earth, during this initial creation phase it must have been gaseous in form and so of much larger physical size that it is today. As its ionization vanished and heavier matter evolved so that it became consolidated in the form we see today its aether spin would be sustained, not by gravitationally induced core charge, but by its residual aether angular momentum. Aether spin would become the primary factor resulting in electric charge displacement and the Earth would respond by deploying electrons in its metallic and semi-conductor composition and ionic displacement in its oceans along with deployment of free charge in the aether itself. The spin of the quon lattice system sets up radial charge displacement from the spin axis and so a charge system that shares that spin but the counterflow of non-spinning aether charge, as needed to balance linear momentum owing to the cosmic motion of our Earth with its spinning aether provides the action which neutralizes the induced charge electrostatically but not its magnetic effects.

We therefore have the situation where, after the moon had been shed by the Earth, it could, for a short period, induce the charge effect which produced aether spin and imported angular momentum and, thereafter, as it lost its charge induction capability when no longer ionized, leaving the aether already spinning to hold on to whatever angular spin momentum it had acquired. This would keep the Earth's aether spinning in the same direction as the Earth traverses successive domain boundaries in its onward cosmic motion with the solar system, but owing to the charge polarity reversals of the aether as each new space domain is entered, there then needs to be a reversal of the Earth's magnetic moment at each domain boundary crossing. Such a reversal would take effect over a period governed by eddy-current reaction as the currents induced in the Earth retarded the transition, but our expectation then has to be that our space domain theory is open to test by our search for the

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geological fingerprints left by such reversals. This brings us to the final topic of this chapter, geomagnetism.

Geomagnetism

Before we delve too deeply into this question of the Earth's magnetic field, it is appropriate to note that two compensating charge effects are involved in an electrostatic sense, one seated in the Earth's body form and the other seated in the aether spinning within body Earth. Additionally, there is the factor that the aether spin is about an axis that does not share the precession of the Earth's spin. Here may lie the reason why the geomagnetic poles are at latitudes offset from the geographic poles by as much as 17° and why those geomagnetic poles move around the Earth at the 73° latitude in cycles of 960 years duration. In 1659 the magnetic declination at London, England was zero. By 1820 this declination had reached its maximum westerly of 24.5° and it reduced to 11° 52' W by 1933, the expectation being that it will be zero again in the year 2139.

So here you can see that something involved in setting up the Earth's magnetic field is moving within body Earth and changing its spin axis very slowly, a sure sign of something having a very large amount of angular momentum subjected to forces that cause the kind of precession one sees in a spinning top. This has to be a message which says the aether is there spinning within body Earth!

A great deal of effort has been expended by physicists in trying to prove or disprove claims concerning the source of the Earth's magnetic field. Some decry the idea of a magnet sitting in the Earth's core. The reason is that the shape of the Earth's magnetic field does not fit the dipole pattern. Some have argued also that the field cannot arise from an electric charge sharing the Earth's rotation, even allowing for some factor neutralizing its electrostatic action. Their reason is the same, the shape of the

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field as measured at the Earth's surface and in comparison with measurements at depths a few miles below the Earth's surface. None, however, seem to have factored into their analysis the simple fact that a distributed core charge of one polarity accompanied by a compensating surface charge of opposite polarity would combine to determine a magnetic field pattern that fits what is observed.

As to the magnitude of the field, we can calculate the geomagnetic moment involved, noting that whatever the component for the distributed core charge, the surface charge will set up double that in the reverse sense. The net magnetic moment in theory is, therefore, 1/2c times the electric charge velocity moment, or:

$$(1/2c)(2/5)(4\pi\sigma_c/3)R^5\omega \quad \ldots\ldots (8.16)$$

Here, R is the radius enclosing the charge of density σ_c and ω is the angular velocity of its rate of spin.

Since the charge here is induced by aether spin we need to use the equation (8.9) to eliminate the charge density term and give a result dependent only on R and ω plus two constant parameters of the aether. We then obtain:

$$(8\pi/15c)R^5\omega^2(\sigma/\Omega) \quad \ldots\ldots (8.17)$$

which, since σ is e/d^3 and Ω is $c/2r$, gives us our final formula for the magnetic moment induced by aether spin as:

$$(16\pi/15)erR^5\omega^2 d^2c^2 \quad \ldots\ldots (8.18)$$

In this expression er is the Bohr magneton, known from experiment to be 9.27×10^{-21} cgs units, d is 6.37×10^{-11} cm as we know from the evaluation of r/d in chapter 7 and e and c as measured are 4.803×10^{-10} esu and 2.998×10^{10} cm/s, respectively.

Applying this to our Earth's aether, if deemed to spin at the same angular velocity as Earth itself, namely 7.27×10^{-5} rad/s, and if R is 6.45×10^{8} cm, we obtain a magnetic moment of 7.86×10^{25} in cgs emu. Now the corresponding value of the geomagnetic moment as estimated from measurement of the Earth's magnetic

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field is 8.06×10^{25} which is close to our theoretical value. If R were 6.50×10^{8} cm then the magnetic moment in these units would be 8.17×10^{25}.

I conclude from this that the Earth's magnetic field is generated by aether spin and that the aether sphere spinning with body Earth, albeit with its spin axis tilted with respect to that of Earth and there being precession causing the geomagnetic poles to move around the Earth's geographic poles. The Earth's radius is 6.38×10^{8} cm and so its aether sphere extends a little way above the Earth's surface and this may have a role in accounting for the outer ionosphere layer of our upper atmosphere. As to the magnetic action involved, I see the primary induction as that of charge displacement in the aether which is matched by a balancing charge displacement in the matter constituting body Earth, but the latter charge providing the magnetic field and the aether charge having a passive role in that respect.

Such is my theory of geomagnetism, a theory which convinces me that the subject of 'aether spin', whether by entrainment with a rotating material body to so induce an electrically charged condition or by a spin action arising from the prior existence of a charged state, has a potential role in future energy technology.

Note that, whereas we needed to argue that the Earth's aether spin was bounded within the Earth's material radius in its primordial creation state, as evident from the $k = 1$ factor, we find that, upon consolidation and contraction to its ultimate form, it has come within the aether spin boundary. This seems a consistent picture and so, our final task in this chapter 8, is now to show how geomagnetism can tell us something about the space domain pattern on a universal scale.

For the record I can say that discovering the basis of aether spin and obtaining this result for the geomagnetic moment were very early achievements in my theoretical efforts. They date from

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the second half of the 1950s as one can verify by referring to my work entitled: *'The Theory of Gravitation'*, the preface of which is dated 22nd November, 1959. On page 32 of that work, under the heading 'The Calculation of the Geomagnetic Moment', one can see how the same numbers emerge from the same formulae as those introduced above. As there noted the results obtained suggested:

> "... that the Earth's aether terminates at a mean height of about 140 miles above the Earth's surface. This suggests that the ionosphere may be a phenomenon arising at the aether boundary. It should be noted that it could be that the aether boundary is graded and occurs in stages , corresponding to different ionosphere levels. These levels are at mean altitudes of 45, 75, 105 and 155 miles respectively."

There was, in fact, one difference which affected the resulting numerical derivation, in that my analysis in that early work took account of the 23.5 degree tilt between the Earth's spin axis and the axis in space about which it precesses. Charge induction by aether spin is subject to a reducing factor, according to the cosine of any such angle of tilt, because the quon orbits of radius r are about an independent axis in space, which I assume is closer to that about which the planets orbit the sun than to the Earth's spin axis. This was factored into that earlier treatment of the subject, but is omitted here to keep the presentation simple and avoid digression along tracks that are open to debate but do not affect the primary case presented.

The derivation of the geomagnetic moment by such a theory was, of course, enough for me to cry 'Eureka' at the time, nearly 50 years ago, but, as ever, the doctrine of the aether was the bugbear. When opportunity presented itself some ten and

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more years later, I was able to draw my theory to the attention of Sir Edward Bullard, who was a key contributor to the physics of geomagnetism. He had published papers on the theory of the origin of the Earth's magnetic field in terms of differential rotation of parts of the Earth's core and the theory of hydromagnetism that was of interest in the middle of the 20th century [E. C. Bullard et al., Phil. Trans. Roy. Soc., **243A**, 67-92 (1950)]. The only reaction I drew from that contact was his comment that my theory did not explain the magnetic moment of planet Mars.

Inevitably, you see, such contacts lead to one being side-tracked and diverted, with really no scope for recovery that addresses the main issue. Another such example was after my 1969 book: *'Physics without Einstein'* was published and led to a published reviewed by a scientist of the National Physical Laboratory in U.K. My theoretical derivation of the fine structure constant on page 115 of that work had given the result:

$$hc/2\pi e^2 = 137.038$$

in agreement with what was previously of record as its measured value, whereas the latest consensus as to its experimental value had become a figure of 137.036. The tone of the review, though guarded, made me feel that it was thought my way of deriving this number was contrived to give a fit, rather than being good physics. Yet I had on page 111 introduced a section entitled: *'Space Polarization Energy'*, which was evidently a little speculative as to a term which enhanced r·d from its formal 'zero energy' aether structure value of 0.30289 to 0.30292 and a fine structure value of 137.036 requires, according to the formula given by the theory, equation (7.24), that r·d should be 0.302916, which might excuse my 'error' in relying on the approximate value 0.30292. Happily, thanks to the intervention of Dr. D. M. Eagles and his employment at the National Standard Laboratory in Australia Measurement, the necessary fine-tuning of my theory

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owing to discovering a resonance that governed that space polarization energy duly emerged. It led to evaluation of that factor governing N in the decoding exercise introduced in this work and gave the required result for the fine structure constant. As to our final 'Eureka' of this pursuit to fathom the secrets of Creation, it concerns a theme I first wrote about in 1977 by a paper published in a little known periodical named *'Catastrophist Geology'*. It appears in volume **2** at p. 42 and describes space domains and their correlation with geomagnetic field reversals and geological disturbances. Then, in 1980, I discussed the subject again at pp. 168-174 of my book: *'Physics Unified'*. The following text is, for the most part, a replica of the account there presented. The 'Eureka' cry is warranted because, not only does the historical pattern of geomagnetic field reversals tell us that there is a cubic pattern in space dividing domain regions of interchanged charge polarities as between electrons and protons and aether continuum and quons, but it also gives us a measure the dimensions of those domains and the latter matches what we have deduced from the dynamics of the sun's creation.

I hope the reader will agree that, given evidence which shows the Earth's magnetic field has reversed, albeit over a period of a few thousand years owing to retardation as by induction of eddy currents in the Earth's core, and then retained its direction of polarization for a few hundred thousand years before flipping direction again, it is a very difficult proposition to justify by physical theory. One may then begin to think the unimaginable, namely that, for some reason, with the Earth maintaining its direction of rotation owing to its very high inertia, that positive electricity has become negative and negative electricity has become positive. Yet, even then, there will be those who argue that if source of an electrical action reverses polarity and so field direction the sensors indicating that field direction, being electrical themselves, must reverse polarity too

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and so detect no change at all. Either way, however, there is another circumstance that can result in a reversal that would be sensed. This applies if, in moving from one space domain to the next, the quons and gravitons in keeping to the precise rhythm of their dynamic balance, happen to orbit clockwise in one domain and anticlockwise in the adjacent domain. This has the merit of explaining how, on a universal scale, the angular momentum overall can be in balance, as seems likely given that the domain structure condenses from a chaotic state that would have no overall rotary motion.

On this latter basis, the key factor governing geomagnetic field reversal is the sustained direction of spin of the Earth and its entrapped aether, regardless of domain boundary transit. Then, since charge polarity induced by aether spin reverses with the change direction of Ω, we would surely have a geomagnetic field reversal at each domain boundary crossing.

Although it is convenient to assume that the space domains all have the same size so as to fit together well in a cubic pattern, this may not be the case but we will make the assumption nevertheless. If each domain gives birth at Creation to a single star or a binary star pair, then the size of stars ought really to be more uniform than appears. However, much depends upon the energy in surplus in each domain and so available to create matter, those protons and electrons that form hydrogen. More critical, so far as uniformity of domain size is concerned, is the resulting angular momentum acquired by a star at birth.

The key parameter here is that factor S in equation (8.7), the ratio of the angular momentum of a star to its mass. Constant space domain size means that this quantity must be constant, which in turn, for a star which has not shed any planets, means, from equation (8.13), a fixed ratio of mass/radius. However, a likely scenario affecting most distant stars is that there will be planets, in spite of our difficulty in detecting their existence.

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Accordingly, there is little point in trying to compare such data but, for what it is worth, let us take an extreme example of a red giant star. Betelgeuse is said by Jeans [*'The Stars in their Courses'*, Cambridge University Press, p. 92 (1931)] to be about 40 times as massive as the sun and to occupy 25,000,000 times as much volume. The mass/radius parameter is 0.137 compared with the sun and the value of D given by (8.7), the radius dimension of the space domain in which Betelgeuse was created, would on this basis be 0.37 of that applicable to our sun at creation. However, a red giant is believed to be the decaying form of a star, rather than the form it may have had upon initial creation. Since the majority of stars are similar to the sun, we can, therefore, expect a reasonably-representative pattern of geomagnetic field reversals to emerge from the choice of a simple cubic structured simple domain system.

As the reader can see, those who theorize about stars and their creation, the cosmologists, have plenty of scope for research without imagining the Big Bang scenario, but they do need to get a better grasp of the physics which underlies the phenomena we observe here on Earth and within our solar system. Deciphering the secrets which determine the numerical parameters that physicists measure, often with incredible precision, is a pursuit which surely cannot be ignored, given that it can lead us along paths such as we are exploring here in relation to geomagnetic field reversals.

If the domain cube dimension were to be such that its volume is that of a sphere having the radius of 480 light years estimated from the sun's data, or 780 light years as that of a cube matched to the volume of the assumed domain sphere in the earlier calculation, then, at its cosmic speed of the order of 390 km/s, our Earth would cross a domain boundary every 600,000 years or so if moving parallel with a cube side. That U-2 speed measurement was, however, subject to an uncertainty factor of 60

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km/s and so a reversal period of the order of 700,000 years is consistent with the sun's data. In general, however, the motion will be inclined to such an axis and the planes separating domain boundaries will be crossed more frequently than this.

In Fig. 8.3 the hypothetical pattern of reversals due to motion through cubic domain space is shown in a time scale measured in millions of years before the present time. The solar system is imagined to move in a straight line through the domain space over this period of time, though it does move in a slight arc owing to its galactic motion. The inclination of the line with the domain cube axes is chosen deliberately to give results which resemble the observed reversal sequence and the time scale has been matched accordingly. The names assigned to the reversals are those used conventionally to designate these events. There is a reasonably close correlation. The interesting result, however, is that such an erratic pattern of events lends itself to decoding in this way. I believe that this is affirmative support for the domain theory suggested, especially as the size of the domains derived from the empirical data fit is in close accord with that calculated for the sun.

A textbook showing the Earth's magnetic field reversal pattern over the past four million years is one by D. H. Tarling and M. P. Tarling [*'Continental Drift'* Bell, London, pp. 52 and 66 (1971)]. They also comment on the rather perplexing evidence which shows that fossil species have disappeared at times of reversal and new species have appeared shortly thereafter. This implies that the geomagnetic field reversal was accompanied by a rather more traumatic event. Reporting on the documentary evidence of data gleaned from the deep-sea floor of the Indian Ocean, the Science Correspondent of the U.K. newspaper 'The Times' wrote in 1972.

> "..... tiny metallic and glass beads that originated from outer space ..... were fragments from some

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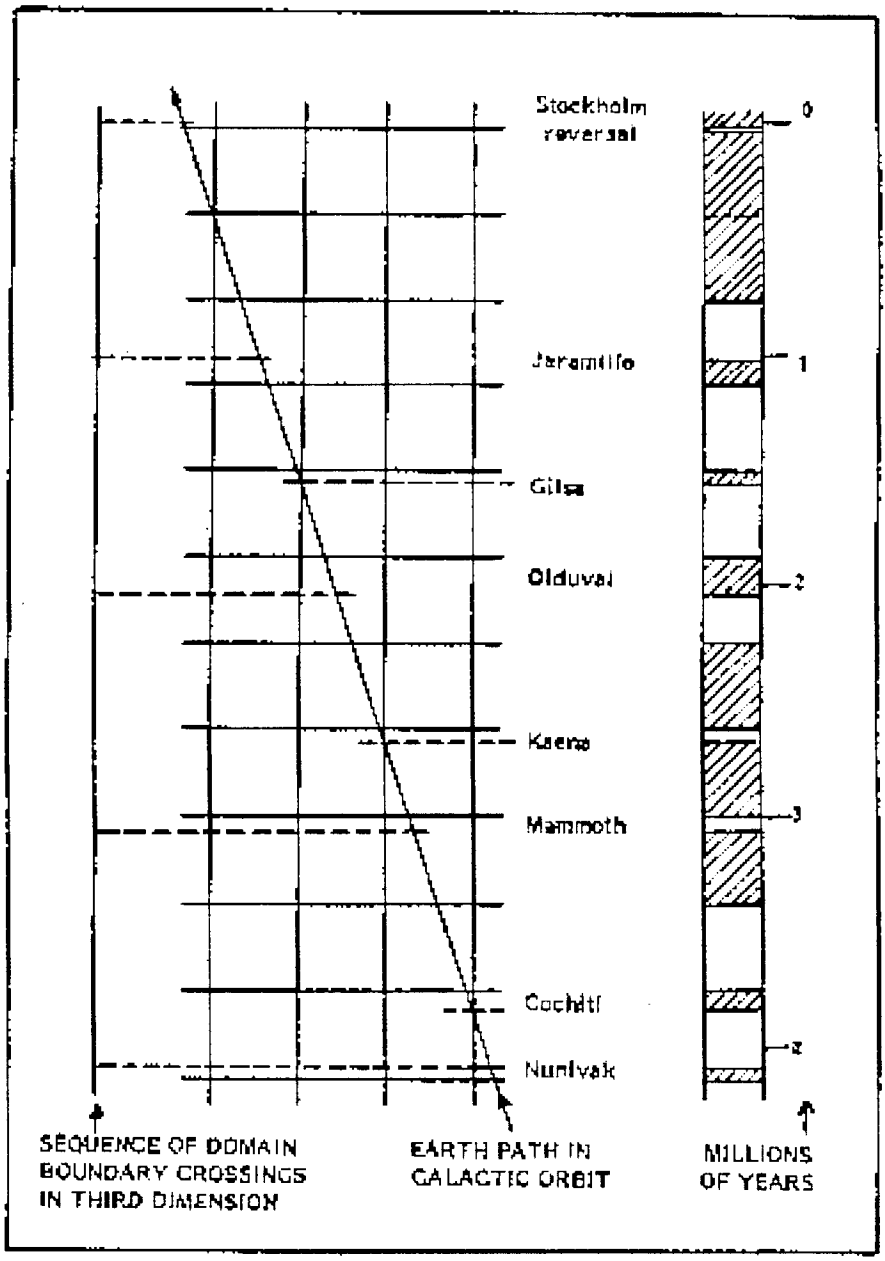


Fig. 8.3

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great cosmic catastrophe that caused molten particles to splash into the upper atmosphere some 700,000 years ago. The shower of debris coincided with the last reversal of the Earth's magnetic field."

The reader will notice that Fig. 8.3 shows a recent reversal of the geomagnetic field. The above report and the Tarling book both suggest that the last reversal was 700,000 years ago. If this were true then another reversal would be imminent on the time scale used in Fig. 8.3. However, since these reports were written, evidence of a reversal about 12,000 years ago, a very short-lived reversal, has emerged. This fits very well with the empirical evidence in Fig. 8.3, which shows a near crossing of a cube domain edge, meaning two reversals in rapid succession. I was unaware of the latest discovery when outlining this domain theory at the end of my book *'Modern Aether Science'*, published early in 1972. The fact that we have had a magnetic reversal in relatively recent times is reassuring if such events are accompanied by cosmic upheavals. One may well wonder whether catastrophic geological events can be traced to this recent period.

On a longer time scale it is interesting to consider the circuital motion of the solar system in its galactic cycle and contemplate the fact that the Earth would cross the domain boundaries at different angles of incidence with a four-fold periodicity per galactic cycle. If, as my theory indicates, the gravitational field between matter in the Earth is disturbed when the domain boundaries are traversed, the faster the crossing, the less this disturbance. The crossing will be most rapid when the Earth approaches the boundary in the normal direction. If it approaches a boundary at a low angle it will take much longer to traverse it. Indeed, it seems statistically possible for an approach to be at such a low angle that the Earth could disintegrate on

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reaching the domain boundary. The probability is very small but it is a consequence of this theory and one might wonder whether the asteroids really originated in a planet broken up in this way.

These ideas are rather speculative but they take encouragement from the researches of J. Steiner [Jour. Geol. Soc. Australia, **14**, 99 (1967)], who did, in fact, visit me in England to discuss my theory several years ago after becoming aware of my book: *'Modern Aether Science'*. He has made an extensive study of the possible correlation between geological events and the galactic motion and concluded that the constant of gravitation G may, in some way, depend upon the period in the galactic cycle. The theoretical interpretation of such data is difficult in view of the uncertainty in the present state of cosmological theory, particularly so far as concerns variation of G. The problem is further confused by the expanding Earth hypothesis which is dependent upon a slowly varying G. Yet Einstein's theory hardly permits G to vary and my theory as presented in this work requires G to be as constant as the charge-mass ratio of the electron. One feels that if the latter were to change then all other parameters, such as speed of light and the dimensions of the aether quon lattice structure, would change as well. I therefore favour the supposition that G is constant but only acts between matter within the confines of a common space domain. This renders G effectively dependent upon the close proximity of a domain boundary as far as geological events are concerned and seems to offer scope for relating geological events and galactic motion. Reverting, therefore, to the statement above that there would be a four-fold periodicity of gravitational upset in the galactic cycle, given the space domain picture, I draw attention to another of Steiner's papers [Geology, p.89 (1973)] in which he writes:

> "If Phanerozoic geological history incorporates any periodicities, they are of the order of 60 or perhaps

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> 70 million years .... The galactic periodicity of the solar system is, however, approximately 274 million years, representing the length of the cosmic year, or one revolution around the galactic centre."

I see this as a message which says that space itself has a cubic structure and have in mind a circular orbit traversed by the solar system which cuts across space domain boundaries almost tangentially four times per revolution and so results in tremendous gravitational upheavals in body Earth. A crossing normal to the space domain boundary would be about a half a minute in duration, certainly enough to leave a trace in geological history, but the crossings that occur at very acute angles some four times per galactic cycle could be of several minutes duration and the loss of gravity between matter temporarily astride the boundary would be devastating at such times.

Can you wonder, therefore, if I am slightly amused when those knowledgeable on such matters declare with confidence that dinosaurs became extinct some 70 or so million years ago owing to our Earth suffering impact from a large asteroid at about that time? Doomsday, or rather the next doomsday, at least for mankind, may be a game of chance encounter with an asteroid but if we want to predict how far away we are from certain extinction then future generations of cosmologists need to map those space domains and chart our motion to predict when and at what angle we are due to cross those boundaries as we progress along our collision course. My guess, from Fig. 8.3, is that we are safe for about 300,000 years, but only if there was, in fact, a boundary crossing some 12,000 years ago.

What remains now in the next chapter is the need to collect together certain loose ends and, in particular, clarify where electrodynamic action fits into the physics of Creation. Hopefully, however, enough has already been said to satisfy the

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reader that our decoding exercise is complete, or at least sufficiently complete to meet our set objectives. Whether what has been said will cause cosmologists to alter course in their theory concerning the Big Bang scenario remains to be seen. It will, I am sure, take some time, but at least I have done my best in presenting the case against that belief and the best I can hope for is that those who read this work will begin to understand what is implied by the word 'Creation'.

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