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**What Has Geology to Say About the Origin
of the World? GA#60
One Lecture in Berlin, Feb. 9, 2011
by
Rudolf Steiner**

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Chapter: Spiritual Science

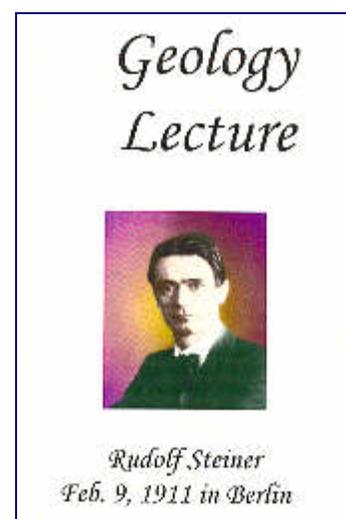
How can one align the evolution of Earth as
described by Steiner's spiritual science with

that provided to us by the physical science of geology? Geology starts at the time when the granite of Earth becomes solid and cannot provide data about what our planet was like before then. Spiritual science shows us how the evolution of Earth proceeded through stages of progressive solidification to the most recent solid granite stage. If geology can only speak to the most recent stage of Earth's evolution, how much can geology give to answer the title question, the question which Steiner expands below:

[page 1] Our main purpose today will be to envisage the relationship in which spiritual science must stand to geology, and to answer the question, "How much has geology to say about the question concerning the origin, the gradual emergence, and evolution of the earth and its living organisms?"

The answer to the question "How much?" can only be "Not much" because geology only covers a small portion of the evolution of Earth, the solid stage. Nevertheless, Steiner gives a thoughtful reply to the question, "from the point of view of spiritual science which has always formed the base of our considerations."[\(1\)](#) In this lecture he discusses geology and how it fits into his spiritual science without contradicting it, geology only explaining details of the granite stage of Earth's evolution.

In 1975 I attended a lecture by a young geologist who was a pioneer in the new field of plate tectonics which explained how mountains formed, volcanos blew, and earthquakes shook. Her lecture made a deep impression on me. She began by promising to tell us "everything we needed to know about geology," and she fulfilled that promise so well that I remember her lecture now as if I had heard her give it last night. Particularly these memorable words: "There are three kinds of rocks: pink rock, green rock, and black rock. Pink rock floats on green rock, and when green rock seeps into the ocean bed, black rock is formed." That's it! Can you remember that? If you can, dear Reader, you'll know all that you need to know about geology. To summarize what she explained that night as best I can: Pink rock is granite; Green rock is the liquid asthenosphere on which granite floats; Black rock is basalt which is formed when the asthenosphere liquid (very dense and hot) contacts seawater and turns into basalt, the basis of what we know as volcanic pumice, the black sands of Hawaii, and the various ocean ridges formed by the leakage of green rock. Granite, the Pink rock, forms the basis of the large continents which float on Green rock. As these giant slabs of granite called tectonic plates move, they collide with other plates and must go either over or under the other plates, causing mountain ranges to rise. If there is a hot spot, a thin place in the plate, volcanic



mountains can form. If the hot spot is at sea, volcanoes will rise to form islands with mountains on them, the condition which created the Hawaiian Islands, for example. When the plates rub each other as along the San Andreas Fault in California, you get earthquakes. There you have it, just as she promised me, all you need to know about geology, but remember this applies only to the Earth since it reached the physical level in our current stage of evolution of our planet.

What Steiner's spiritual science has to add to the knowledge of the Earth's evolution fills out the time before it became solid and the time to come when its solidity will disappear. The solid phase of geology can be seen as a minor speed bump in the grand scheme of cosmic evolution, a grand scheme in which humans have participated from the beginning and will see through to the end of the Earth, a time when "the Sun shall rise and set no more", a time when we will look back at the Earth as our launching pad for entering the spiritual world, in freedom and light.

Let us take a look at how Steiner sums up geology and natural science and their methodical approach.

[page 2, 3] Thus geology seems to be fully in conformity with what natural science knows today from other inferences, namely, that in the process of the earth's evolution the living creatures have developed by slow degrees from quite primitive to more perfect forms. When we now examine the Cambrian bed, namely, the lowest layer, and imagine that all the other layers had not yet come into existence, we shall have to assume that in the most ancient times there existed only the lowest animal forms, which as yet had no skeleton and were the first predecessors of the still undeveloped animals which were entombed in the deposits covering the lowest stratum of the rock-material. Then we must imagine that these beings have had descendants, that the latter may have undergone changes under the then prevailing, different conditions. In the next layer, which is again younger, we discover those animals in which there are already some indications of skeleton-like structures. And as we approach the younger layers we see evidence of more highly-developed animal species, until we come to the tertiary layers, where we already find the mammals, and then, in layers still younger than the tertiary layers, man.

According to geology and natural science, the geological event took place during billions and billions of years. Their method of calculating these numbers has an amazing logical problem, which Steiner has approached in various ways. In a previous lecture he mentioned how doctors might examine a man and calculate how much a disease is progressing in him per year, but if you were to use that same data to extrapolate backwards you would reach the conclusion that the disease must have started 300 years previously, only the man was not alive 300 years ago. This kind of backward calculation might seem ludicrous to us, but it is exactly the method used by geology and natural science to calculate the age of the Earth and the various geological epochs. In the next passage Steiner explains how this is done.

[page 3] Some idea of the methods applied and of the manner in which research is conducted may be gained from the following. — If, for instance, one observes how certain layers are still being formed today as alluvial deposits washed up by river-action or the like in the course of so and so many years, and if by measuring the thickness of such a layer a certain measurement is obtained by which it can be reckoned how many years it has taken for that layer to be deposited — then one can calculate how long the accumulation must have taken of all the layers we have had under review — provided that conditions were the same as they are today. As a result, the most divergent figures are obtained from the calculations made by the geologists. There is no need to enlarge upon contradictions which arise from this; for anyone who understands the contradictions will know that they have no essential significance, although they are really sometimes rather pronounced and amount to many billions of years according to the results obtained by different investigators.

The number of years is not so important as the overall assumption that if you go back far enough, there will be no life existing on Earth. "For geology finds itself compelled to assume that the lowest stratum owes its origin to a fire-process within which any possibility of life is unthinkable." (Page 3) The basic principle that life can only come from life cannot be confirmed from geological assumptions.

[page 3] When we consider those oldest layers upon which the life-carrying layers are resting, and study their rock-material which consists mainly of what is called granite, we envisage our globe in a form which, according to modern geology, still presents itself in a kind of lifeless condition. That is where the upper layers are open, and granite protrudes and forms mountains, so to speak, as a witness of the oldest times of our earth.

Our human body in this geological age consists of flesh and liquid which rests upon and is supported by our hard bony structure. Granite is the bony-structure of the great being we call Earth, and this granite is called by Goethe, the "oldest son of the earth". After reviewing the Plutonist fire origin and the Neptunist water origin for the Earth, Steiner explains:

[page 6] Thus Goethe already points out that in the last resort neither fire-action nor water can be thought responsible for the mysterious formation of this oldest son of our earth — granite. If against the investigations of geology, which anyhow have reached a point from which they cannot lead us any further, we quite simply set down what spiritual science has to say, what clairvoyant investigation has revealed, it presents itself somewhat in the following way. . . . We then find creatures without any vertebrate skeleton, and so, with clairvoyant vision, we do indeed come to a tellurian epoch in which we cannot find such beings as are now living on our earth.

We find creatures for whom we have never and cannot ever find skeletal remains, as they lived in a time when such minerals had not precipitated into a hard form. Spiritual science can fill in details for which geology and natural science have few suppositions pre-granite ages and below the mantle of the Earth conditions. What the young geologist told us about the three rocks had not yet come into being, and perhaps the Earth was only asthenosphere, Green rock, during those ages, the same Green rock which we can know only as the basalt it turns into upon exposure to seawater.

[page 7] If in the field of geology we remain on really safe ground (and no student of natural science ought to doubt what I am now saying), geology has only suppositions in regard to what precedes the granite-age; likewise geology can have no more than suppositions about conditions in the interior of the earth. For the bores that have been driven into the earth by drilling-operations reach depths which must be regarded only as tiny pin-pricks. There are suppositions, hypotheses, and nothing else — at best some dim divination about conditions which preceded the weaving and surging processes in granite-formation and so forth.

We humans have striven to penetrate the crust to the mantle of the Earth with our pin-pricks of long drilling tools, but success at doing that seems still far away: best estimates are that we may get samples of the mantle by the 2020s. But what we may make of the samples is yet to be seen. We will be sampling the asthenosphere as best I can understand this endeavor and given the violent reaction of lava when it interacts with seawater, being able to retrieve the sample unaltered seems rather difficult and unlikely.

The simple principle that *life can only come from life* reveals the folly of asking the question backwards as "How can life have developed out of the lifeless?" Those who try to answer that question have hit dead ends literally, but that has not deterred them from their quest and they generate even more preposterous claims of some primordial soup in which proteins arrangement themselves into living forms by random mutations. Many scientists have given up on the primordial soup hypothesis, only to replace it by the alien being hypothesis — but at least having an alien being drop some living molecules of DNA on Earth is a postulate which respects the life-from-life principle. But the alien being hypothesis does not solve the

origin of life, but only pushes the logical problem further away: Where did the life of the first alien being come from? We end up in an infinite regression from *Alien1 to Alien2 to Alien3 . . . ad infinitum*. This is the dilemma of hard science, the science of material things, it cannot create life from material things which are not already alive. That should be enough to discredit science, but science uses its tools of hypothesis to generate a bafflegab which few non-scientists can understand or challenge, up until now. Only a science which leads us to understand Earth as an organism will work, and Steiner has used this approach in his spiritual science which is not intended to discredit material science, but rather to extend the realm of science into areas which material science cannot handle due to its own defined limitations for investigation and hypothesis.

[page 8, 9] Thus spiritual science leads us back to the earth as an organism — not to a primeval state in which the earth was, so to speak, dead matter; on the contrary, the earth was originally a mighty organism. From the point of view of spiritual science one must practically reverse the way of asking a question that is put quite wrongly today. No science which assumes that the earth was once a dead globe in which only chemical and physical processes were active will be able to explain how life could arise out of this dead globe. This is a highly controversial question; but as a rule it is put quite wrongly. For generally people ask: How could "life" have developed out of the lifeless? — But that is not how it is: the living is not preceded by the lifeless, but the reverse is the case; the lifeless is preceded by the living.

How did life originate? The answer is found in Steiner's classic book, [An Outline of Occult Science](#), and involved the evolution of our entire cosmos and the sacrifice of many beings of the spiritual hierarchies to form this life which evolves through the stages of Old Saturn, Old Sun, Old Moon, and finally to the solid stage of Earth in which granite and other minerals could begin to aggregate and form the stage for the first Adam, the first "Hard Man", to walk upon an Eden, our Earth, prepared by the spiritual beings which we subsume under the single name God, a name which indicates our lack of understanding of the spiritual hierarchies who work together in concert to fashion the living beings which now populate the stage we call planet Earth. Not only is it the stage upon which we walk and strut our hour, but, rightly understood, it is womb in which our very life was born over aeons of time before it was ready for us humans to walk upon its surface. So how do the *lifeless* proceed from the *living*?

[page 9] The lifeless mineral is a product of segregation, as our bones are segregations of our organism. Similarly, all rock-material is a product of segregation in the earth-organism, and processes of spirit-and-soul forces — processes of destruction in the first place — are the means of producing such segregations in the organism of the earth. And were we to go further back we should see how this path would lead us much further still. We are led by what operates in the mineral domain to the earth as an organism, and indeed we already see, as we go still further back, that we are being led not only to an organism, but to a formation of our planet that is permeated with the working of forces of spirit-and-soul.

Now we are ready to learn how it came to be that granite became "the oldest son of Earth" as Goethe claimed.

[page 9] No longer do we trace life back to the lifeless, but we trace the lifeless back to processes of segregation from the living, and we regard the living as a state emanating from the sphere of the spirit and of the soul. And the further we go back, the nearer we come to that sphere in which lies the real origin of the present minerals, the plant-forms and so on: we approach the Spiritual and we let spiritual science tell us that it was not merely out of a lifeless, fiery nebula that there came into existence all that we perceive in the manifold forms of earthly phenomena, but that all this has taken shape out of the Spiritual, that originally our earth was pure Spirit, and that the course of evolution was such that on the one side emerged those forms which tend more towards the mineral

element, and that on the other side the possibility arose for certain new forms to develop, capable of responding to spiritual functions of a new order. For if we now proceed in the opposite direction and say: In the old rock-material we have something which segregated out of the original organism of the earth, and if we then go on to our present age, this segregation is going on all the time. Granite is merely the oldest segregation; but the processes which bring about the segregation will be ever less and less living processes; for more and more they will tend to be mere chemical, mere mechanical processes; so that at last, in our time, we still have only those effects due to water-action, which can be observed when, for instance, a river carries rock-material from one place to another. But what we perceive there as the result of mechanical-chemical processes is only the final product; this has turned into the minerals in accordance with the laws of nature; it is a state resulting from what was originally at work in the realm of the life-forces.

With this next step, Steiner takes us through the organic evolution of our spirit and soul filled Earth until it reaches the geological stage of the Cambrian epoch in which the first living forms began to leave traces of their existence for us to view. If we walk on a beach and see footprints, do we claim that these are the first footprints to be left on the beach? No, other footprints could have been left and washed away. Similarly we must see that the Cambrian fossils are *not* the first living beings in or on the Earth, only the *first ones to leave footprints behind them!*

[page 9, 10] And so we see how actually in the course of the development of our earth something takes place in connection with the formation of the ground beneath us, which we find in a similar way in the individual human or animal organism. There we see, how a man lives to a certain age, how he then passes through the gate of death, leaving his body as a corpse, and we see the continuation of those processes which are purely mineral processes; during the body's lifetime, however, these chemical and physical processes were an integral part of those working through the forces of spirit-and-soul. Similarly we come back to a time of earth-existence when the processes which today are of a chemical and mechanical nature were caught up and perpetuated by organic — yes, by spiritual and soul-processes. But what is taking place on the ground formation of our earth is, so to speak, only the one stream, left from earlier — to begin with more living, organic processes — and then spiritual processes. This foundation had to come into existence, had to form itself, so that on its firm ground, life of a different order could function — that life which gradually became our life, in order that as time went on such cerebral instruments could develop in living beings which enabled them to become "inwardly" aware of the spirit, inwardly able to form thoughts and produce feelings which, as it were, repeat the outer processes in reflective and emotional awareness. Therefore the whole mass of our earth's substance had to be "sifted," the present purely mineral substances had to be discarded — and those retained which today can form the organisms which are permeated by a part only of the substance of the old massif. These are the parts which only now can form themselves, for example, into what man is today. The spirit which lives in the human head, in the human heart, that is to say in a being whose organization is as it were, more refined than that of the planetary being of the earth as a whole, this spirit could only originate in a being from which were eliminated those substances which today do not belong to organic life. This "sifting" of the whole mass of our earth's substance had taken place, and the one part was given over as a foundation to the purely mineral life in order that on it can develop a new life, which we see entering its lowest form at the moment which in later times geology has marked as that of the emergence of the most primitive beings in Cambrian form.

During early stages of life, the beings were in the fluid region surrounding the accumulating mass which eventually formed the surface of Earth on which these beings could function and evolve. Decomposition created by spirit-and-soul forces created ascending beings of a higher order as well as providing the foundation for these beings, all of which resulted in the organism we know as the human being.

[page 10] The development of these finer organisms is in the ascendancy. Why? Because, through having segregated the coarsest material as in a mighty process of elimination, which then became the surface of the earth, they were in a position to isolate themselves more or less from the earth and its inner processes — and are now open to cosmic influences streaming towards the earth from outside. They are now exposed to the more spiritual effects of the cosmos and it is to this that they owe the ascent from primitive forms of life to that of man.

Rightly understood, we walk about upon the earth-corpse which is yet decomposing beneath us. But we must at the same time consider the fructifying forces which lead us to our future, a future in which Earth becomes humankind's launching pad.

[page 10, 11] From the standpoint of spiritual science, we move about on a ground in process of destruction which had to come about in order to give us the firm, solid ground we need when we consider the blossoming forces which point to the future and move in the opposite direction to those we encounter in the body of the earth; for these future-building forces are something which, independent of the solid ground of the earth penetrates into human souls, into human spirits, perhaps also into those beings which are outside the human element, and are only beginning their ascent on the foundation of the solid earth. In the latter itself we should, however, have something in a state of decomposition. From the point of view of spiritual science our earth would appear as a progressively disintegrating dead body, and the geological laws would at the same time be those governing the decomposition of the earth-corpse. And man on earth would be a being who lifts himself out of the dead earth body, just as the human soul, passing through the gate of death, rises from the corpse and abandons it to those forces which bring about its decomposition and destruction.

If this sounds depressing, it can only be so to someone who does not understand the thrust of human evolution through many lifetimes which arrives eventually at the stage of spirit no longer bound to the surface of the earth-corpse.

[page 11] In some way it must obviously come about that not only the individual human being but the whole of humanity gradually throws off the earth-body in order to be able to rise step by step to other realms of development. And so, from the standpoint of spiritual science, the mid-period of earth-evolution had already been passed ever since the time when "the oldest son of the earth" was segregated, and the beings which are beginnings in preparation for the future will unfold further on the foundation thus laid down.

Having laid the basis for spiritual science's extension of geology, Steiner asks the eponymous question, "What does modern geology have to say about this conception of spiritual science?" He turns first to the preeminent geologist of his time, Eduard Suess, who thrust aside the Plutonist-fire-origin and the Neptunist-water-origin theories and focused on the physiognomy of the Earth in his book "The Face of the Earth". He saw the mountains on Earth to be like the wrinkles on the peel of an apple, and his theories set the stage for the continental drift and plate tectonic theories of geology which followed him. Suess used a sense-perceptive method for his research and concluded:

[page 12, quote from Suess' book] ". . . The collapse of the globe is what we are witnessing. True, it had already begun a very long time ago, and so the brevity of the span of human life lets us be of good cheer. Not only are there traces of it in the high mountain ranges. Great blocks of earth have sunk hundreds, yes, in certain cases, many thousands of feet, and not the slightest sign of graded subsidences on the surface, but only the differences in the kinds of rock or deep mining betray the existence of a fracture. Time has leveled everything. In Bohemia, in the Palatinate, in Belgium, in

Pennsylvania, in numerous places, the plough draws its furrows above the mightiest fractures."

Seuss's work on the evolution of Earth, being sense-based rather than theory-based, aligned itself with Steiner's spiritual science work on the evolution of Earth. What is unique about Steiner's work is that it continues past the question-marks at which geology must stop.

[page 13] Spiritual science lets the spiritual facts speak for themselves and tell what they have to reveal of the cosmic mysteries; natural science speaks of what it has established by its own methods: the two are in full concord. If you ignore those popular works which declare this or that to be a "scientific fact" and go to the sources, then you will find, especially in the field of geology, that the geologists everywhere get to a certain point — and then put a question-mark. Arriving at those question-marks, one can take them as a starting-point for spiritual research. Then spiritual science tells us: if it is true what clairvoyance reveals, the external factual material must appear in this or that form. — In the case of geology it was this: if what spiritual science has to describe is right, then, with the present process of decomposition continuing, our globe must now be in a state of collapse. Geology, adhering to facts, has shown that according to the laws it is so! The findings of true natural science everywhere are in line with the results of spiritual scientific investigation.

Life is a puzzle with two question marks. We can in our imagination go back to our birth or go forward to our death, and each of those two points, we find a question mark. With natural science we are not able to proceed before or after these two question marks — it abandons us at these points, but proclaims that natural science provides a complete description of the world. With the natural science of geology, we find the same two question marks: one at the birth of geology (the Cambrian Age) and the other at the end of Earth. I was led to Rudolf Steiner's work exactly because he provided answers to the enigmas marked by the two question marks: before birth and after death for the human being. In this lecture, he takes us exploring past the two enigmas of geology, before the Cambrian Age and beyond the disappearance of Earth as a planet. Most geologists will find Steiner's explanations unsatisfactory, but will certainly notice that his spiritual science where it describes geological conditions aligns with their geological theories. If they were to spend only a fraction of the time they spent studying geology to study the basis of spiritual science, they might begin to see answers to the realities past those two question marks of geology and of their own lives.

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Footnote 1. The passage from page 1, quoted above, I have paraphrased for clarity to English readers.

[Return to text directly before Footnote 1.](#)

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