INTRODUCTION TO

CHAPTER TWENTY-TWO

So far in this book, those basic things which were created and set in motion on Days One and Two of the Creation week have been examined to one degree or another. This new chapter begins to examine a few of those special geologic processes which God established on Day Three of the Creation week. These powerful geologic processes were used to allow the dry land to appear above the worldwide ocean: that ocean which initially covered the whole face of the Earth at the end of Day One, and for the whole of Day Two of Earth's first week of existence.

To better understand the Creation process, the Reader will herein obtain a rudimentary understanding of how new landmasses are readily formed upon the face of this Earth, even today. Some fundamental rock categories are also introduced, along with their distribution upon the face of this Earth. The chemistry which ultimately results in granite (of which the continental masses are greatly composed) is also examined. Furthermore, this chapter notes some very special heat-shielding material which appears to be contained within the continental shields. This heat-shielding helps to make an environment upon the face of the Earth which is conducive to life.

This chapter examines exactly what was created on Day Three, and the implications of it. It will soon become evident that the continents of this Earth are simply floating (because of their specific gravity) upon the materials which are situated below them. Because they are floating, they are subject to change. The overall outer surface of the Earth is somewhat pliable. Its contour can be readily and rapidly altered by the natural forces which are acting upon it from beneath.

May this chapter work to increase each Reader's knowledge of the mighty power of God, and also of His mercy toward us. May it make clear at least one method whereby He is readily able to perform a fiery judgment upon any portion of (or all of) a wicked and disobedient mankind residing upon the face of the Earth. May this discussion also lead us to a better understanding of some of those finer works of God.

Chapter 22: CONTINENTAL CONSTRUCTION

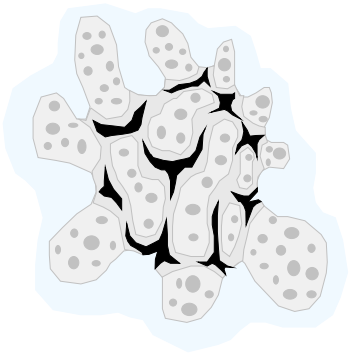
THE PLATFORM

Concerning the third day of Creation, the Word of God proclaims: *"And God said, 'Let the waters under the heaven be gathered together unto one place, and let the dry land appear:' and it was so.*

"And God called the dry land Earth; and the gathering together of the waters called he Seas: and God saw that it was good."[1]

A QUICK LOOK BACK

Before the events of Day Three of Creation are examined (and the processes which allowed for the creation of the original landmass), it is needful to temporarily look back to that which occurred on Day Two. An important event of this day must be understood, and the full implications of it. This important event is the rotational startup of the Earth spinning on its axis, and the continued acceleration up to full rotational speed throughout Day Two. What effects would this phenomenon have had throughout the mass of the Earth?



Please remember that on Day One, according to the Word of God, the Earth was *"without form, and void..."*[2] This means that the Earth was not the beautiful, relatively round sphere that it appears to be today. Below the surface of the extremely deep (as viewed from the outside), superheated layer of liquid and vaporous covering waters, the forming Earth was simply an erratically shaped 'blob' of various materials, with the whole unit suspended in the immense void of relatively empty space.

The distance through the more-solid mass of this 'Earth-blob' may have been considerably greater in one direction, than in another. The outer surface of this blob may have been extremely wavy, with immense 'canyons' hundreds of miles deep, and gigantic mountains hundreds of miles high. The outer crust may have been pock-marked with extremely deep tunnels, caused by the massive release of gases from deep within the forming Earth.

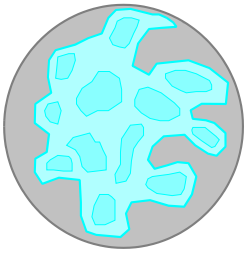
As first formed on Day One, the Earth appeared to be relatively stationary in space, with no spinning motion at all. Starting on Day Two, the centrifugal forces of rotation would have had a great effect upon any protruding lobes. What may then have happened to the larger lobes is discussed more fully in Chapter 27.

ACTION AND REACTION

The Earth is very massive. This mass possesses inertia. As the Earth began to rotate on Day Two of Creation, the inertial reaction caused various forces to display themselves within its great mass. This mass was composed of various molten, semi-molten, and somewhat solid materials. As the Earth's rotational speed continued to accelerate throughout Day Two, the inertial reactions and resulting stresses would have been hard at work throughout the whole day.

Within the outer reaches of the molten material, a rolling, spinning, stirring action may have occurred. This sent mighty pressure waves in all directions. The original outer crust was greatly jostled, and began to break up in many places. This prepared the way for that which occurred on Day Three.

DAY THREE BEGINS



At the beginning of Day Three, God began a very special process. During this process, the vast waters of the Earth were rapidly gathered together into one place. In this particular process, God began to form the habitable part of the Earth. He desired a place for a number of the more delicate creations which He was preparing to make. The regions where the waters ultimately remained, after being gathered together, were called "Seas."

Friend, this process which occurred at the beginning of Day Three of Creation was indeed a very large and involved one. In this great process, God further established and set in motion many of the ongoing operations within this Earth. At this time, many of the new forces of nature were also brought into being. We continue to see these processes in action today, but at a greatly subdued scale from that at which they were operating during the time of Creation.

GENERAL SHRINKAGE

When most superheated rocks and minerals cool, they tend to shrink. In this cooling process, the internal volume of these materials becomes somewhat less. There is something else which also takes place during the shrinking process. As this mass of material continues to shrink, its internal stresses usually become greater and greater.[3 and 4]

There comes a certain point when something drastic must happen to any material which is in great stress, especially when the stresses just continue to build. If the material is of a somewhat rigid nature, there is a great chance that this material will fracture in various places.[5] If the material is more pliable, it will most likely buckle or wrinkle in a number of places.

AN EXAMPLE

For a somewhat extreme example of shrinkage, go and look at a raisin. That small, wrinkled up raisin was formerly a big, juicy grape. The original deliciously juicy grape had a relatively smooth skin covering it. As the liquid was removed from the cells within that grape, the process of shrinkage began.

As the internal volume of the grape shrank considerably, its large skin area shrank relatively little. The skin did not shrink nearly enough to remain in its smooth state any longer. Great stresses built up within the structure of the shrinking grape. Then, to relieve the stresses, the non-rigid, pliable skin of the grape began to wrinkle. When the process was complete, the newly formed raisin was completely covered with large wrinkles.

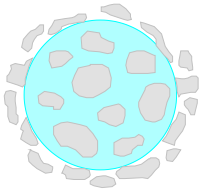
A COMPARISON

Friend, let us consider the process, shown above, of that which occurs during the making of a raisin. Let us ponder on these thoughts just a little longer. Let us use the "raisin process" as an example of that which occurred on this Earth on the third day of Creation.

If the original pliable, plump, fat, and juicy grape had been covered all over with a layer of water, it may have been similar to what the Earth was like at its beginning (except the Earth was irregularly shaped). Now, think about the raisin-forming process as we discuss the more rigid Earth.

MASS DEFORMATION

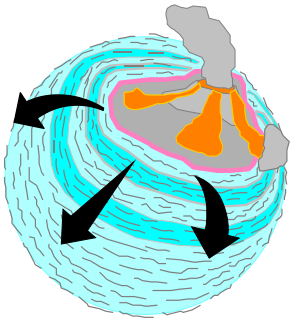
As the Earth began cooling after the superheated nuclear reaction which occurred on Day One, its rigid, rock-forming materials began to shrink. This shrinkage caused great stresses to be created within the structure of the Earth.[6]



The heat in the Earth's crust was rapidly transferred into the surrounding layer of water. The water, in turn, rapidly released this heat into the atmosphere which surrounds this Earth. The massive release of heat energy into the atmosphere was in the form of steam. This steam formed into numerous, immense clouds. Because of this rapid heat transfer from the crust of the Earth, outward, the crust shrank faster than those materials below it.

During the process of rapid shrinking, within the crust of the Earth were formed great tensional stresses. Eventually, many great fractures formed in the outer portion of the crust.[7] This renewed fracturing allowed the molten magmas from below to spew freely onto the surface of the Earth.[8]

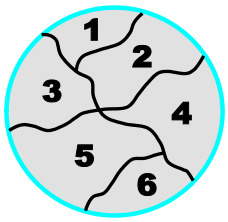
THE MIGHTY ONES



As the magmas broke forth from below, a new phenomenon was created. This phenomenon was the building of immense volcanos. As the volcanos rose up from below, they broke through the surface of the deep, worldwide ocean. Then the volcanos began spreading their enormous loads of rock-forming materials in many directions, just as volcanos do today.[9]

As the magmas poured forth out of the bowels of the Earth, and spread out in all directions, the waters were forced back more and more. The Word of God states that the deep waters which formerly covered the whole Earth were eventually confined into one place. It appears that the individual sections of the original large ocean were then called Seas.

A CLOSER LOOK



The heat continued to be drawn out of the Earth. At the site of the large and extended fractures in the crust of the Earth, other new processes were set into motion. As the strata of the Earth cooled, the internal volume of the Earth shrunk.[10] The shrinking caused the crustal plates to be forced together. This resulted in buckling of the crust along the great fractures. As the opportunity arose, a portion of crust would release its pent up stress, and straighten.

As the crust on both sides of the crack attempted to regain a relatively flat position, one of the sections of crust would often be forced to slide up, and over the other section. The lower plate was then forced downwards, into the molten Earth below. This process created a number of large subduction zones across the face of the Earth.

SUBDUCTION ZONES

As indicated above, subduction zones originally start as long fractures in the crust of the Earth. These large fractures divide the crust of the Earth into a number of individual plates. At the subduction zones, during Creation, one of the dense plates of basaltic crust slid under the adjoining plate. As this sliding of one crustal plate beneath another continued, the Lord God set into motion a totally new process in nature. This process can teach us many things about the very nature of God. By this process, we can learn what God the Father wants, and what must be done to accomplish that which God desires. As in this Earth, so also must this be a continual process in each individual.

REFINING FIRE

The Lord God Almighty is a refiner of all things. He refines things because He wants all of His Creation to be as pure as possible. That is why each individual person must let the refining fire of the Word and Spirit of God melt their heart.

Once the heart of a person is melted, then the Word and Spirit of God are able to cause the dross to 'float out.' Once the dross is caused to come to the surface, then it may be burned away by the power of God. This process works to purify the heart and mind of the individual. We are speaking here of the true conversion process of an individual, whereby they are converted to God's way.

SO LIKEWISE

The Earth also has a refining system which God Almighty set in motion at Creation. As one basaltic ocean plate slid under another, it appears that its leading edge fractured, and turned downward. It appears that the slab then began to sink deep into the Earth. It is proclaimed by the scientists that as the slabs of crustal mass reach a depth of about 60 to 90 miles (100 to 150 km), they begin to melt.[11]

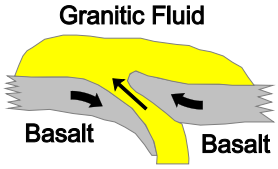
CONTINENTAL UPRISING

As God Almighty continued His work on the third day of Creation, He set into motion another new phenomenon. This phenomenon would begin creating great areas of dry land. As the slabs of sinking ocean crust began to melt, the extremely fusible elements contained within the basalt are believed to have distilled off first. This first batch of distillates formed into granitic fluids.[12 and 13]

The granitic fluids consist mainly of the light-weight silica and alkali elements. These fluids contain only a minor amount of iron and magnesium materials. Basaltic-type rocks, on the other hand, contain proportionally little silica and alkali elements, but have a greater proportion of the magnesium materials and the heavier iron-containing products.[14]

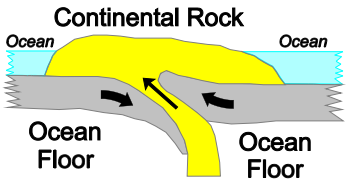
DENSITY DIFFERENTIAL

The granitic fluids have a density of approximately 2.7. The basaltic materials has a density of about 3.0.[15] The granitic fluids therefore are more buoyant than the heavier, basalt-type materials composing the floor of the ocean.



Because of the buoyancy created by the density differential, the granitic fluids begin to rise to the surface of the Earth. These lighter weight granitic fluids literally floated on top of the heavier basaltic rocks which makes up the ocean floors.[16]

CONTINENTAL BASE



Once the granitic fluids reached the surface of the Earth, they began to harden and form the base rocks of the continental crust. These base rocks typically contain a high percentage of silicon and aluminum. For this reason, in the field of geology, this type of rock is simply called "sial."[17]

The granite-type rocks, found worldwide, exist only as a part of the continental masses. They do not make up the floors of the vast oceans. The basalt-type rocks, on the other hand, are found mainly as the floors of ocean basins. But (as proven in many cases) they may also be spread out upon certain areas of the continental masses.[18]

THE SEQUENCE

When a large volume of intruding granitic fluid begins to crystallize, it forms a large mass of igneous rock called a batholith. During the formation of this batholith, as cooling occurs, the minerals which compose it are formed in a distinct sequence. This sequence is commonly indicated by the Bowen's Reaction Series. This series actually defines the reaction principles involved during the cooling of a magma.[19 and 20]

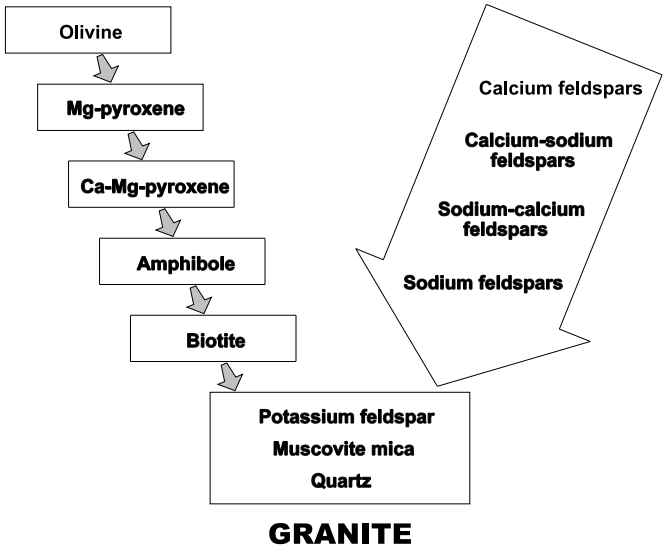
According to the Bowen's Reaction Series, it is the magnesium-rich olivine ($MgSiO_4$) which crystallizes first. Then something very interesting begins to occur as the magma cools further. The olivine crystals react with the molten magmatic material, and begin to dissolve. As the olivine dissolves, a magnesium-rich pyroxene material begins to crystallize. The more the magma cools, the more the olivine is dissolved. The more it is dissolved, the greater is the volume of crystallized magnesium-rich pyroxene which is formed.[21 and 22]

Eventually, all of the crystallized olivine is consumed as the cooling continues. In this reaction process, the magnesian-pyroxene swaps ions with the molten magma. This causes the magnesian-pyroxene to become enriched with calcium. One of the new materials formed is commonly called augite. It should be noted that as the cooling of the magma continues, the pyroxene materials can also dissolve and react with the molten magma. During this reaction, new materials of the amphibole-group begin to crystallize. During the ensuing reaction, the amphiboles eventually convert into biotite. This strange process is commonly called the "discontinuous reaction series."[23]

COMPANION SERIES

The discontinuous reaction series contains the ferromagnesian silicates, but this series is only part of story. A companion series also occurs during the cooling of the molten magma. This other series is called the "continuous reaction series." It contains the plagioclase feldspars.[24]

THE OTHER HALF



In the continuous reaction series, the first materials formed are the calcium feldspars. Then the element sodium begins to enter into the material. Feldspars which contain a greater portion of calcium, and a lesser portion of sodium are formed next. As sodium continues to increase in the cooling material, a feldspar is formed which contains a larger portion of sodium, and a lesser portion of calcium. The last materials produced in the continuous reaction series are those of the sodium feldspars. At this point, this series combines with the discontinuous series.

REMAINDER OF THE STORY

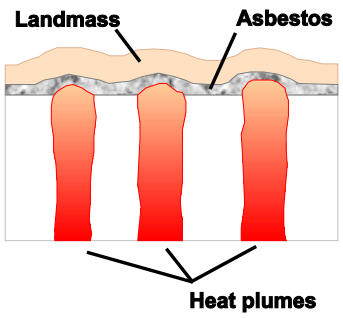
The continuous and discontinuous series combine to produce potassium feldspar, muscovite mica, and quartz. These materials are the major constituents in granite. This granite forms the bulk of a solidified batholith. Once the batholith is solidified, the aqueous solutions which remain consist of sulfur, the transition metals (which may form rich deposits), various semi-metals, and silica. These solutions are forced outward from the batholith, and tend to form mineral veins.[25]

HEAT SHIELDING

At the beginning of the discontinuous series (shown above) are found the olivines, pyroxenes, and amphiboles. When a certain portion of these superheated materials are cooled by water vapor at a temperature below approximately 932 degrees Fahrenheit (500°C), they may be strongly altered into a new, very fine-grained material called serpentine. It should be noted that the fibrous forms of serpentine were formerly used to make a fire-resistant cloth called asbestos.[26]

There appears to be an efficient heat-shield which is cladding a portion of the granite which forms the continental masses. This may be part of the reason why the continental crust transfers heat from within the Earth at only one-half the rate of the oceanic crust.[27] God created the continental crust to act like a rather large heat-insulator, upon which the plant and animal life are readily preserved.

THE BULGE



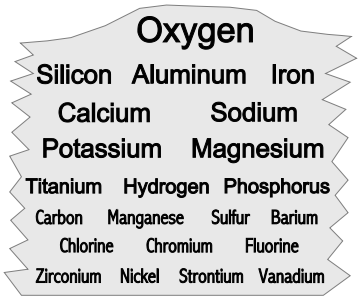
A portion of the rising heat from within the mantle of the earth may come into intimate contact with the bottom of the continental crust. It appears that this rising heat may become trapped within the fibers of the asbestos-like heat shield. When enough heat is trapped under the continental mass, it tends to raise upwards. If enough heat is concentrated at one particular location under the continental mass, it may cause a certain degree of upward bulging at this point.[28 and 29] If there are a number of rising heat plumes under the continental crust, it may produce a rolling landscape.[30]

RELATIVELY FLAT EARTH

There is no mention in the Scriptures of the original landmass having large, rugged mountain chains, of the nature which we find today. The rising materials which formed the landmass would have been molten at roughly the same time. There would have been elevated areas where the molten materials welled up. But generally, the materials would have flowed out relatively level.

As the molten surface of the magma cooled, it began to shrink somewhat. This caused a rippling effect in the final surface of the landmass. For this reason, the original land surface may have consisted of a vast tract of gently rolling hills, and a number of relatively large volcanos.[31] But there were not the large, jagged mountain chains which we see today. The chains we see today came up at a far later date, as will be found in Volume Three (*Listen to the Earth: The Days of Peleg*).

OUTER CONTINENTAL CRUST



The outer continental crust of the Earth consists largely of a mixture of the lighter-weight minerals. These minerals are not necessarily in distinct layers, as are the elements within the core region of the Earth. The surface minerals are often found as compounds. These compounds may be located in veins, seams, and other types of deposits.

The scientists proclaim that the minerals in the mixture of the continental crust include the following elements: aluminum (8.13 percent), calcium (3.63 percent), iron (5.0 percent), magnesium (2.09 percent), potassium (2.59 percent), oxygen (46.60 percent), silicon (27.72 percent), and sodium (2.83 percent). To this crustal mixture is added less than one percent of the following elements: titanium, hydrogen, and phosphorus.[32]

Besides the elements listed above, within the continental crust of the Earth are also found traces of other elements. These elements are listed as follows (in order of percentages, from greatest to smallest): carbon, manganese, sulfur, barium, chlorine, chromium, fluorine, zirconium, nickel, strontium, and vanadium.[33]

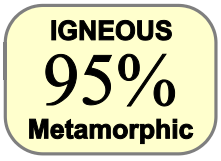
A complete sequence of the minerals by percentage (in order from the greatest to the smallest values) is generally indicated in the graphic at the bottom of the preceding page. Oxygen, being the largest value at 46.60 percent, is found at the top. Vanadium, being the lowest value, is found at the lower right corner.

THE CHART

The following section of the Periodic Table is for reference only. Included on this table are those elements which commonly form the continental crust.[34] These are the elements named above. Also shown for each element is its atomic number and weight:

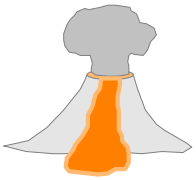
Atomic Number	Element	Atomic Weight
1	**Hydrogen**	**1.0079**
6	Carbon	12.011
8	Oxygen	15.9994
9	Fluorine	18.998403
11	Sodium	22.98977
12	Magnesium	24.305
13	Aluminum	26.98154
14	Silicon	28.0855
15	Phosphorus	30.97376
16	Sulfur	32.06
17	Chlorine	35.453
19	Potassium	39.0983
20	Calcium	40.08
22	Titanium	47.90
23	Vanadium	50.9414
24	Chromium	51.996
25	Manganese	54.9380
26	Iron	55.847
28	Nickel	58.70
38	Strontium	87.62
40	Zirconium	91.22
56	**Barium**	**137.33**

CRUSTAL NOTE



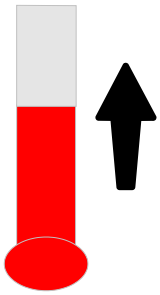
Let us look at the rock types which commonly make up the crust of this Earth. About 95 percent of the crustal rocks of the Earth are of igneous and metamorphic origin. The other, roughly 5 percent, are mainly rocks of a sedimentary nature.[35] There are also a certain percentage of rocks upon and within the crust of this Earth which are of a celestial nature. We commonly call them meteorites.

IGNEOUS ROCK



The igneous rocks are those which are formed by the solidification of molten silicate materials. These molten silicate materials are the magmas which have been brought up from deep within the Earth by volcanic action.[36]

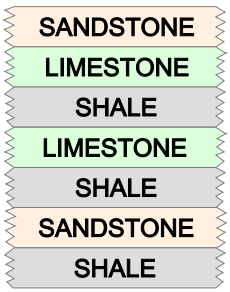
METAMORPHIC ROCK



Metamorphic rocks are those which have formed within the crust of the Earth by the transformation of the original rock material into another rock type. The metamorphosis takes place because of changes in temperature, with or without the addition of pressure.[37]

The metamorphic transformation of rock materials may or may not include the addition of new material. This transformation also takes place without the melting and blending of the rock materials.[38]

SEDIMENTARY ROCK



One class of sedimentary rocks are those formed by the deposition of the eroded particles of other rocks.[39] The eroded particles (or sediments) are then cemented together by various minerals which precipitate out of water solutions. This mixture then forms into a new horizontal rock layer.[40] Some of the rocks commonly included in this particular class are sandstone, shale, and limestone.[41]

Another class of sedimentary rocks are those formed solely by the process of chemically-induced precipitation out of solution. Another class is created by concentration of the mineral by the evaporation of the water within the solution.[42]

Pure rock salt is made of the mineral called halite. Rock salt can readily be produced from the halite in water solutions. This form of rock is commonly included in the sedimentary class of rocks. Coal is another member of the sedimentary class. Coal is formed from the deposition and burial of organic matter. There are also many other rocks included in the sedimentary class.[43]

It is of interest to note that the relatively small percentage (in comparison to the other rock types) of sedimentary rocks actually end up covering about 75 percent of the total land area of the Earth.[44] To put all things in their true perspective, the sedimentary rocks are like a thin "skim-coat" on the outer surface of the main base-rocks of this Earth.

CONTINUING PROCESS

As granitic fluids continue to rise with the heat plumes from deep inside the Earth, they extrude on the surface of the Earth as silicic lavas. These lavas may harden into the granite cores of mountains. They may also create the andesitic flows which are extruded from volcanos.

Friend, the rising of the volcanic magmas from deep within the Earth is a never-ending process. The refining fires are continually in operation. It will continue in this manner, until God Almighty decides (because of the sin of mankind) to put an end to all things as we currently know them.

Let us now look to the One who is in full control of all these great forces of Nature. May we give the glory and honor which truly is due to His most holy name! May we give Him true honor by walking in willful obedience to the ultimate King of all Creation!

TO THE GREAT KING

The psalmist cries: *"The LORD reigneth; let the earth rejoice; let the multitude of isles be glad thereof. Clouds and darkness are round about him: righteousness and judgment are the habitation of his throne. A fire goeth before him, and burneth up his enemies round about.*

"His lightnings enlightened the world: the earth saw, and trembled. The hills melted like wax at the presence of the LORD, at the presence of the Lord of the whole earth. The heavens declare his righteousness, and all the people see his glory."[45] Amen, and amen!

Friend, so ends another Chapter in this FIRST EDITION of

Listen To The Earth, Volume One, THE CREATION, by **David E. Sakrisson and Friends**

in 34 Chapters, plus README, Preview, Start, and End files

with References following each Chapter

REFERENCES

1. *The Holy Bible*, Book of Genesis, chapter 1, verses 9-10.

2. *The Holy Bible*, Book of Genesis, chapter 1, verse 2.

3. *Physical Geology*, Longwell/Flint/Sanders, 1969, page 498.

4. See: *Modern Materials And Manufacturing Processes*, John E. Neely and Richard R. Kibbe, 1987, pages 148-149.

5. *Physical Geology*, Longwell/Flint/Sanders, 1969, page 498.

6. The great stresses would only have been created within the more rigid type of materials in the outer crustal region of the Earth. Because of relatively free movement of materials, no stresses could truly form, or be very long lasting, within the inner, more pliable or molten regions of the Earth.

7. For an example of cracks forming on a present-day Earth-surface, look at a lake-bed or the bed of a pond which has lost its water and has dried in the open air, under the sun. Indeed, it is covered with many intersecting cracks.

8. Let us make a very important point. The massive fracturing of the original outer crust of the Earth, which occurred on Day Two of Creation, would have had a leveling effect. The blocks of original crust would have been all brought to about the same relative level (measured from the center of the Earth), with the level being somewhat higher at the equator because of centrifugal force. In this leveling operation, the blocks of crust would have likely become tightly wedged together. The molten magmas from below would have quickly sealed the relatively small gaps between the crustal blocks. But on Day Three, the renewed cracking of the crust was of a different nature.

   The cracks which were formed because of the shrinkage of the Earth's rock masses may have created gaping chasms between the crustal block, rather than just small gaps which were quickly sealable. Because the crustal material cooled first, and shrank more quickly than the inner Earth, the gigantic chasm in the outer crust could have remained wide open. Up through these vast chasms flowed great volumes of molten, continental-forming materials. The great volume of these materials flowing upward through the chasms did not solidify as quickly as had the relatively small amount of material which had filled the initial small gaps.

   Let us make one more point. That which occurs when the molten material flows upward through gaps and chasms in the crust of the Earth is similar to that which occurs when a human receives a cut in their outer flesh. With a cut, the blood quickly fills the wound and begins to solidify, thereby sealing the wound. If the wound is small, the blood may be caused to simply fill the wound, without leaving a large amount of solidified blood outside of the wound itself. If the wound is large and wide open, a large amount of blood may flow out of the wound, and eventually form into a rather large area of scab. As we turn our attention back to the Earth, the continental landmass is something like a gigantic "scab" over a massive "wound" in the crust of the Earth.

9. It must be remembered that at the time of Creation, the forces of nature were in operation at a much escalated scale, which was far in excess of anything which we observe today.

10. The internal volume of the Earth may also have been reduced in proportion to the volume of the molten materials which spewed forth from the volcanos as the first landmass was created. This reduction of internal volume would have allowed the outer crust of the Earth to also shrink, and the fractured plates could then be forced together. This may have caused great compression of the rock-masses at the ancient fault lines.

11. *The 1998 Grolier Multimedia Encyclopedia*, "Plate Tectonics."

12. See: *The 1998 Grolier Multimedia Encyclopedia*, "Earth, structure and composition of."

13. The writer believes that there are a number of other processes which can also cause the granitic magmas to be forced out of the Earth. These processes may be discussed further in Volumes Two and Three of this series.

14. *Physical Geology*, Longwell/Flint/Sanders, 1969, page 510.

15. *Microsoft Encarta 98 Encyclopedia*, "Earth."

16. *The 1998 Grolier Multimedia Encyclopedia*, "Earth, structure and composition of."

17. *Physical Geology*, Longwell/Flint/Sanders, 1969, page 443.

18. *Physical Geology*, Longwell/Flint/Sanders, 1969, page 510.

19. *Physical Geology*, Longwell/Flint/Sanders, 1969, page 106.

20. *Minerals of the World*, Charles A. Sorrell, 1973, page 82.

21. *Physical Geology*, Longwell/Flint/Sanders, 1969, page 106.

22. *Minerals of the World*, Charles A. Sorrell, 1973, page 82.

23. *Physical Geology*, Longwell/Flint/Sanders, 1969, pages 59, 106 and 108.

24. *Physical Geology*, Longwell/Flint/Sanders, 1969, pages 108-109.

25. *Minerals of the World*, Charles A. Sorrell, 1973, pages 82-83.

26. *Minerals of the World*, Charles A. Sorrell, 1973, pages 164 and 190-191.

27. *Plate Tectonics: Unraveling the Mysteries of the Earth*, Jon Erickson, 1992, page 51.

28. See: *Plate Tectonics: Unraveling the Mysteries of the Earth*, Jon Erickson, 1992, page 51.

29. *Mantle Plumes and Their Record in Earth History*, Kent C. Condie, 2001, pages 21, 25-26, 43-44, and 87.

30. It appears that the elevation of the landmasses above the level of the ocean waters may be greatly effected by the volume and intensity of heat plumes rising beneath them. If the volume of rising heat is reduced under a given area of landmass, that mass may begin to sink (to one degree or another), relative to the structure of the Earth. If the volume of rising heat in increased under a given area of landmass, that mass may begin to rise, relative to the rest of the Earth. Indeed, it appears that landmasses have the ability to move up and down. There are many examples of this type of occurrence found worldwide.

31. See: *The Holy Bible*, Book of Genesis, chapter 7, verses 19-20.

32. *Microsoft Encarta 98 Encyclopedia*, "Earth."

33. *Microsoft Encarta 98 Encyclopedia*, "Earth."

34. Not included on the table are the heavier elements, whose major portion is found much deeper in the structure of the Earth. Relatively small percentages of these heavier elements are found within the crust of the Earth, and upon its surface, in the form of mineral veins and placer deposits.

35. *The Rockhound and Prospector's Bible*, L.J. Ettinger, 3rd Edition, 1992, page 3.

36. *Physical Geology*, Longwell/Flint/Sanders, 1969, page 652.

37. *The Rockhound and Prospector's Bible*, L.J. Ettinger, 3rd Edition, 1992, page 11.

38. *Physical Geology*, Longwell/Flint/Sanders, 1969, page 654.

39. *Handbook For Prospectors*, M.W. Von Bernwitz, 2nd Edition, 1931, page 335.

40. *Physical Geology*, Longwell/Flint/Sanders, 1969, page 658.

41. Please note that limestone can also be created outright by a chemical reaction between calcium and carbon. This process is more fully discussed in Chapter 23.

42. *The 1998 Grolier Multimedia Encyclopedia*, "Sedimentary Rock."

43. *The 1998 Grolier Multimedia Encyclopedia*, "Sedimentary Rock."

44. *The Rockhound and Prospector's Bible*, L.J. Ettinger, 3rd Edition, 1992, page 3.

45. *The Holy Bible*, Book of Psalms, chapter 97, verses 1-6.