

INTRODUCTION TO
CHAPTER TWENTY-FIVE

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The discussion in the last three chapters was aimed at those natural forces which God set in motion on Day Three of the Creation week to create the first continent upon the face of this Earth. Furthermore, the relatively simple, yet very powerful cumulative natural forces which shaped the final contour of this continent were noted. But let us not, with a casual attitude, simply stop here. Friend, there was much more which occurred on Day Three.

From the Word of God, we know that, after the dry land was formed, on that very same day all of the vegetation was created. Because God is a God of order, it only stands to reason that if grasses, herbs, and fruit trees were created on this day, then there must first have been some type of soil for them to readily grow in. That is where this chapter comes in. It is a more detailed examination of the initial soil on this Earth.

The pages ahead contain a rudimentary discussion of those natural processes which it appears God used to rapidly produce the first soil upon the face of this Earth. The nature and composition of this first soil is also explored. Some examples, readily observable today, will help to obtain a much clearer understanding of that which occurred on the third day of Creation. This discussion also examines a few processes by which God formed an abundant supply of special 'super-food' for all the vegetation which He would soon create. But how did all of this happen? Exactly what was the motivating force behind the creation of all these things on Day Three?

It should be remembered that this Earth was initially created by a massive nuclear fission reaction. An immense amount of heat was generated in this process. The crust, which formed upon the original molten mass, worked to contain a considerable amount of internal heat within the Earth itself. Because of the radioactive decay which continued (and still continues) from deep within the Earth, there was a steady supply of new heat. All of this immense heat from deep within the Earth had to go somewhere.

As heat energy is released from deep in the Earth, it tends to take the path of least resistance. Generally, it travels upward in the form of a heat plume, toward the surface of the Earth. One form of powerful heat plume which breaks forth upon the surface of this Earth is called a volcano. Because volcanos are related to the production of the first soil, this chapter will begin with a very basic discussion on volcanism.

Chapter 25: THE FIRST SOIL

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SOIL TYPES

The Lord Jesus Christ spoke this parable: “A certain man had a fig tree planted in his vineyard; and he came and sought fruit thereon, and found none. Then said he unto the dresser of his vineyard, ‘Behold, these three years I come seeking fruit on this fig tree, and find none: cut it down; why cumbereth it the ground?’

“And the dresser of his vineyard answering said unto him, ‘Lord, let it alone this year also, till I shall dig about it, and dung it: and if it bear fruit, well: and if not, then after that thou shalt cut it down.’”¹ Friend, may we all be of that “good ground” which produces much fruit to God!

VARIOUS PROCESSES



The basic ‘blob’ of the Earth was created by a massive nuclear reaction, but the finishing touches which created the habitable platforms were of a gentler, volcanic nature. Furthermore, a myriad of powerful volcanos played a part in the creation of the first soil which covered the landmasses. This chapter examines that special soil which God initially created upon this Earth. From all of the evidence, it was extremely good soil. This soil (along with the perfect growing environment) allowed the vegetation to grow extremely fast, and very strong.

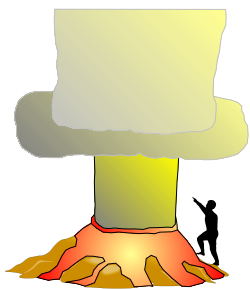
THE EXTENT

Volcanic activity has taken place to one degree or another over virtually the whole face of the Earth.² This volcanic activity transports new materials upward, from deep within the Earth. These new materials are then deposited over the surface of the existing Earth in various forms. Some of these materials are in the form of volcanic ash and cinders, while others are in the form of dense lava and various other materials.

QUALITY

The quality and speed at which soil is formed from volcanic materials depends largely upon the chemical composition and nature of the original material. The next major factor for rapidly producing good quality soil is the prevailing climate. It, in conjunction with other environmental factors, affects the rate of chemical weathering for each volcanic material.³

BASIC STEAM

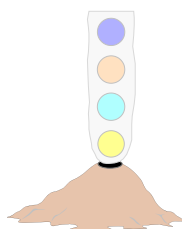


Water facilitates chemical weathering. The gases discharged from a typical volcano are said to contain from 50 to 95 percent of their volume as superheated steam.⁴ It is commonly believed that some of this steam comes from groundwater which has been forced to the surface of the Earth by the penetrating lava.^{5 and 6} The free constituents of water vapor, hydrogen and oxygen, are also found in volcanic gases. It appears that these two gases, to some degree, are a result of high-temperature dissociation of superheated water vapor.^{7 and 8}

OTHER VOLCANIC GASES

Included in a volcanic discharge are usually the gases of carbon dioxide (which, with water, forms carbonic acid), carbon monoxide, nitrogen, sulfur dioxide, sulfur trioxide, hydrogen, sublimed sulfur, hydrogen sulfide, argon, methane, hydrochloric acid, and hydrofluoric acid. There are also a number of the metallic chlorides and other gases included in these discharges.⁹

GASEOUS VARIABILITY



Numerous tests have found quite a variation in the content of gases which are emitted from the various volcanos. Interestingly enough, it appears that there is also a considerable variation in the gas mixture which is emitted from any given volcanic vent, even during a short period of time. It has actually been found that no two gas bubbles have the identical composition, though discharged from the very same volcanic orifice.^{10 and 11}

GASEOUS CONSIDERATIONS

God Almighty is not a waster of anything. He does not create any natural product on this Earth in vain. All of the gases which are emitted from volcanic vents are used for a good purpose, in one form or another. The uses for some of these gases will be examined later in this chapter.

MAGMATIC VARIABILITY

It is of interest to note that the basic ingredients in all types of lavas from volcanos (including even that of pumice) are virtually the same. The main difference between the lava types is the proportion of each constituent within the magmatic mixture. These proportions may vary greatly.¹²

The general composition of the initial starting magma may be altered even further as it passes upward through the strata of the Earth. This compositional change occurs because various components of the surrounding 'country rock' may be assimilated into the magma. These new components can intermix and chemically react with the magma, forming new compounds. An example of such magma would be the Mediterranean-type lavas.¹³

The Mediterranean lavas pass through limestone as they near the surface of the Earth. The calcium in the limestone creates a very basic type of magma, which is also rich in carbonates.¹⁴ In the end, all magmas solidify into various rock materials.

COMMON KNOWLEDGE

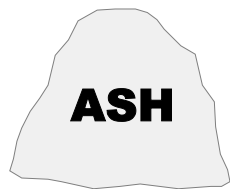
Today, it appears to be commonly taught that volcanic, or igneous rocks are the parent material for all soil. Scientific studies have shown that all of the ingredients necessary for plant growth are contained within the composition of these rocks.¹⁵ But these solid rocks do not grow good plants!

Truly, solid rock is not a good growing medium for vegetation. Furthermore, it takes many years for solid rock to become weathered into soil. We should not, however, be led astray into believing that the first soil on this Earth was created directly from the weathering of solidified magma.¹⁶

A QUICK NOTE

It is commonly thought that soil is required in order to have luxuriant plant growth. This is a fallacy! All that is needed to produce a lush growth of healthy plants is a permeable growing medium (for plant support),¹⁷ and a watery solution brought to the plant-roots which contains the necessary growing nutrients.¹⁸ The growing medium can consist of good soil, or it may be composed of just a single material such as sand, gravel, or a layer of cinders and volcanic ash.¹⁹

ASHY CONSIDERATIONS



Not only is volcanic ash an excellent growing medium, but it is also very rich in the basic elements from which plant food is produced. Volcanic ash particles are of a relatively small size. This small particle size allows them to be rapidly converted into a very fertile volcanic soil.²⁰ The conversion into good soil is rapidly facilitated by the process of chemical weathering (mentioned earlier).²¹

Volcanic soils tend to remain extremely fertile for centuries. Sporadic dustings of volcanic ash (from further eruptions) will act as a fertilizer, and will help keep the volcanic soil at its optimum fertility.²² Let us now examine a few examples of the benefits of this fertilization process.

ONE OLD VOLCANO

Sunset Crater National Monument is located a short distance from Flagstaff, Arizona (USA). The scientists believe that this volcano last erupted in about AD 1065. As a result of that eruption, a large part of the surrounding region was covered with a thin layer of black cinders and ash. These materials acted as a mulch, and retained moisture in the upper soil.²³

The improved soil worked to increase the yield of dry-land crops such as beans, corn, and squash. This new environment attracted a sizable population of Indians with agricultural interests.²⁴ The reference material (somewhat prematurely) gave credit for the improved growing conditions to mulching action alone. Later, we will obtain a better understanding of the additional benefits available from volcanic ash. Nevertheless, thin layers of volcanic ash do truly act as an excellent mulch.²⁵

BASIC MULCH

A mulch helps to retain the water in the soil and also causes this water to percolate upward to the roots of vegetation. A mulch increases any microbial activity in the upper soil, and allows the oxygen to have easy access to the soil. Furthermore, a mulch activates any nutrient solution which is flowing into or through the soil beneath.^{26 and 27}

On the third day of Creation, the benefits of a volcanic mulch worked to increase the yield of all the numerous types of vegetation which Almighty God was creating. The good soil, coupled with a perfect growing environment, caused the rapid and healthy growth of all plants.

ANOTHER VOLCANIC EXAMPLE



In the Mediterranean Sea, just west of the “toe” of the Italian boot, lies the island of Sicily. The volcano of Etna (on the eastern side of Sicily), with its numerous parasitic cones, has spread much volcanic ash over the surrounding countryside throughout history. This ash makes the soil very productive. This high productivity has resulted (for economic reasons) in a high population density in this region.^{28 and 29}

MORE EXAMPLES

In southeastern Sumatra is located the Lampong District. Prior to the eruption of Krakatoa, in 1883, this district was a poor country, with little development. After the eruption of Krakatoa spread its ash on this region, things changed. The growing environment improved so drastically that many new people moved into the area to share in the agricultural wealth.³⁰

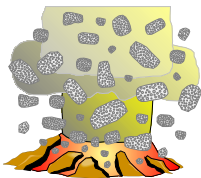
Studies have shown that the most fertile soils in Indonesia are located on the island of Java. Interestingly enough, this island contains almost all of the active volcanos in the region. Furthermore, it appears that the minerals have been leached out of the soils of the surrounding islands. Because these other islands do not receive a periodic dusting of volcanic ash, their soil is very impoverished in the elements necessary for plant growth.³¹ But how does the soil region of a landmass receive its periodic dusting of ash and other volcanic materials? Moreover, what similar thing was happening at Creation? What were (and are) the mechanics involved?

GASEOUS MAGMA

Acidic magmas are those which contain a relatively large portion of silica. Acidic magmas are generally of a thicker nature or more viscous than the more basic lavas (such as those which form basalt). These acidic magmas, because of their viscosity, have the ability to contain a large volume of highly pressurized, superheated, dissolved gases trapped within the molten material. When this gaseous magma rushes upward in the throat of a volcano, it steadily encounters regions of lessening pressure.

As magma rapidly rises toward the surface of the Earth (and pressure upon the magma is reduced), the high-pressure, dissolved gases exsolve. As the gas rushes out of solution, the myriad of extremely high-pressure bubbles are violently converted into a froth, within the magma. All of these highly compressed, superheated bubbles now have the ability to produce a considerable amount of work. They tend to rise rather explosively, forcing their host material violently upward.³²

EXPLOSIVE VOLCANOS



Acidic magmas which contain a large portion of bubbly froth are usually expelled violently out of the throat of volcanos. The explosion is so intense that the magma is blasted into pumice and ash. One reputable source proclaims that volcanos which discharge mainly pumice are the most violently explosive volcanos known to man.³³

FIRST FROTH

During the first days of Creation, a myriad of superheated plumes of magma rose explosively from deep within the cooling Earth. The highly-pressurized, dissolved gases which they contained flashed out of solution as the pressure upon the magmas steadily reduced on the upward trip to the surface of the forming Earth. As the gases suddenly exsolved, they produced vast swarms of violently exploding volcanos across the entire face of the newly formed landmasses.³⁴ The volcanic froth in the magma was blasted into dust. Volley after volley, the swarms of massive eruptions continued with unrelentingly fury.

The myriad of volcanos were a result of the superheated products from the enormous nuclear reaction which started all Creation. The pumice which was produced is a natural volcanic glass with a high silica content. It is composed of numerous, adjoining, thin-walled gas pockets.³⁵ The immense volumes of volcanic ash and porous pumice quickly formed a thick layer of raw soil-materials over the whole face of the newly formed landmass.

BASIC NECESSITIES

To grow healthy, luxurious plants, at least 16 different elements are believed to be necessary. The carbon for plant food is obtained mainly from carbon dioxide in the air. The hydrogen and oxygen is received mainly from water, and to a lesser degree from air. The remainder of the necessary elements are obtained from the soil itself, or from a nutrient solution.^{36, 37, and 38}

The soil-based or solution-based elements which plants require in large quantity for healthy growth are: nitrogen, phosphorous, potassium, calcium, magnesium, and sulphur. Other elements of which plants require just trace amounts from the soil or solution are: boron, chlorine, copper, iron, manganese, molybdenum, sodium, and zinc. It also appears that cobalt and iodine may have their value as trace elements in the healthy growth of plants.^{39, 40, and 41}

All of the above soil-based or solution-based elements are included in a good growing environment, in a form which plants can readily use. Let us now examine how these elements were prepared for plant growth by the third day of Creation.

ELECTRIFIED CONVERSION



Air is composed of about 78 percent nitrogen, by volume. But the plants are not designed to use this ordinary nitrogen. They must have nitrogen in the special form called nitrate. Now, how did God convert the ordinary nitrogen of the air into a nitrate which the plants could use? Lo and behold, when a bolt of lightning flashes through the air, it converts ordinary nitrogen into the required nitrate form. Now the nitrogen is readily available for plant food.^{42, 43 and 44} Isn't the wisdom and simplicity of Almighty God wonderful indeed?

A LOOK BACK

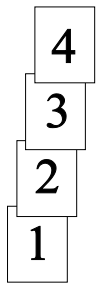
In Chapter 18, it is noted that exceptionally large and intense lightning storms were occurring, worldwide, on the latter part of the first day of Creation. These vast lightning storms continued on the second day, during the creation of the firmament which surrounds the Earth. On the third day of Creation, the dry land was created using powerful volcanic activity. Extremely powerful lightning storms are often associated with this type of massive, volcanic, land-building activity.⁴⁵

END RESULT



It must be remembered that the creation of plants and trees would start later on this third day of Creation. Therefore, a very great supply of plant foods was needed. The continual lightning activity (on an extreme scale), over a number of days, produced a great and continuous supply of the important nitrates. This supply of nitrates was now ready for the production of much luxuriant vegetation.

TRAIN OF EVENTS



The basic continental structure was formed at the beginning of this third day of Creation. Through this basic structure penetrated numerous volcanos. These volcanos were of the extremely explosive type. As is the nature of this type of volcano, they spread a vast layer of pumice, cinders, and ash over the landmass. This produced a quality, friable growing medium.

Many volcanic gases were emitted into the atmosphere. They provided the carbon dioxide, nitrogen, and water vapor from which the carbon, nitrates, hydrogen, and oxygen were made available for plant food. As noted in Chapter 19, the lightning also caused a certain percentage of the emitted nitrogen and hydrogen to combine into ammonia.

PLANT FOOD



Part of the ammonia gas reacted with the sulfuric acid, which was created by the volcanic discharges. This new reaction produced ammonium sulfate. This product, too, is a good plant fertilizer. The ammonia further reacted with nitric acid, forming ammonium nitrate. This, too, is an excellent fertilizer for vegetation. It should be noted that plants are able to use the raw ammonia directly, in the proper quantities, for their nitrogen needs.

WEATHERING

The compounds and elements, as they are normally integrated into rocks, pumice, cinders, and ash, are not useable by plants. These materials must first be converted into a useable form of plant food. This conversion is usually accomplished by the process of weathering. This process may occur slowly, by ordinary rainfall. But it may be speeded up by aggressive chemical weathering, of the type resulting from the action of the acidic products from volcanic eruptions upon the rock materials.

ACID RAIN

Volcanos, by nature, produce many necessary products for the growing of plant life. Not only do they produce the ash and cinder so useful as a growing medium, plus fertilizer products, they also spew forth sulfur dioxide gas and much water vapor. A certain portion of the sulfur dioxide gas and water vapor enters into chemical combination to produce sulfuric acid.

At the time of Creation, the myriad of volcanos were spewing forth their moist, acidic cargos into the atmosphere. Above the face of the Earth, a dense cover of rain clouds rapidly formed. The incredibly heavy rains began to fall. What began to rain down upon the Earth were the first acid rains on planet Earth. God was the perfect environmentalist! He knew the proper use of acid rain. Used properly, acid rain was a benefit to the perfect growing environment which He was creating.

TO DISTANT PLACES



How far can acid rains travel? On June 6, of 1912, Mount Katmai (in Alaska) experienced a major eruption. Great volumes of sulfurous gases and other fumes were blasted into the atmosphere. The acid rains resulting from this volcano damaged clothes on lines in Vancouver, British Columbia. These rains had traveled a distance of about 1,500 miles (2,413 km) from the source.⁴⁶

Friend, this example should give some idea of the distance which acid rains can fall downwind of a volcano. By this example, we may begin to understand how widespread the acid rains were at the time of Creation. Examined above is the effect of just one volcano. But do not lose sight of the important fact that numerous, extremely powerful volcanos were all violently erupting at the same time, worldwide, in the early stages of Creation.

BASIC SUPPORT

In the previous chapters, the nuclear process at the beginning of Creation is shown. The greater portion of the heavier elements remained toward the core of the Earth. The progressively lighter materials were created as the reaction moved outward from the initial nucleus. As a result of this process, the lightest weight elements are found intermixed in compounds at the surface of this Earth.

In Chapter 23, the creation of pure limestone was examined. This limestone formed the bed upon which the ash and cinder came to rest. When the volcanic acid-rains worked their way down through the ash, they came in contact with the limestone. As these acids reacted with the limestone, another important product was created. This product improved the growing environment still further.

BEDDING MATERIAL



Pure limestone is a mixture of calcium and carbon, in the form of calcium carbonate. Limestone has the chemical formula of CaCO_3 . When a calcium containing material is acted on by sulfuric acid, gypsum is produced.⁴⁷ Gypsum has the chemical formula of $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$.

Gypsum is used in many valuable agricultural fertilizers. In the uncalcined form, gypsum is used as a fertilizer to improve arid, alkaline soil. This material is currently found in all regions of this world.^{48 and 49} God Almighty created much gypsum on the face of the Earth at the time of Creation. He was preparing for all of the lush vegetation which He was about to create.

ACID CONVERTER

Any pure calcium which was present on the surface of the Earth, during the early stages of Creation, would have reacted violently with any juvenile water. As shown earlier, the product of this reaction is calcium hydroxide. Another name for this product is lime.⁵⁰ At Creation, the lime quickly prepared the Earth for the growing of plants.

God was rapidly creating the materials which would produce the optimum growing conditions. With all conditions perfect, the vegetation would grow extremely fast. This would allow the new Earth to rapidly be covered in greenery, painted here and there with flowers of many colors.

ANOTHER FERTILIZER

While still in the highly reactive state (during the early part of Creation), the potassium and chlorine reacted together to form potassium chloride. This substance is currently an important agricultural fertilizer.⁵¹ Friend, the truth is easy to see! One after another, Almighty God was preparing the necessary materials for growing the first plants and trees upon the face of this Earth!

SPECIAL CONDITIONS

The acidic and basic solutions instantly went to work. They began their chemical actions upon the growing medium, breaking it down and refining it into the best possible substance in which to grow all of the vegetation that soon would inhabit God's magnificent Earth.

The perfect growing medium was in place. The optimum growing solution was ready. One other important condition in the growing environment must be noted. From beneath the surface of the Earth rose up a steady, yet mellow warmth. This warmth helped the plant-life to grow better still.

FINAL TALLY

By the time the early part of the third day of Creation was finished, the chemical interactions of the volcanic products (plus the reaction of these products with the lightning) produced many useful plant foods. The list of these useful foods included: ammonium phosphate, calcium nitrate and sulfate, magnesium sulfate, potassium sulfate and nitrate, sodium nitrate, manganese chloride, boric acid, copper and zinc sulfates, plus a number of other fertilizers.

By the latter part of the third day of Creation, all of the fertilizers for the nutrient solution were ready for the plants. Combined with the canopy of water vapor in the upper atmosphere, the environment was perfect for rapidly growing all of the different forms of extremely healthy plant life. The Earth was now just like a giant greenhouse. This was to be God's very special greenhouse, for all of His very beautiful creations!

PARTING THOUGHTS

Friend, as we examine the Creation, by God the Father and His beloved Son, our Lord and Savior Jesus Christ, we cannot help but feel incredibly small in comparison. Even the most monumental works which mankind has produced are as nothing when compared with those mighty works which God Almighty and His dear Son performed at the time of Creation, and also thereafter.

Today, we find that there are many upon this Earth who do not truly believe or honor God the Father. There are many who call themselves Christians, but they have no desire to walk in the true way of Christ. There are many who willingly walk in disobedience to the Father. Friend, how long will Almighty God allow this world to continue in its arrogant wickedness?

FUNDAMENTAL TRUTH

The psalmist cries out: "*The LORD is righteous in all his ways, and holy in all his works. The LORD is nigh unto all them that call upon him, to all that call upon him in truth. He will fulfil the desire of them that fear him: he also will hear their cry, and will save them. The LORD preserveth all them that love him: but all the wicked will he destroy.*"⁵² Amen, and amen! So shall it be, both now and in the days ahead! Friend, may your heart and life be completely prepared for Him.

ETERNAL QUESTIONS

Friend, are you walking in the true way which God the Father has ordained?⁵³ Do you truly love Him?⁵⁴ Do you show you love for God by willfully walking in obedience to His commands? Will God proclaim of you, that you are His true friend? May you always be found in obedience to God, both now and throughout all eternity. May you be of those who truly obtain eternal life.

TO ALL MANKIND

The lessons to be learned from the whole Word of God are for all mankind.⁵⁵ The Lord calls out: *“Wash you, make you clean; put away the evil of your doings from before mine eyes; cease to do evil; learn to do well; seek judgment, relieve the oppressed, judge the fatherless, plead for the widow.*

“Come now, and let us reason together, saith the LORD: though your sins be as scarlet, they shall be as white as snow; though they be red like crimson, they shall be as wool. If ye be willing and obedient, ye shall eat the good of the land: but if ye refuse and rebel, ye shall be devoured with the sword: for the mouth of the LORD hath spoken it.”⁵⁶

The lesson continues: *“Cast away from you all your transgressions, whereby ye have transgressed; and make you a new heart and a new spirit: for why will ye die, O house of Israel? For I have no pleasure in the death of him that dieth, saith the Lord GOD: wherefore turn yourselves, and live ye.”⁵⁷* This proclamation was given also as an example to us.

It is not the will of the Lord God that any individual should perish. But it is His will that all people would come to true repentance, willingly walk in His way, and then obtain life eternal.⁵⁸ Friend, do you currently have eternal life abiding within you?

Friend, so ends another Chapter in this FIRST EDITION of
Listen To The Earth, Volume One, THE CREATION, by *David E. Sakrison and Friends*
in 34 Chapters, plus README, Preview, Start, and End files
with References following each Chapter

REFERENCES

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1. *The Holy Bible*, Book of Luke, chapter 13, verses 6-9.
2. *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, page 4.
3. *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, page 522.
4. Powerful volcanos can blast an enormous load of steam high into the atmosphere. This steam, as it quickly cools, readily converts into dense clouds of moisture. As all of this moisture comes into contact with atmospheric ozone, it can produce a considerable amount of hydrogen peroxide. (It should be noted that common rainwater, and even snow, contains a certain amount of hydrogen peroxide. Even mountain streams, where the rushing water is continuously aerated, contain hydrogen peroxide.) Hydrogen peroxide is a somewhat corrosive substance. It readily increases the rate of chemical weathering; and so it was at Creation. Examining the situation further, as the process of immense volumes of steam-condensation continued, it resulted in torrential rainstorms, possibly over a large region. These rainstorms, along with the various volcanic chemicals included in the rain, led to extremely rapid chemical weathering.
5. *Physical Geology*, Longwell/Flint/Sanders, 1969, page 457.
6. Chapter 23 notes the potential that at least some volcanos may be a product of groundwater, or water which comes from lower down in the Earth, which has penetrated into a region of acid contained within the strata of the Earth. The heat produced in the violent reaction which ensues instantly converts the water into superheated steam, and also produces superheated, vaporous acid. This may be part of the cause for all of the steam and acidic vapors which issue forth from volcanos. The book *Volcanoes of the Earth* (by Fred M. Bullard, 1984 Edition) notes on pages 26-27 & 35 that the scientists generally believe that volcanos are the result of steam-blast explosions, in which groundwater, by some process, is rapidly converted into superheated steam. This superheated, highly pressurized steam then blasts upward and erupts out of the crust of the Earth. Friend, the water and acid reaction appears to be a major culprit in volcano production.
7. *Geology*, Chamberlin and Salisbury, 1909, volume 1, page 618.
8. Chapter 17 notes that at a temperature of 4,892°F (2,700°C), about 11 percent of the water molecules in a vapor are thermally decomposed into the component gases of hydrogen and oxygen. The higher the temperature rises, the more the water vapor is decomposed. At a temperature of 6,332°F (3,500°C), about 30 percent of the effected water molecules are decomposed into hydrogen and oxygen. The research of the writer indicates that the percentage of free hydrogen in volcanic gases is very small, possibly less than 1 percent. This would tend to indicate that the temperature of volcanic magma is somewhat less than 4,892°F (2,700°C) during its ascent to the surface of the Earth. The book *Volcanoes of the Earth* (by Fred M. Bullard, 1984 Edition) notes on page 283 that tests at the lava lake in Halemaumau volcano (in Hawaii) indicate the temperature of the magma to be about 2,147°F (1,175°C) at a depth of 40 feet (12 m) below the surface of the lake.
9. *Physical Geology*, Longwell/Flint/Sanders, 1969, page 457; and, *Concepts of General Chemistry*, McLellan/Day/Clark, 1966, page 337.
10. *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, page 37.
11. *Physical Geology*, Longwell/Flint/Sanders, 1969, page 457.
12. *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, pages 46 and 51.
13. *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, page s 67 and 222.
14. *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, page s 67 and 222.
15. *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, page 522.
16. We should also not be led astray into believing that it must have been an exceptionally long period of time from the creation of the landmass, to the time when the immense volumes of vegetation were readily growing.

17. Let us examine the required nature of the growing medium a little further. According to the book *Hydroponic Gardening*, by Raymond Bridwell (8th Printing, 1974, page 80), this growing medium may even take the form of straw, wood chips, sawdust, peat moss, sand, crushed brick, perlite, vermiculite, glass marbles, sponge rubber, plastic foam scraps, broken dishes, and even old broken phonograph records. It appears that, generally speaking, plants are not extremely picky to the material upon which they grow, as long as then are given proper nourishment one way or another. The above book, on page 150 is stated that “on some of the U.S. Navy’s submarines there are hydroponic units in which they grow everything. There, incidentally, you would probably change from a gravel-culture method to a straight water-culture method.” According to some earlier research of the writer’s, it appears that these Navy submarines use lightweight screens in the growing trays to obtain plant support, rather than a more solid growing medium.
18. Friend, this is hydroponic gardening at its best!
19. See: *Hydroponic Gardening*, Raymond Bridwell, 8th Printing, 1974, pages 79-86.
20. The book *Paramagnetism: Rediscovering Nature’s Secret Force of Growth*, (by Philip S. Callahan, Ph.D., © 1995), declares on pages 80 and 81 that: “All really good soil is volcanic,” “All volcanic soil and rock is highly paramagnetic... Good soil is therefore highly paramagnetic,” and “...Good healthy crops grow only on highly paramagnetic soil.” Furthermore, “This [paramagnetic] force can be added to soil, where it has eroded [or been leached] away, by spreading ground-up paramagnetic rock such as basalt, or granite, into the soil.” Friend, is not volcanic dust and ash somewhat of the same nature as ground-up volcanic rocks? For many reasons, God used this volcanic dust and ash as the ultimate growing medium in which to plant the first vegetation upon this Earth.
21. See: *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, page 522.
22. *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, pages 522-523.
23. *The 1998 Grolier Multimedia Encyclopedia*, “Sunset Crater Volcano National Monument” and “Wupatki National Monument.”
24. *The 1998 Grolier Multimedia Encyclopedia*, “Sunset Crater Volcano National Monument” and “Wupatki National Monument.”
25. *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, pages 522-523.
26. *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, page 522.
27. *Hydroponic Gardening*, Raymond Bridwell, 8th Printing, 1974, pages 70-71.
28. *Volcanoes of the Earth*, Fred M. Bullard, 1984 Edition, page 337.
29. *The World Book Encyclopedia*, 1978 Edition, volume 17, page 367, “Sicily.”
30. *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, page 523.
31. *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, page 523.
32. *Ground Water*, May 1995, “Retardation of Dissolved Oxygen due to a Trapped Phase in Porous Media”, Fry/Istok/Semprini/O Reilly/Buscheck, pages 391+.
33. *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, page 46.
34. See: *Plate Tectonics: Unraveling the Mysteries of the Earth*, Jon Erickson, 1992, page 123.
35. *Physical Geology*, Longwell/Flint/Sanders, 1969, page 623.
36. *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, page 522.
37. *Microsoft Encarta 98 Encyclopedia*, “Hydroponics.”

38. *Hydroponic Gardening*, Raymond Bridwell, 8th Printing, 1974, pages 59-63.
39. *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, page 522.
40. *Microsoft Encarta 98 Encyclopedia*, "Hydroponics."
41. *Hydroponic Gardening*, Raymond Bridwell, 8th Printing, 1974, page 61.
42. *Hydroponic Gardening*, Raymond Bridwell, 8th Printing, 1974, page 63.
43. *Microsoft Encarta 98 Encyclopedia*, "Nitrogen" and "Nitrogen Cycle."
44. *The 1998 Grolier Multimedia Encyclopedia*, "Nitrogen Cycle."
45. See examples of this phenomenon in: *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, pages 124, 149, 162, 163, 177, 214, and 216.
46. *Volcanoes of the Earth*, Fred M. Bullard, 2nd Revised Edition, 1984, page 161.
47. *Microsoft Encarta 98 Encyclopedia*, "Gypsum."
48. *Microsoft Encarta 98 Encyclopedia*, "Gypsum."
49. The great amount of gypsum found upon the face of this Earth may give some indication of that great amount of volcanic activity which occurred in ancient times. The vast quantities of sulfuric acid rains may have voraciously attacked the thick layer of limestone which formerly covered much of the original Earth, converting a portion of it into gypsum.
50. *Microsoft Encarta 98 Encyclopedia*, "Calcium." As a side note, lime is currently used in agriculture as a neutralizer of acidic soils. (See: *Microsoft Encarta 98 Encyclopedia*, "Lime (substance).")
51. *Microsoft Encarta 98 Encyclopedia*, "Potassium."
52. *The Holy Bible*, Book of Psalms, chapter 145, verses 17-20.
53. In the *Holy Bible*, Book of Matthew, chapter 7, verses 13-14, the Lord Jesus Christ proclaims: "*Enter ye in at the strait gate: for wide is the gate, and broad is the way, that leadeth to destruction, and many there be which go in thereat: because strait is the gate, and narrow is the way, which leadeth unto life, and few there be that find it.*"
54. *The Holy Bible*, Book of I John, chapter 5, verse 3, proclaims: "*For this is the love of God, that we keep his commandments: and his commandments are not grievous.*"
55. See: *The Holy Bible*, Book of I Corinthians, chapter 10, verses 6-12.
56. *The Holy Bible*, Book of Isaiah, chapter 1, verses 16-20.
57. *The Holy Bible*, Book of Ezekiel, chapter 18, verses 31-32.
58. See: *The Holy Bible*, Book of II Peter, chapter 3, verses 9-14.