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بسم الله الرحمن الرحيم

In the name of God, Most Gracious, Most Merciful

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Answers Without Questions

I found a dollar on the sidewalk the other day. I immediately picked it up and shoved it into my pocket. Then a strange sensation overtook me. I felt as though the dollar were burning in my pocket. I told myself, "No, this is a gift from God. It should not be burning." But I could not get rid of the feeling, so I stuffed it into the tithe box at the masjid as soon as I got there, thus relieving myself of my burden.

If I were to argue that my feelings were from God and that I believed my actions were dictated by my true, godly self, my words would not be taken well by most people. Some would say I had a guilt complex; others would say I overreacted to something trivial. I later told my fiancée about it. To my surprise, she had once had an identical experience. I concluded that, though I had asked no questions, I was given an answer. I did not argue with it.

When I look to my feelings to assist in my judgment, I may act on some latent guilt acquired during childhood, or I may act in a purely godly way, consistent with my true nature. By seeking the clarity of vision that comes from worshiping God alone, I gradually learn to accept myself as the beautiful, godly creature that God created (95:4). By coming to grips with the truth of my existence, I learn to let go of any past guilt that may have obscured my sight. When I am on the straight path, I can understand things that perhaps I could not argue so well were I to debate them with words.

This is indeed a bold assertion to make before those who find themselves unable to let go of the crutches of half-worship —those to whom the sight of the word "Allah" alone in a masjid or the sound of a *shahadah* in which the only name mentioned is "Allah" is frightening. But, in the same way in which God has made the Quran accessible to all, God has also given us all equally the capacity to know right from wrong. When I read the Quran, my heart heals (10:57), and my ability to judge all things correctly becomes ever sharper.

When, therefore, the inevitable arguments assail me and the inescapable pressure of being alone in my reverence for God alone rails against my grip on reality, let me remind myself, first, that to give in means to follow other people, instead of God, no matter how I look at it. Second, that God will most assuredly answer my questions, though in all likelihood not through the mouths of those who wish to see me yield. And, third, I will make mistakes in my quest for pure worship, but by no means does this mean that God will forsake me (Sura 93).

It takes a lot of inner strength to go it alone the way most of us do. We can find that strength by holding fast to the Quran and our worship of God alone, and by keeping in touch with each other.

Perhaps, if many of us often find ourselves in debates that do little more than tax out vitality, we ought instead to leave those who seek debate with a question and then depart. ("What would the Prophet have said if he had called the *adhan* himself?" "Did God bless Bukhari with a capacity with which only angels had previously been endowed?")

If the goal of the disputant is to seek truth, he will do so and leave us alone. If it is not, he will not, and at this point we should leave him alone. Confident silence may thenceforth be most eloquent.

(Continued on page 2)

(Continued from page 1)

Ultimately, my greatest obligation is to God alone. Let me keep my mind and heart clear and keep in contact with my fellow believers. I may not be able to explain to anyone's satisfaction why a dollar burns in my pocket, but my fellow believers will give me the benefit of the doubt:

When God talks to you, He talks to you, not me. And if by arguing with people who do not seek real answers my mind becomes cloudy and my heart frail and I can no longer feel the dollar burning, then I have made a worthless sacrifice. I would rather have answers without questions than questions without answers.

R.S.V.

[reprinted from July 1995 SP]

Stabilizers on Earth

"*As for the Earth, we constructed it, and placed on it stabilizers (mountains), and we grew on it a perfect balance of everything.*

We made it habitable for you, and for creatures you do not provide for." (15:19-20)

"Did we not make the Earth habitable?

And the mountains stabilizers?" (78:6-7)

The Quranic verses above hint of a link between the habitability of Earth and Mountains. Mountains have long had the obvious role of storing snow and releasing the melted snow in spring and summer. This has given us streams and rivers with fertile banks on which the first civilizations formed.

In the past 200 years, geologists have been fascinated by linear Mountain ranges. While they could easily explain the formation of a single volcanic mountain, which forms as molten magma and lava are ejected through earth crust, they remained puzzled as to how linear mountain ranges are built.

Earth is the only planet in the Solar System which has mountain ranges on its thin crust. Mars has a few mountains among which Olympus is the tallest. But all the Mars Mountains are each separate from each other and are all in the form of a single cone. There is no wall of mountains such as the ones we see in large number on Earth, on Mars nor on any other planet.

Since its conception in the mid 1960's, Plate Tectonics Theory has explained the process by which linear mountain ranges are formed. This theory has since been successfully tested and verified.

This is the list of benefits Mountains provide for us:

1) Mountains act as natural barriers for plant and animal life so that they could survive mass extinction in case of natural calamities. For example in case of a disease break out, mountain ranges act as protective partitions to minimize loss of life and prevent the spread of disease to the other areas within the continent.

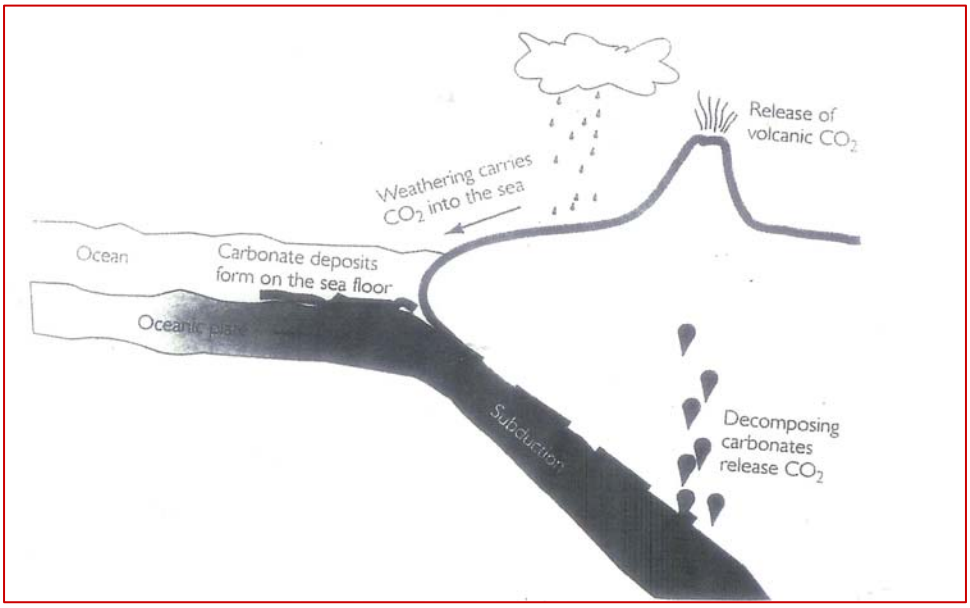
2) Emission of CO_2 (Carbon dioxide) through the top of volcanic mountains, either still active or long dormant, warm the Earth atmosphere as CO_2 and other green house gases trap the sun's infrared rays. This is something nitrogen and oxygen can not do. CO_2 comprises 0.035 percent (3.5 percent of one percent) of atmosphere.

As a result, the average temperature of Earth has remained 60 degrees Fahrenheit. Mountains are thus the Earth's thermostat causing water to remain liquid and providing the favorable temperature range that plant and animal life depend on.

Only recently, the excessive CO_2 emission due to human activity has become problematic. But in the past 2.5 billion years, since Earth's crust cooled and became thick enough, CO_2 emission from volcanic mountain tops has been the pivotal factor for Earth's moderate temperature.

This moderate temperature has helped formation of billions of micro organic plants which first took root on Earth, and later the leafing plants. Plants undergo Photosynthesis during the day. This in turn has produced oxygen. Oxygen is crucial for animal and human life.

The sketch below shows the cycle of CO_2 production through volcanic activity of a typical mountain.



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Rain dissolves CO_2, becomes acidic (CO_3H_2) and cause weathering of mountains which are mainly of granitic composition. Granitic rocks are thus chemically transformed to become limestone, a carbonate material ($SiO_3Ca+CO_2 = CO_3Ca+SiO_2$). The eroded carbonate rock particles are carried off by rivers and deposited, layers upon layers, on the ocean floor to become sedimentary limestone.

Marine creatures with shell, owe their protective jackets to the calcium minerals released into the ocean water from these sedimentary limestone deposits.

Extreme heat, pressure and forceful eruption of CO_2, magma and lava upward would metamorphose and uplift ocean's sedimentary limestone deposits to become part of the mountain. Erosion of the mountain, such as what the Colorado River has done to the Grand Canyon, would expose the parallel lines of sedimentary soil layers within the mountain which were once deposited on the ocean floor.

Mountains are thus built from the ocean floor. Mountains are built, then eroded and uplifted again to recycle earth minerals and materials.

Mountain building process takes millions of years. Earth was given almost 2.5 billion years in order to be able to sculpt mountains on its thin crust. So, the CO_2 production cycle has been in operation for 2.5 billion years. Without consistent CO_2 introduction into the atmosphere, through the cycle mentioned above, Earth would cool off causing oceans and seas to freeze. Without liquid water and moderate temperature on Earth, land animal and human life would cease to exist.

"*He made the Earth egg-shaped.*

From it, He produced its own water and pasture.

He established the mountains.

All this to provide life support for you and your animals." (79:30-32)

Plate Tectonics Theory

Plate Tectonics is the movement of Earth's crust across the surface of the planet. The earth's crust is broken into large pieces called plates or slabs, as a response to upward movements of molten rocks in the upper Mantle. Plates would either move away from each other (Divergent plate boundary) or move to close the gap (Convergent plate boundary) or slip past each other (Strike Slip boundary). Earthquakes happen when stresses at plates' boundaries overcome the frictional forces, which keep the plates locked.

"When you look at the mountains, you think they are standing still but they are moving, like the clouds. Such is the manufacture of GOD, who perfected everything. He is fully cognizant of everything you do." (27:88)

This movement is made possible by an extremely hot interior iron and molten rocks of the mantle which is of basaltic composition (mostly Si & Mg). In addition, there is considerable radioactive material locked in the Earth interior, which would decompose and break into their lighter isotopes. This unleashes great heat. Heat thus created is equivalent to the heat produced by thousands of nuclear power plants. The combined heat from hot Earth interior and heat produced by the decomposition of the radioactive materials acts as a heat engine causing gigantic convection cells of hot, semi fluid basalt to move up. This mechanism is called "convection." Convection is one of three types of heat transfer, namely radiation, conduction and convection.

The upward movement of basalt could be likened to the way water boils inside the pot on the stove when heated at the center from below. If we place two tiny lentil seeds at the bottom of the pot, there would be a moment when we see both seeds rise to the surface of boiling water, move horizontally until they reach the side of the pot, then get sucked down. All parts of water move to the center to be heated in the same way. Convection cells of basalt would make the top of the mantle restless similar to the top of the boiling water.

Earth crust is only 3 miles in thickness on the average at ocean floor and 20 miles in thickness at continents. Maximum Continent crust thickness is approximately 1 percent of Earth diameter. The thin and brittle crust breaks easily as a response to convecting basalt. With the Earth crust thicker at continent compared to the Earth crust in the ocean, ocean floor cracks. There are approximately 8 major and 20 minor plates floating on Earth's surface. A thin layer of mantle gets attached to the bottom of each plate making it thicker. The combined crust and this thin layer of mantle, which move as one piece, is called lithosphere.

As the convecting semi fluid basalt moves upward with high pressure, it melts as pressure decreases. Liquid basalt would look for gaps and crevices of the Earth crust to settle into. Gaps in between the oceanic plates (divergent plate boundaries) provide the path of least resistance.

Hot liquid basalt erupts into the ocean floor (spreading centers) at gaps and gradually spreads over the entire oceanic plate while the horizontal component of the convection (same horizontal force causing the lentil seeds to move laterally at the top of boiling water) will move the plate toward the edge of the neighboring plate to close the gap (Convergent Plate boundaries).

As basalt erupts into the ocean floor plate at spreading centers, water is gradually added to the crystal mineral of the basalt and transforms the basalt into hydrated basalt, with

(Continued on page 4)

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Happiness is Submission to God Alone

(Continued from page 3)

a lower melting point compared to the parent basalt in the mantle.

Several complex events occur when oceanic and continental plates collide before a linear mountain is formed.

The cooled magma in the newly created mountain is lighter and of a different composition compared to the parent basalt material of mantle. The cooled magma, containing more white color Silica, becomes Granite and Andesite rocks. This process caused the first island to arise from the ocean floor billions of years ago, at the time the Earth was completely covered with oceans.

"He is the one who created the Heaven and Earth in six days-and His (Earthly) domain was completely covered with water-in order to test you, to distinguish those among you who work righteousness…" (11:7)

The repeat of this process added more land mass to the first island, making our continents. Ocean crust can sink whereas the lighter continental crust remains afloat like a cork on the sea of basalt. Continents are therefore always safe and would never sink into mantle. The lighter granite and andesite will become the flotation device for continents.

"He placed stabilizers (Mountains) on Earth, lest it tumbles with you, as well as rivers and roads, that you may be guided." (16:15)

"He placed on it stabilizers (mountains), made it productive, and He calculated its provisions in four days to satisfy the needs of all its inhabitants." (41:10)

What makes continents float on the mantle is the Plate Tectonics process. Mountains are the byproduct of this process. The Revealer of the Quran described the process—Stabilizers—1400 years before Geologists discovered it.

"Do the unbelievers not realize that the heaven and the Earth used to be one solid mass that we exploded into the existence? And from water we made all living things. Would they believe?

And we placed on Earth stabilizers lest it tumbles with them, and we placed straight roads therein, that they may be guided.

And we rendered the sky a guarded ceiling. Yet, they are totally oblivious to all the portents there in." (21:30-32)

The fact that Earth's interior heat is allowed to dissipate from inside of our planet into Trenches (a total of 46,000 miles of trenches has been discovered by now) allows the movement of lighter impurities forced out of the solidifying iron, which is largely responsible for generating the electric currents in the liquid outer iron core, that are the basis of the Earth's magnetic field. The magnetic field deflects the streams of charged atomic nuclei and other particles that emanate from the Sun, as well as from deep space. Without this protective shield, the atmosphere would be stripped away from Earth.

The "guarded ceiling" of 21:32 refers to the magnetic field, as well as the Ozone in the atmosphere which blocks the Sun's harmful Ultra Violet rays.

"Why do they not reflect on the camels and how they are created?

And the sky and how it is raised.

And the mountains and how they are constructed.

And the earth and how it is built." (88:17-20)

"The Earth and Him who sustains it." (91:6)

Farzin E.

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