
Chapter ٥

The Earth

٥/١ The Earth's Shape:

The round shape of the earth is a fact that verifies the preciseness of the Qur'anic expression *yukawwir*.

Allah says in the Holy Qur'an:

(خَلَقَ السَّمَوَاتِ وَالْأَرْضَ بِالْحَقِّ يُكَوِّرُ اللَّيْلَ عَلَى النَّهَارِ وَيُكَوِّرُ النَّهَارَ عَلَى اللَّيْلِ
وَسَخَّرَ الشَّمْسَ وَالْقَمَرَ كُلٌّ يَجْرِي لِأَجَلٍ مُّسَمًّى أَلَا هُوَ الْعَزِيزُ الْغَفَّارُ)

Meaning: He (*yukawwir*) rolls the night over the daytime, and He (*yukawwir*) rolls the daytime over the night. (Surah Az-Zumar – Verse No. ٥)

The Arabic word '*yukawwir*' meaning rolled over or conglobated has as its root *kawwara*, meaning to twist and wind, e.g. as for a turban. Thus, the verse refers to a spherical body whose rotation results in the alternation of the day and the night.

The verb '*yukawwir*' also means: to conglobate. Nothing but a round body can be conglobated. It is worth mentioning that some classical



interpreters of the Holy Qur'an such as Al-Baydawi and Ar-Razi concluded from the above-mentioned verse that the earth is global, even before the existence of the scientific proofs of such a fact.

Also, it is a well-known fact that the earth is not completely spherical; it is more of an oval. Modern science has verified that the ratio between the two axes of the earth decreases steadily. This may be an explanation of the Qur'anic phrase 'diminishing it in its extremes.'

Allah says in the Holy Qur'an:

(أَفَلَا يَرَوْنَ أَنَّا نَأْتِي الْأَرْضَ نَنْقُصُهَا مِنْ أَطْرَافِهَا أَفَهُمُ الْغَالِبُونَ)

Meaning: Do they not then see that we come up to the earth, diminishing it in its extremes? (Surah Al-Anbiya' – Verse No. ٤٤)

(أَوْلَمْ يَرَوْا أَنَّا نَأْتِي الْأَرْضَ نَنْقُصُهَا مِنْ أَطْرَافِهَا وَاللَّهُ يَحْكُمُ لَا مُعَقَّبَ لِحُكْمِهِ وَهُوَ سَرِيعُ الْحِسَابِ)

Meaning: And have they not seen that We come up to the earth diminishing it in its extremities? And Allah judges; none reverses His judgment and he is swift at the reckoning. (Surah Ar-Ra'd – Verse No. ٤١)

In another *tafsir* (interpretation of the Qur'an), some Muslim scholars thought that the Qur'anic expression 'diminishing it in its extremes' referred to the divergence of the continents that began when all they were one unified unit. They then split into separate individual continents in pre-historic times and wide oceans emerged between the separated parts. The process of separation has continued at a gradual slow rate until the present time. The beaches are also eroding and decreasing continually, due to many factors. Some of the pious predecessors who interpreted the Holy Qur'an said that the verse above referred to the reduction of the land of the disbelievers by the expansion of the land of the believers, and Allah is the One Who knows best.

•/٢ The Rotation of the Earth around its Axis

Many Qur'anic verses refer, in precise terms, to the continual rotation of the earth around its axis. The Holy Qur'an refers, in precise scientific expressions, to the following aspects:

A- The day stripping from the night:

Allah says in the Holy Qur'an:

(وَعَايَةَ لَهُمُ اللَّيْلِ نَسَلَخُ مِنْهُ النَّهَارَ فَإِذَا هُمْ مُظْلِمُونَ)

Meaning: And a sign for them is the night; We *yaslakh* (strip) the daytime from it, and so, only then they are in darkness. (Surah Yasin – Verse No. ٣٧)

The word ‘strip’ is a translation of the Arabic word *yaslakh*, meaning to gradually scrape off or remove the skin, or the like. As pointed out before, the earth’s atmospheric envelope facing the sun receives sunlight and becomes illuminated due to the scattering of light by gaseous molecules and ions. The other half of the atmospheric envelope at this time is totally in darkness. With the earth’s rotation, the illuminated part is gradually replaced with darkness, and hence stripped of the part of the envelope that was in daytime, and then night prevails. The expression also suggests that the space is essentially dark, a fact confirmed by recent space travels.

A similar description of the night in the Holy Qur’an is that of ‘a cover over the day’ in the following verse:

(إِنَّ رَبَّكُمُ اللَّهُ الَّذِي خَلَقَ السَّمَوَاتِ وَالْأَرْضَ فِي سِتَّةِ أَيَّامٍ ثُمَّ اسْتَوَىٰ عَلَى الْعَرْشِ يُغْشِي اللَّيْلَ النَّهَارَ يَطْلُبُهُ حَثِيثًا وَالشَّمْسَ وَالْقَمَرَ وَالنُّجُومَ مَسخَرَاتٍ بِأَمْرِهِ أَلَا لَهُ الْخَلْقُ وَالْأَمْرُ تَبَارَكَ اللَّهُ رَبُّ الْعَالَمِينَ)

Meaning: Indeed your Lord is Allah, Who created the heavens and the earth in Six Days, and then He *Istawa* (rose over) the Throne (really in a manner that suits His Majesty). He brings the night as a cover over the day, seeking it rapidly, and (He created) the sun, the moon, the stars subjected to His Command. Surely, His is the Creation and Commandment. Blessed be Allah, the Lord of the *Alamin* (all that exists)! (Surah Al-A`raf – Verse No. ٥٤)

The verse, by the use of the word: ‘rapidly’, also refers to the high velocity of the earth’s rotation, it is ١٦٧٠ km/h, a fact that we cannot grasp as we observe the alternation of day and night.

B- Inserting night into daytime, and vice versa:

The Holy Qur’an mentions this in precise scientific expressions:

(يُولِجُ اللَّيْلَ فِي النَّهَارِ وَيُؤَلِّجُ النَّهَارَ فِي اللَّيْلِ وَسَخَّرَ الشَّمْسَ وَالْقَمَرَ كُلَّ يَجْرِي لِأَجَلٍ مُّسَمًّى ذَلِكَ اللَّهُ رَبُّكُمْ لَهُ الْمُلْكُ وَالَّذِينَ تَدْعُونَ مِنْ دُونِهِ مَا يَمْلِكُونَ مِنْ قِطْمِيرٍ)

Meaning: He merges the night into the day, and He merges the day into the night. And He has subjected the sun and the moon, each runs its course for a term appointed. Such is Allah your Lord; His is the kingdom. And those, whom you invoke or call upon instead of Him, own not even a *Qitmir* (the thin membrane over the datestone). (Surah Fatir – Verse No. ١٣)

(أَلَمْ تَرَ أَنَّ اللَّهَ يُولِجُ اللَّيْلَ فِي النَّهَارِ وَيُؤَلِّجُ النَّهَارَ فِي اللَّيْلِ وَسَخَّرَ الشَّمْسَ وَالْقَمَرَ كُلَّ يَجْرِي إِلَىٰ أَجَلٍ مُّسَمًّى وَأَنَّ اللَّهَ بِمَا تَعْمَلُونَ خَبِيرٌ)

Meaning: See you not (O Muhammad SAW) that Allah merges the night into the day, and merges the day into the night, and has subjected the sun and the moon, each running its course for a term appointed; and that Allah is All-Aware of what you do. (Surah Luqman – Verse No. ٢٩)

(ذَلِكَ بِأَنَّ اللَّهَ يُولِجُ اللَّيْلَ فِي النَّهَارِ وَيُؤَلِّجُ النَّهَارَ فِي اللَّيْلِ وَأَنَّ اللَّهَ سَمِيعٌ بَصِيرٌ)

Meaning: That is because Allah merges the night into the day, and He merges the day into the night. And verily, Allah is All-Hearer, All-Seer. (Surah Al-Hajj – Verse No. ٦١)

(يُولِجُ اللَّيْلَ فِي النَّهَارِ وَيُؤَلِّجُ النَّهَارَ فِي اللَّيْلِ وَهُوَ عَلِيمٌ بِذَاتِ الصُّدُورِ)

Meaning: He merges night into day, and merges day into night, and He has full knowledge of whatsoever is in the breasts. (Surah Al-Hadid – Verse No. ٦)

(تُولِجُ اللَّيْلَ فِي النَّهَارِ وَتُؤَلِّجُ النَّهَارَ فِي اللَّيْلِ وَتُخْرِجُ الْحَيَّ مِنَ الْمَيِّتِ وَتُخْرِجُ الْمَيِّتَ مِنَ الْحَيِّ وَتَرْزُقُ مَنْ تَشَاءُ بِغَيْرِ حِسَابٍ)

Meaning: You make the night to enter into the day, and You make the day to enter into the night, You bring the living out of the dead, and You bring the dead out of the living. And You give wealth and sustenance to

whom You will, without limit (measure or account). (Surah Al-`Imran – Verse No. ٢٧)

In all these verses, “inserting night into daytime, and vice versa” is another expression that precisely refers to the gradual crawling of darkness into the illuminated half of the atmospheric envelope in the evening; with the corresponding gradual penetration of daylight into the opposite dark half, starting with daybreak.

C- Rolling over:

Allah says in the Holy Qur'an:

(خَلَقَ السَّمَوَاتِ وَالْأَرْضَ بِالْحَقِّ يُكَوِّرُ اللَّيْلَ عَلَى النَّهَارِ وَيُكَوِّرُ النَّهَارَ عَلَى اللَّيْلِ
وَسَخَّرَ الشَّمْسَ وَالْقَمَرَ كُلٌّ يَجْرِي لِأَجَلٍ مُّسَمًّى أَلَا هُوَ الْعَزِيزُ الْغَفَّارُ)

Meaning: He (*yukawwir*) rolls the night over the daytime, and He (*yukawwir*) rolls the daytime over the night. (Surah Az-Zumar – Verse No. ٥)

This verse (see ٥/١) refers to the conglobation of the earth and its rotation around itself.

D- The movement of the night and the day in fixed orbits:

Allah says in the Holy Qur'an:

(وَهُوَ الَّذِي خَلَقَ اللَّيْلَ وَالنَّهَارَ وَالشَّمْسَ وَالْقَمَرَ كُلٌّ فِي فَلَكٍ يَسْبَحُونَ)

Meaning: And He it is Who has created the night and the day, and the sun and the moon, each in an orbit floating. (Surah Al-Anbiya' – Verse No. ٣٣)

(لَا الشَّمْسُ يَنْبَغِي لَهَا أَنْ تُدْرِكَ الْقَمَرَ وَلَا اللَّيْلُ سَابِقُ النَّهَارِ وَكُلٌّ فِي فَلَكٍ يَسْبَحُونَ)

Meaning: It is not for the sun to overtake the moon, nor does the night outstrip the day. They all float, each in an orbit. (Surah Yasin – Verse No. ٤٠)

The Arabic expression in the above-mentioned verse is a translation of the Arabic word *yasbahun*, the plural form of the verb referring to more than two subjects. (Arabic grammar differentiates between the dual and plural subjects.) Thus, the word ‘float’ or *yasbahun* in Arabic does not refer only to the sun and the moon.

The word ‘orbit’ in the verses is a translation of the word *falak*, meaning ‘path’ in Arabic. The sun’s orbit, relative to the movement of the earth or its real orbit in its own galaxy is known; as is the moon’s orbit known as it rotates around the earth. Then, what about the orbit of the day and night? It is the earth’s rotation relative to the atmospheric envelope (at any moment being half dark and half illuminated by the scattered sunlight) that causes the alternation of day and night.

E- Manifestation of the sun:

Allah says in the Holy Qur’an:

(وَالشَّمْسُ وَضُحَاهَا * وَالْقَمَرُ إِذَا تَلَاهَا * وَالنَّهَارُ إِذَا جَلَّاهَا * وَاللَّيْلُ إِذَا يَغْشَاهَا)

Meaning: And (by) the sun and its forenoon radiance. And (by) the moon when it ensues her. And (by) the day when it manifests her. And (by) the night when it envelopes her! (Surah Ash-Shams – Verses Nos. ١ - ٤)

Our predecessors believed that the earth was motionless and that the daylight came from the rotation of the sun around the earth from east to west. Yet, the Holy Qur’anic verse mentioned above clearly states the fact discovered by modern science, that it is the day (resulting from the movement of the earth) that makes the sun manifest and visible. The last verse affirms what we referred to previously, i.e. that the night envelops (i.e. conceals) the sun due to an independent motion (i.e. the relative motion of the earth to the atmospheric envelope).

Allah also says:

(هُوَ الَّذِي جَعَلَ لَكُمُ اللَّيْلَ لِتَسْكُنُوا فِيهِ وَالنَّهَارَ مُبْصِرًا إِنَّ فِي ذَلِكَ لَآيَاتٍ لِّقَوْمٍ يَسْمَعُونَ)

Meaning: He is The One Who has made for you the night to rest in it, and the daytime a beholder. Surely in that are indeed signs for a people who hear. (Surah Yunus – Verse No. ٦٧)

﴿وَجَعَلْنَا اللَّيْلَ وَالنَّهَارَ آيَاتَيْنِ فَمَحَوْنَا آيَةَ اللَّيْلِ وَجَعَلْنَا آيَةَ النَّهَارِ مُبْصِرَةً لِّتَبْتَغُوا فَضْلًا مِّن رَّبِّكُمْ
وَلِتَعْلَمُوا عَدَدَ السِّنِينَ وَالْحِسَابَ وَكُلُّ شَيْءٍ فَعَصْنَاهُ تُفَصِيلًا﴾

Meaning: And We have made the night and the day (time) as two signs; so We have erased the sign of the night and We have made the sign of the day-time a beholder that you may seek Grace from your Lord, and that you may know the number of the year and the reckoning. And everything We have expounded with (a distinct) expounding. (Surah Al-Isra' – Verse No. ١٢)

F- The spread of the earth:

Allah says in the Holy Qur'an:

﴿وَالأَرْضَ بَعْدَ ذَلِكَ دَحَاهَا﴾

Meaning: And after that He spread (spinned) the earth (Surah An-Nazi'at – Verse No. ٣٠)

The word 'spread' is a translation of the Arabic word *dahaha* meaning to throw out, protract widen the surface. This must have been the case with the earth when it separated from the sun, to be attracted to the sun (that great mass whose size is ١٠^٩ times that of the earth), during its annual rotation, just as it orbits around itself once every day and night.

G- Movement of the mountains:

Allah says in the Holy Qur'an:

﴿وَتَرَى الْجِبَالَ تَحْسَبُهَا جَامِدَةً وَهِيَ تَمُرُّ مَرَّ السَّحَابِ صُنِعَ اللَّهُ الَّذِي اذْنَقَنَ كُلَّ شَيْءٍ إِنَّهُ خَبِيرٌ بِمَا تَفْعَلُونَ﴾

Meaning: And you see the mountains, that you reckon inert, and (really) they pass by like clouds – the handiwork of Allah. (Surah An-Naml – Verse No. ٨٨)

The earth, which we suppose to be at rest, rotates around itself, together with what it sustains such as the mountains and its own weight, at a speed of ١,٦٦٩ km/h, and at a speed of ٥٣,٦٢٤ km/h around the sun. Concerning the above verse, some classical interpreters of the Holy Qur'an thought that there would be independent displacive movement of the mountains on the Day of Resurrection. But the verse refers clearly to 'the handiwork of Allah' in His creation of the moving earth, and not to the destruction that will take place on the Day of Resurrection. This is affirmed by a verse we discussed previously (Surah An-Naml – Verse No. ٨٦) that deals with the grace of creating the day and the night:

(الْمُ يَرَوْنَ أَنَّا جَعَلْنَا اللَّيْلَ لَيْسَكُنُوا فِيهِ وَالنَّهَارَ مُبْصِرًا إِنَّ فِي ذَلِكَ لآيَاتٍ لِقَوْمٍ يُؤْمِنُونَ)

Meaning: Have they not seen that We have made the night for them to rest in it, and the day-time a beholder? Surely in that are indeed signs for a people who believe. (Surah An-Naml – Verse No. ٨٦)

Both verses are mentioned amid verses that deal with the Day of Resurrection, and they remind people of the graces and merits bestowed on them by Allah during their lifetime, as contrasted with the reckoning of the world to come. It is common in the Holy Qur'an to mention scenes from the Hereafter and the signs of Allah's creation alternately, so that man's belief in tangible matters should be joined with a belief in all that is hidden.

H- Points of sunrise:

Allah says in the Holy Qur'an:

(وَأَوْرَثْنَا الْقَوْمَ الَّذِينَ كَانُوا يُسْتَضْعَفُونَ مَشَارِقَ الْأَرْضِ وَمَغَارِبَهَا الَّتِي بَارَكْنَا فِيهَا)

Meaning: And We made the people who were considered weak to inherit the eastern (points of sunrise) of the land and the western (points of sunset) parts thereof which We have blessed. (Surah Al-A`raf – Verse No. ١٣٧)

(رَبُّ السَّمَوَاتِ وَالْأَرْضِ وَمَا بَيْنَهُمَا وَرَبُّ الْمَشَارِقِ)

Meaning: Lord of the heavens and of the earth, and all that is between them, and Lord of every point of the sun's risings. (Surah As-Saffat – Verse No. ٥)

(فَلَا أَقْسِمُ بِرَبِّ الْمَشَارِقِ وَالْمَغَارِبِ إِنَّا لَقَادِرُونَ)

Meaning: So I swear by the Lord of all points of sunrise and sunset in the east and the west that surely We are Able. (Surah Al-Ma`arij – Verse No. ٤٠)

The rise of the sun is referred to in these verses with the Arabic word *mashariq* meaning risings. This word refers to the different and successive risings of the sun to the earth due to its rotation. If the earth were stable there would only be one point for sunset and another for sunrise for all places at all times on the earth.

٥/٣ The Depths of the Earth

The Holy Qur'an referred to the mineral wealth to be found in the depths of the earth, centuries before the development of the science of geology and mining. They were created for the benefit of man, the successor of Allah on the earth:

(هُوَ الَّذِي خَلَقَ السَّمَوَاتِ وَالْأَرْضَ فِي سِتَّةِ أَيَّامٍ ثُمَّ اسْتَوَىٰ عَلَى الْعَرْشِ يَعْلَمُ مَا يَلِجُ فِي الْأَرْضِ وَمَا يَخْرُجُ مِنْهَا وَمَا يَنْزِلُ مِنَ السَّمَاءِ وَمَا يَعْرُجُ فِيهَا وَهُوَ مَعَكُمْ أَيْنَ مَا كُنْتُمْ وَاللَّهُ بِمَا تَعْمَلُونَ بَصِيرٌ)

Meaning: He it is Who created the heavens and the earth in six Days and then *Istawa* (rose over) the Throne (in a manner that suits His Majesty). He knows what goes into the earth and what comes forth from it, what descends from the heaven and what ascends thereto. And He is with you (by His Knowledge) wheresoever you may be. And Allah is the All-Seer of what you do.” (Surah Al-Hadid – Verse No. ٤)

(الْمُ تَرَأَىٰ اللَّاهُ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَأَخْرَجْنَا بِهِ ثَمَرَاتٍ مُّخْتَلِفًا أَلْوَانُهَا وَمِنَ الْجِبَالِ جُدَدٌ بَيْضٌ وَحُمْرٌ مُّخْتَلِفٌ أَلْوَانُهَا وَغَرَابِيبُ سُودٌ)

Meaning: See you not that Allah sends down water (rain) from the sky, and We produce therewith fruits of varying colors, and among the mountains are streaks white and red, of varying colors and (others) very black.” (Surah Fatir – Verse No. ٢٧)

(لَهُ مَا فِي السَّمَوَاتِ وَمَا فِي الْأَرْضِ وَمَا بَيْنَهُمَا وَمَا تَحْتَ الثَّرَى)

Meaning: To Him belongs all that is in the heavens and all that is on the earth, and all that is between them, and all that is under the soil. (Surah Taha – Verse No. ٦)

The Qur’anic Surah Az-Zalzalah, which deals with the terrors that will afflict the earth on the Day of Resurrection, refers to the burdens in the deepest depths of the earth:

(إِذَا زُلْزِلَتِ الْأَرْضُ زِلْزَالَهَا * وَأَخْرَجَتِ الْأَرْضُ أَثْقَالَهَا)

Meaning: When the earth is quaked with its (final) earthquake. And the earth brings out its very heavy (burdens). (Surah Az-Zalzalah – Verses Nos. ١ - ٢)

Who then informed Muhammad (peace be upon him) of the burdens found inside the earth? The people at the time of the revelation of the Holy Qur’an knew only that the depths of the earth contained some wells.

•/٤ Materials of Construction

The Holy Qur’an informs us of a source of one of the construction materials that were used by the previous nations, but unknown to the ancient Arabs. This material is mud brick that were formed from clay, such as the mud from the river Nile or desert clay. The mud bricks were hardened by burning. Burnt bricks were not widely known and used until the last century. Recent archeological studies have discovered, among the monuments of ancient Egypt, some buildings made of burnt adobe. It is believed that the adobes were mixed with straw, and then they were burnt, before or after building. The pagan Arabs of the era of ignorance (pre-Islamic times) did not have the knowledge of these arts.

Allah, the Exalted, says in the Holy Qur’an:

(وَقَالَ فِرْعَوْنُ يَا أَيُّهَا الْمَلَأُ مَا عَلِمْتُ لَكُمْ مِنْ إِلَهٍ غَيْرِي فَأَوْقِدْ لِي يَا هَامَانَ عَلَى الطِّينِ فَاجْعَلْ لِي صَرْحًا لَعَلِّي أَطَّلِعُ إِلَى إِلَهِ مُوسَى وَإِنِّي لأظنُّهُ مِنَ الْكَاذِبِينَ)

Meaning: Fir'awn (Pharaoh) said: "O chiefs! I know not that you have an ilah (a god) other than me, so kindle for me (a fire), O Haman, to bake (bricks out of) clay, and set up for me a *Sarhan* (a lofty tower, or palace, etc.) in order that I may look at (or look for) the Ilah (God) of Musa (Moses); and verily, I think that he [Musa (Moses)] is one of the liars. (Surah Al-Qasas – Verse No. ٣٨)

٥/٥ Iron

Allah, the Glorified and the Exalted, chooses to refer to iron, from among all the metals and minerals, in the Holy Qur'an. The following is one of these important references:

(لَقَدْ أَرْسَلْنَا رُسُلَنَا بِالْبَيِّنَاتِ وَأَنْزَلْنَا مَعَهُمُ الْكِتَابَ وَالْمِيزَانَ لِيَقُومَ النَّاسُ بِالْقِسْطِ وَأَنْزَلْنَا الْحَدِيدَ فِيهِ بَأْسٌ شَدِيدٌ وَمَنَافِعُ لِلنَّاسِ وَلِيَعْلَمَ اللَّهُ مَن يَنْصُرُهُ وَرُسُلَهُ بِالْغَيْبِ إِنَّ اللَّهَ قَوِيٌّ عَزِيزٌ)

Meaning: Indeed We have already sent Our Messengers with the supreme evidence(s), and We have sent down with them the Book and the Balance, that mankind may keep up equity. And We have sent down iron, wherein is mighty power (in matters of war), as well as many benefits for mankind, and that Allah may know who vindicates Him and His Messengers in the unseen. Surely Allah is Ever-Powerful, Ever-Mighty. (Surah Al-Hadid – Verse No. ٢٥)

Iron has become the backbone of engineering structures for human civilization. All geological and metallurgical indicators suggest that iron will continue to have the same importance on earth, until the time Allah wills, as iron is the most abundant and easily extracted metallic element. (As a chemical element, aluminum is more abundant than iron, and is found in different compounds. However, most of the aluminum is found in the form of aluminum silicates (clays) which are stable and difficult to reduce. Hence, it is technically and economically prohibitive to extract aluminium therefrom)

Iron ores are not found in a naturally pure state. Just as with other metals, they are combined with many impurities. To extract the iron in a pure state, its ores are concentrated by washing out the impurities with water, solvents, etc. Accordingly, the impurities separate from the concentrated ores and float on the surface. The concentrated ores are heated with a reducing material and suitable additions. The impurities separate from the molten metal in the form of a layer of slag floating on the surface of the molten metal. The Holy Qur'an simulates these two processes (washing the impurities of the ore and separating the slag from the metal) in an inimitably accurate manner (for the people of the time of the revelation of the Holy Qur'an). Allah likened the two processes (of washing out impurities and slag separation) to a flood removing impurities from the earth's surface:

(أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَسَالَتْ أَوْدِيَةٌ بِقَدَرِهَا فَاحْتَمَلَ السَّيْلُ زَبَدًا رَابِيًا وَمِمَّا يُوقِدُونَ عَلَيْهِ فِي النَّارِ ابْتِغَاءَ حُلْيَةٍ أَوْ مَتَاعٍ زَبَدٌ مِثْلَهُ كَذَلِكَ يَضْرِبُ اللَّهُ الْحَقَّ وَالْبَاطِلَ فَأَمَّا الزَّبَدُ فَيَذْهَبُ جُفَاءً وَأَمَّا مَا يَنْفَعُ النَّاسَ فَيَمْكُثُ فِي الْأَرْضِ كَذَلِكَ يَضْرِبُ اللَّهُ الْأَمْثَالَ)

Meaning: He sends down water (rain) from the sky, and the valleys flow according to their measure, but the flood bears away the foam that mounts up to the surface, and (also) from that (ore) which they heat in the fire in order to make ornaments or utensils, rises a foam like unto it, thus does Allah (by parables) show forth truth and falsehood. Then, as for the foam it passes away as scum upon the banks, while that which is for the good of mankind remains in the earth. Thus Allah sets forth parables (for the truth and falsehood, i.e. Belief and disbelief). (Surah Ar-Ra`d – Verse No. ١٧)

Compared to other metals, iron and steel alloys are uniquely diverse in properties, according to the content of carbon and alloying elements, as well as the mechanical and thermal treatments applied to it. Some alloys are ductile, from which plates, pipes, columns, nails, etc can be easily formed. Others have enough elasticity and strength to produce springs, while hard tough steel alloys are used to make armor and machine tools, etc. These are 'benefits for mankind' mentioned in (Surah Al-Hadid-Verse ٢٥) above. This is one of the proofs from Allah by which He challenged the proud non-believers from the time of the revelation of the Holy Qur'an until our modern age.

Through certain thermal treatments the alloys of iron and steel become more ductile to be easily shaped. Allah informed the Prophet Dawud (David) of these facts:

(وَلَقَدْ آتَيْنَا دَاوُدَ مِنَّا فَضْلًا يَا جِبَالُ أَوِّبِي مَعَهُ وَالطَّيْرَ وَالنَّارُ لَهِ الْحَدِيدَ * أَنْ أَعْمَلَ سَابِغَاتٍ وَقَدَرَ فِي السَّرْدِ وَاعْمَلُوا صَالِحًا إِنِّي بِمَا تَعْمَلُونَ بَصِيرٌ)

Meaning: And indeed We bestowed grace on David from Us (saying): "O you mountains. Glorify (Allah) with him! And you birds (also)! And We made the iron soft for him." Saying: "Make you perfect coats of mail, balancing well the rings of chain armor, and work you (men) righteousness. Truly, I am All-Seer of what you do. (Surah Saba' – Verses Nos. ١٠ - ١١)

The alloys of steel are a combination of iron and one or more other elements. These alloying elements change the microstructure of steel and could make it harder, more corrosion resistant, or having other desired useful properties. The Holy Qur'an refers clearly to this art in the context of the story of Dhul-Qarnayn. Allah guided him to add molten copper to iron in order to make it hard and impenetrable:

(وَيَسْأَلُونَكَ عَنِ ذِي الْقَرْنَيْنِ قُلْ سَأَتْلُو عَلَيْكُمْ مِنْهُ ذِكْرًا * إِنَّا مَكَّنَّا لَهُ فِي الْأَرْضِ وَعَآتَيْنَاهُ مِنْ كُلِّ شَيْءٍ سَبَبًا)

Meaning: And they ask you about Dhul-Qarnayn. Say: "I shall recite to you something of his story." Verily, We established him in the earth, and We gave him the means of everything. (Surah Al-Kahf – Verses Nos. ٨٣ - ٨٤)

This is mentioned in other verses in the same Surah:

(قَالُوا يَا ذَا الْقَرْنَيْنِ إِنَّ يَأْجُوجَ وَمَأْجُوجَ مُفْسِدُونَ فِي الْأَرْضِ فَهَلْ نَجْعَلُ لَكَ خَرْجًا عَلَيَّ أَنْ تَجْعَلَ بَيْنَنَا وَبَيْنَهُمْ سَدًّا * قَالَ مَا مَكَّنِّي فِيهِ رَبِّي خَيْرٌ فَأَعِينُونِي بِقُوَّةٍ أَجْعَلْ بَيْنَكُمْ وَبَيْنَهُمْ رَدْمًا * ءَاتُونِي زُبَرَ الْحَدِيدِ حَتَّىٰ إِذَا سَاوَىٰ بَيْنَ الصَّدَفَيْنِ قَالَ انْفُخُوا حَتَّىٰ إِذَا جَعَلَهُ نَارًا قَالَ ءَاتُونِي أُفْرِغْ عَلَيْهِ قِطْرًا * فَمَا اسْتَطَاعُوا أَنْ يَظْهَرُوهُ وَمَا اسْتَطَاعُوا لَهُ نَقْبًا)

Meaning: They said: "O Dhul-Qarnayn! Verily! Ya'juj and Ma'juj (Gog and Magog) are doing great mischief in the land. Shall we then pay you a tribute in order that you might erect a barrier between us and them?" He said: "That (wealth, authority and power) in which my Lord had

established me is better (than your tribute). So help me with strength (of men), I will erect between you and them a barrier. "Give me pieces (blocks) of iron," then, when he had filled up the gap between the two mountain-cliffs, he said: "Blow," till when he had made it (red as) fire, he said: "Bring me molten copper to pour over it." So they [Ya'juj and Ma'juj (Gog and Magog)] were made powerless to scale it or dig through it. (Surah Al-Kahf – Verses Nos. ٩٤ - ٩٧)

Metals are characterized by their ductility, that is to say, they are susceptible to being shaped at normal temperatures or with a little heating. Yet, if they are subjected to high temperatures, then quenched, they lose much of their ductility and become brittle and subject to fracture or disintegration, according to the rate of cooling. This is referred to in the Holy Qur'an in the context of the story of As-Samiri who made a golden calf for the Children of Israel to worship. Moses ordered the calf to be heated intensely, "burn it" and disintegrated into the cold sea water:

(قَالَ فَادْهَبْ فَإِنَّ لَكَ فِي الْحَيَاةِ أَنْ تَقُولَ لَا مِسَاسَ وَإِنَّ لَكَ مَوْعِدًا لَنْ تُخْلَفَهُ وَانظُرْ إِلَى إِلَهِكَ الَّذِي ظَلْتَ عَلَيْهِ عَاكِفًا لَنُْحَرِّقَنَّهُ ثُمَّ لِنَنْسِفَنَّهُ فِي الْيَمِّ نَسْفًا)

Meaning: Musa (Moses) said: "Then go! Yet, surely it shall be for you in (this) life to say, 'untouchable!' And surely there is for you an appointment you will never be allowed to fail; and behold your god, to whom you lingered on consecrating yourself! Indeed we will definitely burn it away; thereafter indeed we will definitely crush it (into powder) into the main. (Surah Taha – Verse No. ٩٧)

٥/٦ Mountains:

It is a well-established fact that the mountains have an important role in fixing the earth's crust and controlling the magma and vapors under it. Also, the mountains balance the influences from the valleys and those from the depths of the oceans. Without them, the earth would face disturbances, the extent and outcome of which only Allah knows.

The earth's crust consists of a solid layer that extends ٣٠-٤٠ kilometers deep. Much is known about this layer through geological studies. Minerals are extracted from this layer. The earth's crust has many faults and folds that were formed due to the intense shrinkage

during its solidification. These faults and folds are rather sensitive to the movement of the magma and vapors inside the earth, and they are the sources of earthquakes and the outlets for volcanoes. This is where the role of the mountains comes in, as heavy vertical extensions that balance and mitigate the strains resulting from these folds.

Consider the inimitability of the Qur'anic expression that refers to these faults:

(وَالأَرْضُ ذَاتِ الصَّدْعِ)

Meaning: And the by earth comprising crevices. (Surah At-Tariq – Verse No. ١٢)

Additionally, the earth rotates around its axis and revolves about the sun in an orbit that is inclined to the axis of the earth with its burdens, magma, and points of unrest. This could have led to widespread disturbances if it were not for the mountains, that act as distributed masses along the earth's crust, extending deeply inside, much like 'pegs'.

Consider the All-Wise Qur'anic verses that affirm the role of the mountains to fix the earth:

(أَلَمْ نَجْعَلِ الأَرْضَ مِهَادًا * وَالْجِبَالَ أَوْتَادًا)

Meaning: Have We not made the earth as a bed, And the mountains as pegs. (Surah An-Naba' – Verse No. ٦-٧)

(وَأَلْقَى فِي الأَرْضِ رَوَاسِيَ أَن تَمِيدَ بِكُمْ وَأَنْهَارًا وَسُبُلًا لَّعَلَّكُمْ تَهْتَدُونَ)

Meaning: And He has affixed into the earth mountains standing firm, lest it should shake with you, and rivers and roads, that you may guide yourselves. (Surah An-Nahl – Verse No. ١٥)

(وَجَعَلْنَا فِي الأَرْضِ رَوَاسِيَ أَن تَمِيدَ بِهِمْ وَجَعَلْنَا فِيهَا فِجَاجًا سُبُلًا لَّعَلَّهُمْ يَهْتَدُونَ)

Meaning: And We have placed on the earth firm mountains, lest it should shake with them, and We placed therein broad highways for them to pass through, that they may be guided. (Surah Al-Anbiya' – Verse No. ٣١)

(خَلَقَ السَّمَوَاتِ بِغَيْرِ عَمَدٍ تَرَوْنَهَا وَأَلْقَى فِي الْأَرْضِ رَوَاسِيَ أَنْ تَمِيدَ بِكُمْ وَبَثَّ فِيهَا مِنْ كُلِّ دَابَّةٍ وَأَنْزَلْنَا مِنَ السَّمَاءِ مَاءً فَأَنْبَتْنَا فِيهَا مِنْ كُلِّ زَوْجٍ كَرِيمٍ)

Meaning: He has created the heavens without any pillars, that you see and has set on the earth firm mountains, lest it should shake with you. And He has scattered therein moving (living) creatures of all kinds. And We send down water (rain) from the sky, and We cause (plants) of every goodly kind to grow therein. (Surah Luqman – Verse No. ١٠)

٥/٧ The Sky

The Holy Qur'an uses more than one precise scientific description to qualify the sky. According to the Holy Qur'an, the sky consists of layers one above the other, and not as a mere flat picture or a dome decorated with stars and planets as primitive man thought it was before the recent scientific discoveries. The multi-layers of the sky are mentioned in different verses in the Holy Qur'an:

(الَّذِي خَلَقَ سَبْعَ سَمَوَاتٍ طِبَاقًا مَا تَرَى فِي خَلْقِ الرَّحْمَنِ مِنْ تَفَاوُتٍ فَارْجِعِ الْبَصَرَ هَلْ تَرَى مِنْ فُطُورٍ)

Meaning: Who has created seven heavens as strata. In no way can you see in the creation of The All-Merciful any disparity; so return your gaze; do you see any rent? (Surah Al-Mulk – Verses No. ٣)

(أَلَمْ تَرَوْا كَيْفَ خَلَقَ اللَّهُ سَبْعَ سَمَوَاتٍ طِبَاقًا)

Meaning: See you not how Allah has created the seven heavens one above another. (Surah Nuh – Verse No. ١٥)

(وَبَنَيْنَا فَوْقَكُمْ سَبْعًا شَدِيدًا)

Meaning: And We have built above you seven strong (heavens). (Surah An-Naba' – Verse No. ١٢)

(وَلَقَدْ خَلَقْنَا فَوْقَكُمْ سَبْعَ طَرَائِقَ وَمَا كُنَّا عَنِ الْخَلْقِ غَافِلِينَ)

Meaning: And indeed We have created above you seven heavens (one over the other), and We are never unaware of the creation. (Surah Al-Mu'minun – Verse No. ١٧)

The sky is referred to in the Holy Qur'an as '*tibaqa*' meaning 'layers' in English. The very Arabic word '*tibaqa*' is translated in one of the English interpretations of the Holy Qur'an as 'one above the other', 'one above another', 'seven strong heavens', and 'seven heavens (one over the other).' Yet, the Qur'anic word '*tibaqa*' may refer to the three-dimensional universe, that have stars in the galaxies that form the infinite space. Also, the word '*tibaqa*' may refer to the layers of the atmosphere surrounding the earth and Allah is the One Who knows best. Whether the seven layers mentioned in the Holy Qur'an refer to the earth's atmosphere or the expanded heavens of the universe, or whether the number seven mentioned in the previous Qur'anic verses is referred to in the real sense of the word or is a metaphor for the numerous layers of the sky, the Qur'anic fact is evident, existing, and beyond dispute, all that is above the earth, whether one sky or more, is found in the form of layers one above the other. Allah spoke the truth when He described the great well-constructed sky as '*bina'a*' meaning: a construction or building in English.

Allah says in the Holy Qur'an:

(الَّذِي جَعَلَ لَكُمُ الْأَرْضَ فِرَاشًا وَالسَّمَاءَ بِنَاءً)

Meaning: Who has made the earth a for you (as) a bedding, and the heaven an edifice. (Surah Al-Baqarah – Verse No. ٢٢)

(ءَأَنْتُمْ أَشَدُّ خَلْقًا أَمْ السَّمَاءُ بِنَاهَا * رَفَعَ سَمَكَهَا فَسَوَّاهَا)

Meaning: Are you more difficult to create, or the heaven that He constructed? He raised its height, then He has equally ordered it. (Surah An-Nazi'at – Verses Nos. ٢٧ - ٢٨)

(وَبَنَيْنَا فَوْقَكُمْ سَبْعًا شِدَادًا)

Meaning: And We have built above you seven strong (heavens). (Surah An-Naba' – Verse No. ١٢)

One of the precise descriptions mentioned in the Holy Qur'an concerning the atmosphere, the sky, is that it has *raj`* meaning 'to return' in English. This means that the sky returns water vapor in the form of rain, bodies are 'returned' to the earth by gravitational attraction, wireless waves by reflecting them from the ionosphere, infra-red radiation in order to warm the earth during the night, and water vapor evolved from water surfaces after having been condensed.

Allah says in the Holy Qur'an:

(وَالسَّمَاءِ ذَاتِ الرَّجْعِ)

Meaning: By the heaven comprising the *raj`* (returning: rain, etc). (Surah At-Tariq – Verse No. ١١)

The inimitability of the Holy Qur'an is verified by the fact that it describes the earth's atmosphere as 'a roof, safe and well guarded'. The earth, together with the mountains according to some scientific views, stabilizes the atmosphere which, in turn, preserves the oxygen for life and carbon dioxide necessary for photosynthesis in plants. The sky also saves the water vapor necessary for the rain-water cycle. The gravitational attraction keeps the earth's atmospheric air from leaking into the external space and enables the earth to support life, in contrast to many of the other planets.

Consider the following verse:

(وَجَعَلْنَا السَّمَاءَ سَقْفًا مَحْفُوظًا وَهُمْ عَنْ آيَاتِهَا مُعْرَضُونَ)

Meaning: And We have made the heaven as a roof well preserved, and (yet still) from its signs they are veering away. (Surah Al-Anbiya' – Verse No. ٣٢)

Also, the earth's atmosphere prevents heat from leaking into the very cold cosmic space surrounding it. It is the earth's atmosphere that scatters and distributes sunlight, and accordingly, the sky seems radiant as its light spreads all over the earth, while the external space is extremely dark, in which the sun looks like a distant lamp hanging in the dark sky. Another miracle of the earth's atmosphere is that it guards the earth from

the meteors burning through it, and from the cosmic rays that destroy plant and animal life. In the truthful Qur'an (English meaning): "And We have made the heaven a roof, safe and well guarded" .

The earth's atmosphere is continuous with no rifts, unless it is damaged by practices leading to environmental degradation, such as that which has led to the ozone hole.

Allah, the Exalted, said in the Holy Qur'an:

(أَفَلَمْ يَنْظُرُوا إِلَى السَّمَاءِ فَوْقَهُمْ كَيْفَ بَنَيْنَاهَا وَزَيَّنَّاهَا وَمَا لَهَا مِنْ فُرُوجٍ)

Meaning: Have they not looked at the heaven above them, how We have made it and adorned it, and there are no rifts in it? (Surah Qaf – Verse No. ٦)

In the context of mentioning the events that will take place on the Day of Resurrection, the Holy Qur'an refers to the continuity of the sky. On this Day, the heaven shall be stripped off, cleft, and split asunder.

In the Holy Qur'an:

(وَإِذَا السَّمَاءُ كُشِطَتْ)

Meaning: And when the heaven will be scraped off. (Surah At-Takwir – Verse No. ١١)

(إِذَا السَّمَاءُ انشَقَّتْ)

Meaning: When the heaven will be split asunder. (Surah Al-Inshiqaq – Verse No. ١)

(إِذَا السَّمَاءُ انْفَطَرَتْ)

Meaning: When the heaven is cleft asunder. (Surah Al-Infitar – Verse No. ١)

•/٨ The Clouds and Rains:

The Holy Qur'an decisively states the stages in the formation of clouds and rain that are known as the water cycle. The Qur'anic expressions are so precise that it would have been impossible for a human mind to reach such conceptions at the time of the revelation of the Holy Qur'an. Air carries the water vapor drawn from the wide water surfaces (such as the oceans, seas, and rivers) and from the respirations of the plants and the animals, with the air humidity decreasing and increasing according to thermal and environmental conditions. When the air is saturated with water, the extra humidity water appears as fog, or condenses into dew or frost. It does not accumulate together to form clouds in the absence of charged nuclei, around which the above-mentioned extra water joins and condenses. This can only take place in the presence of wind that stirs up the nuclei of condensation from the earth, or due to friction with the sea waves.

Consider the following Qur'anic verses in which Allah affirms the fact that it is the wind that stirs up the clouds in the very beginning:

(اللَّهُ الَّذِي يُرْسِلُ الرِّيَّاحَ فَتُثِيرُ سَحَابًا فَيُبْسِطُهُ فِي السَّمَاءِ كَيْفَ يَشَاءُ وَيَجْعَلُهُ كِسْفًا
فَتَرَى الْوَدْقَ يَخْرُجُ مِنْ خِلَالِهِ)

Meaning: Allah is He Who sends the winds, so they stir up clouds, (and) then He outspreads them in the Heaven how He decides, and makes them into lumps. Then you see rain-drops coming out of the midst of them. (Surah Ar-Rum – Verse No. ٤٨)

(وَاللَّهُ الَّذِي أَرْسَلَ الرِّيَّاحَ فَتُثِيرُ سَحَابًا فَنُقْطِئُهُ إِلَىٰ بَلَدٍ مَيِّتٍ فَأَحْيَيْنَا بِهِ الْأَرْضَ بَعْدَ مَوْتِهَا كَذَلِكَ
النُّشُورُ)

Meaning: And Allah is (The One) Who has sent the winds, so they stir up clouds, and We drive them to a dead land, then therewith We give life to the earth after its death. Thus is the Uprising! (Surah Fatir – Verse No. ٩)

The stage of stirring up (to use the very word used in the Holy Qur'an that is in accordance with scientific facts) clouds is an independent stage that takes place before the clouds' spreading and moving anywhere.

Consider the Holy Qur'anic verse:

(وَأَرْسَلْنَا الرِّيَّاحَ لَوَاقِحَ فَأَنْزَلْنَا مِنَ السَّمَاءِ مَاءً فَأَسْقَيْنَاكُمُوهُ وَمَا أَنْتُمْ لَهُ بِخَازِنِينَ)

Meaning: And We send the winds fertilizing (to fill heavily the clouds with water), then caused the water (rain) to descend from the sky, and We gave it to you to drink, and it is not you who are the owners of its stores [i.e. to give water to whom you like or to withhold it from whom you like]. (Surah Al-Hijr – Verse No. ٢٢)

The Qur'anic verse specifies the role of the wind that collects the 'fertilizing' condensation nuclei. The classical Muslim scholars wrongly interpreted this verse. They said that the verse refers to the fact that the wind carries the pollen seeds to fertilize the plants, which is scientifically true. Yet, the above verse obviously refers to something else, i.e. fertilizing the clouds to cause rainfall.

The wind has another key role in forming the rain clouds, i.e. it also joins the positively charged or the negatively charged clouds, so that they gather and get bigger until they become 'the clouds, heavy (with water)'.

The joining of the clouds is referred to in the following Qur'anic verses:

(أَلَمْ تَرَ أَنَّ اللَّهَ يُزْجِي سَحَابًا ثُمَّ يُؤَلِّفُ بَيْنَهُ ثُمَّ يَجْعَلُهُ رُكَامًا فَتَرَى الْوَدْقَ يَخْرُجُ مِنْ خِلَالِهِ وَيُنَزِّلُ مِنَ السَّمَاءِ مِنْ جِبَالٍ فِيهَا مِنْ بَرَدٍ فَيُصِيبُ بِهِ مَنْ يَشَاءُ وَيَصْرِفُهُ عَنِ مَنْ يَشَاءُ يَكَادُ سَنَا بَرْقِهِ يَذْهَبُ بِالْأَبْصَارِ)

Meaning: Have they not seen that Allah wafts clouds, thereafter joins them together, thereafter makes them accumulated, then you see the raindrops coming out the midst of them? And He keeps sending down from the heaven, from mountains, wherein is hail. So He afflicts with it whomever He decides. The splendor of His lightning almost goes away with the beholdings. (Surah An-Nur – Verse No. ٤٣)

(هُوَ الَّذِي يُرِيكُمُ الْبَرْقَ خَوْفًا وَطَمَعًا وَيُنشِئُ السَّحَابَ الثَّقَالَ * وَيَسْبِغُ الرِّعْدُ بِحَمْدِهِ وَالْمَلَائِكَةُ مِنْ خِيفَتِهِ وَيُرْسِلُ الصَّوَاعِقَ فَيُصِيبُ بِهَا مَنْ يَشَاءُ وَهُمْ يُجَادِلُونَ فِي اللَّهِ وَهُوَ شَدِيدُ الْمِحَالِ)

Meaning: It is He who shows you the lightning, as a fear (for travelers) and as a hope (for those who wait for rain). And it is He Who brings up (or originates) the clouds, heavy (with water). And Ar-Ra'd (thunder)

glorifies and praises Him, and so do the Angels because of His Awe, He sends the thunderbolts, and therewith He strikes whom He wills, yet they (disbelievers) dispute about Allah. And He is Mighty in strength and Severe in punishment. (Surah Ar-Ra`d – Verses Nos. ١٢ - ١٣)

Consider the adequate disposal of the events mentioned in these two verses:

- ١ - radiant sparks (lightning)
- ٢ - the joining of the heavy clouds
- ٣ - the sound of thunder

There are two kinds of clouds. The first type spreads horizontally (horizontally developed stratal clouds), and the second type spreads vertically and takes mountain-like shapes (cumulonimbus clouds). Human beings realized the mountain-like shapes of the clouds only through observation during air flights and by other modern means of astronomy. The Holy Qur'an has differentiated between the two kinds in inimitable, scientific, rhetorical expressions, even before the modern discoveries. Notice how it describes the first kind of clouds in Surah Ar-Rum: "He outspreads them in the heavens." and the second kind in Surah An-Nur "makes them accumulated" (into a heap of layers)."

The wind elevates the clouds, so that the water vapor they carry cools gradually due to expansion (which results from the rarefaction of pressure in the higher altitudes). Approaching the cold summits of high mountains also causes this effect. At this stage, the water vapor turns into snow, while condensed water freezes into ice. Accordingly, crystallized hailstones rise and move upward and downward due to electrical charges and mechanical factors. During this process, some hailstones become positively charged, while others are negatively charged. Accordingly, they become strongly attracted to each other and eventually join. This process is accompanied by a sudden electrical discharge that results in a strong, intensely glowing, blazing light (lightning), and an exploding sound (thunder). The Qur'anic verse above (Surah An-Nur – Verse No. ٤٣) affirms the relation between the hailstones formation and the spark of lightning in the cumulonimbus clouds "Where He sends down hail, and strikes therewith whom He wills, and averts it from whom He wills.

The vivid flash of its (clouds) lightning nearly blinds the sight.” This is exactly what modern science affirmed.

When the hailstones get bigger, they become so heavy that they either fall to the earth to strike whomever Allah wills, or melt during their ascension and become torrential rain. We should also refer here to the extreme accuracy of the Qur’anic expression ‘the rain comes forth ‘from between them’ and not from the lower surface facing the earth, as would appear to a layman.

٥/٩ Water

The more science advances, the more man realizes the importance and the vital role played by water in his present and future. Even in our age of modern technology, we still face the problems of drought, desertification, and limited water resources. Allah, the All-Knowing Creator, inimitably refers to water more than once. Water is the essence of the life of man, plants, and animals on earth. It is essential for the life of fish and plants in the depths of the seas and oceans; the seeds, roots, bacteria, and worms under the earth; and the birds and the insects in the sky. All the biological processes, such as respiration, metabolism, digestion, syngenesi, and exertion, take place in moist or watery environments:

In the Holy Qur’an:

(أَوَلَمْ يَرَ الَّذِينَ كَفَرُوا أَنَّ السَّمَوَاتِ وَالْأَرْضَ كَانَتَا رَتْقًا فَفَتَقْنَاهُمَا وَجَعَلْنَا مِنَ الْمَاءِ كُلَّ شَيْءٍ حَيًّا أَفَلَا يُؤْمِنُونَ)

Meaning: Have not those who disbelieve known that the heavens and the earth were joined together as one united piece, then We parted them? And We have made from water every living thing. Will they not then believe? (Surah Al-Anbiya’ – Verse No. ٣٠)

(وَاللَّهُ خَلَقَ كُلَّ دَابَّةٍ مِنْ مَاءٍ فَمِنْهُمْ مَنْ يَمْشِي عَلَى بَطْنِهِ وَمِنْهُمْ مَنْ يَمْشِي عَلَى رِجْلَيْنِ وَمِنْهُمْ مَنْ يَمْشِي عَلَى أَرْبَعٍ يَخْلُقُ اللَّهُ مَا يَشَاءُ إِنَّ اللَّهَ عَلَى كُلِّ شَيْءٍ قَدِيرٌ)

Meaning: Allah has created every moving (living) creature from water. Of them there are some that creep on their bellies, some that walk on two

legs, and some that walk on four. Allah creates what He wills. Verily! Allah is Able to do all things. (Surah An-Nur – Verse No. ٤٥)

Water that falls from the sky is the source of all water resources on the earth such as rivers, groundwater, and springs. This fact, which was discovered relatively recently by Palissy in ١٥٧٠ C.E., is mentioned in the following Qur'anic verse:

(الَمْ تَرَ أَنَّ اللَّهَ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَسَلَكَهُ يَنَابِيعَ فِي الْأَرْضِ ثُمَّ يُخْرِجُ بِهِ زَرْعًا مُخْتَلِفًا أَلْوَانُهُ ثُمَّ يَهِيجُ فَتَرَاهُ مُصْفَرًّا ثُمَّ يَجْعَلُهُ حُطَامًا إِنَّ فِي ذَلِكَ لَذِكْرًا لِأُولِي الْأَبْصَارِ)

Meaning: See you not, that Allah sends down water (rain) from the sky, and causes it to penetrate the earth, (and then makes it to spring up) as water-springs and afterward thereby produces crops of different colors, and afterward they wither and you see them turn yellow, then He makes them dry and broken pieces. Verily, in this, is a Reminder for men of understanding. (Surah Az-Zumar – Verse No. ٢١)

Until recently, man has been confused about the sources of groundwater and rivers that have nothing to do with rain, according to their thinking. At the time of revelation, superstitious theories prevailed that contradicted facts mentioned in the Holy Qur'an, and which were only discovered recently.

The first source of water on the earth was the water that condensed during the early stages of the earth development and appeared in the form of the water surfaces, i.e. oceans, and seas. The continuous cycles of evaporation, cloud formation, and rain then began to take place. This is stated in the following verses (see also: The earth's shape):

(وَالْأَرْضَ بَعْدَ ذَلِكَ دَحَاهَا * أَخْرَجَ مِنْهَا مَاءَهَا وَمَرْعَاهَا)

Meaning: And after that He spread the earth; And brought forth therefrom its water and its pasture. (Surah An-Nazi'at – Verses Nos. ٣٠ - ٣١)

One of the pieces of information referred to in the Holy Qur'an is the impossibility of mixing river water with that of the sea at the river mouths. An example of this is that where the Mediterranean meets the

Nile in Damietta and Rosetta there is a visible line separating the river water full of mud and the 'blue' seawater. This applies also to places where fresh and saltwater rivers meet each other, such as the Ganges and the Yamuna in the city of Allahabad. The same thing applies to the two adjacent rivers, one of which is saltwater while the other is freshwater, running between Chittagong in Bangladesh and Arakan in Burma, and to the meeting of Red Sea and the Indian Ocean at Bab Al-Mandab. This phenomenon is attributed to osmosis, which pushes the molecules of the freshwater to diffuse in the saltwater and not vice versa, through the separating barrier between them.

This is mentioned in the following Qur'anic verses:

(وَهُوَ الَّذِي مَرَجَ الْبَحْرَيْنِ هَذَا عَذْبٌ فُرَاتٌ وَهَذَا مِلْحٌ أجاجٌ وَجَعَلَ بَيْنَهُمَا بَرْزَخًا وَحِجْرًا مَحْجُورًا)

Meaning: And it is He Who let free the two seas, one palatable sweet, and the other salt bitter; and He has set a barrier and a complete partition between them. (Surah Al-Furqan – Verse No. ٥٣)

(أَمَّنْ جَعَلَ الْأَرْضَ قَرَارًا وَجَعَلَ خِلالَها أَنْهارًا وَجَعَلَ لَها رِوايَ وَجَعَلَ بَينَ الْبَحْرَينِ حَاجِزًا أَعْلَ مَعَ اللَّهِ بَلْ أَكْثَرُهُمْ لا يَعْلَمُونَ)

Meaning: Is not He (better than your gods) Who has made the earth as a fixed abode, and has placed rivers in its midst, and has placed firm mountains therein, and has set a barrier between the two seas (of salt and sweet water). Is there any ilah (god) with Allah? Nay, but most of them know not. (Surah An-Naml – Verse No. ٦١)

(مَرَجَ الْبَحْرَيْنِ يَلْتَقِيانِ * بَينَهُما بَرزَخٌ لا يَبْغِيانِ)

Meaning: He let loosed the two seas meeting together. Between them is a barrier which none of them can transgress. (Surah Ar-Rahman – Verses Nos. ١٩ - ٢٠)

Then, the All-Knowing Creator refers to the fact that water on the planet Earth has a continuous cycle:

(قُلْ أَرَأَيْتُمْ إِنْ أَصْبَحَ ماؤُكُمْ غُورًا فَمَنْ يَأْتِيكُمْ بِماءٍ مَعِينٍ)

Meaning: Say (O Muhammad SAWS): "Tell me! If (all) your water were to be sunk away, who then can supply you with flowing (spring) water? (Surah Al-Mulk – Verse No. ٣٠)

(وَأَنْزَلْنَا مِنَ السَّمَاءِ مَاءً بِقَدَرٍ فَأَسْكَنَّاهُ فِي الْأَرْضِ وَإِنَّا عَلَىٰ ذَهَابٍ بِهِ لِقَادِرُونَ)

Meaning: And We sent down from the sky water (rain) in (due) measure, and We gave it lodging in the earth, and verily, We are Able to take it away. (Surah Al-Mu'minun – Verse No. ١٨)

This is a fact that modern science has discovered recently, i.e. without the earth's atmosphere and its amazing phenomena (see: The earth's atmosphere) and the cycles of the clouds and rain, water would have just be lost in space and the earth would have been arid and barren, as are some other planets. It is also the nature of this earth that permits its rocks to store groundwater in enormous reservoirs, so the water cannot leak further into the depths of the earth. In this context, reference should be made to the inimitable creation of seawater that does not freeze. The ice just floats on the surface of the water in order to shield the seawater from freezing, and to protect the lives of the fish and sea creatures. This is due to a unique property, endowed water by Allah alone, i.e. that the density of water decreases with freezing, contrary to other substances, i.e. the density of snow is less than that of water, and hence floats.

One of the facts of sciene is that rainfall is preceded, as was mentioned above, by electrical discharges in the clouds accompanied by a spark (lightning). This spark has the ability to pollute the rainwater, as it forms nitrous and nitric acids from the union of atmospheric oxygen and nitrogen producing nitrogen trioxide and pentoxide. Yet, it is the will of Allah to save the rainwater from being polluted by such compounds. This may be interpretation of the following Qur'anic verse:

(أَفَرَأَيْتُمُ الْمَاءَ الَّذِي تَشْرَبُونَ * ءَأَنْتُمْ أَنْزَلْتُمُوهُ مِنَ الْمُزْنِ أَمْ نَحْنُ الْمُنزِلُونَ * لَوْ نَشَاءُ جَعَلْنَاهُ أَجَاجًا فَلَوْلَا تَشْكُرُونَ)

Meaning: Tell Me! The water that you drink. Is it you who cause it from the rainclouds to come down, or are We the Causer of it to come down? If We willed, We verily could make it salt (and undrinkable), why then do you not give thanks (to Allah)? (Surah Al-Waqi'ah – Verses Nos. ٦٨ - ٧٠)



On the other hand, the water cycle (seawater - vapor - clouds - rain) is an alternative interpretation of the above verse. Without the evaporation of seawater at the very beginning of the cycle, all the water found on the earth would be salty and undrinkable.

•/• • Rivers

Rivers originate from the mountains. The clouds are driven by the wind, to collide with the mountains, so they become colder and rise. They get colder due to their ascension into the troposphere (see: The earth's atmosphere) and also due to the action of the mountains' cold summits. As a result, the clouds' burden falls at the feet of the mountains in the form of rain. The higher lofty mountains are covered with snow. The lower sections of the snow gradually melt and supply the rivers with a continual source of water. Snow covers the peaks of all high mountains, even those found in the tropics, but the minimum height for snow formation decreases the further we come from the equator. Snow forms at a height of five kilometers and upwards in the tropics, at a height of four kilometers in the two zones of the Tropic of Cancer and the Tropic of Capricorn, and at a height of two kilometers fifty-degrees north or south. Snow can form at any height beyond seventy degrees, north or south to the two poles.

Consider the following Qur'anic verse that refers to the relationship between the peaks of the mountains and the sources of the rivers:

(وَجَعَلْنَا فِيهَا رَوَاسِيَ شَامِخَاتٍ وَأَسْقَيْنَاكُمْ مَاءً فَرَاتًا)

Meaning: And We made lofty (mountains, anchorages); and We made you to drink water grateful (to taste) (Surah Al-Mursalat – Verse No. ٢٧)

Praise and glorify the All-Knowing Creator Who says:

(يَعْلَمُ مَا بَيْنَ أَيْدِيهِمْ وَمَا خَلْفَهُمْ وَلَا يُحِيطُونَ بِشَيْءٍ مِنْ عِلْمِهِ إِلَّا بِمَا شَاءَ)

Meaning: He knows what happens to them (His creatures) in this world, and what will happen to them in the Hereafter. And they will never compass anything of His Knowledge except that which He wills. (Surah Al-Baqarah – Verse No. ٢٥٥)

•/• • The Seas

Modern research, using precision telescopes, has verified that the depths of the seas and oceans are not dormant. Rather, they are full of

waves and currents that are denser and darker than those found in the surface. Allah the All-Mighty speaks the truth when He accurately compares the darkness of the minds of the unbelievers to the darkness of the sea:

(أَوْ كَظَلَمَاتٍ فِي بَحْرٍ لَجِيٍّ يَغْشَاهُ مَوْجٌ مِنْ فَوْقِهِ مَوْجٌ مِنْ فَوْقِهِ سَحَابٌ ظَلَمَاتٌ بَعْضُهَا فَوْقَ بَعْضٍ إِذَا أَخْرَجَ يَدَهُ لَمْ يَكَدْ يَرَاهَا وَمَنْ لَمْ يَجْعَلِ اللَّهُ لَهُ نُورًا فَمَا لَهُ مِنْ نُورٍ)

Meaning: Or (they are) as darkness(es) in a tumultuous sea (vast and deep) enveloped by waves above which are waves, upon which are clouds: darkness above each other, when he brings out his hand, he could almost not see it! And to whomever Allah makes no light, then in no way (can) he have light. (Surah An-Nur – Verse No. ٤٠)

The formation of the seas and the oceans is attributed to the change of the shape of the earth in pre-historic times, from a completely round shape to an oval one (Arabic: *dahaha*). This was accompanied with the separation and subsequent divergence of the continents, which led to the rising of the water between them. This is in accordance with the following Qur'anic verse that combines the spreading of the earth with the formation of the water surfaces:

(وَالْأَرْضَ بَعْدَ ذَلِكَ دَحَاهَا * أَخْرَجَ مِنْهَا مَاءَهَا وَمَرْعَاهَا)

Meaning: And the earth, after that, He *dahaha* (spread, spinned); And brought forth therefrom its water and its pasture. (Surah An-Nazi'at – Verses Nos. ٣٠ - ٣١)

As mentioned above, the word 'spread' is a translation of the word *dahaha*, which has as one of its (Arabic) meanings, to turn something into a somewhat oval shape.

Pearls have been extracted from seawater from ancient times. Pearls and other gemstones were not discovered in freshwater, until contemporary times, which verifies the truthfulness of what the Holy Qur'an stated:

(وَمَا يَسْتَوِي الْبَحْرَانِ هَذَا عَذْبٌ فُرَاتٌ سَائِغٌ شَرَابُهُ وَهَذَا مِلْحٌ أجاجٌ وَمَنْ كُلٌّ تَأْكُلُونَ لَحْمًا طَرِيًّا وَتَسْتَخْرِجُونَ حَبِيَّةً تَلْبَسُونَهَا وَتَرَى الْفُلْكَ فِيهِ مَوَآخِرَ لِيَتَّبِعُوا مِنْ فَضْلِهِ وَلِعَلَّكُمْ تَشْكُرُونَ)

Meaning: And the two seas (kinds of water) are not alike, this fresh sweet, and pleasant to drink, and that salty and bitter. And from them both you eat fresh tender meat (fish), and derive the ornaments that you wear. And you see the ships cleaving (the seawater as they sail through it), that you may seek of His Bounty, and that you may give thanks. (Surah Fatir – Verses No. ١٢)

(مَرَجَ الْبَحْرَيْنِ يَلْتَقِيَانِ * بَيْنَهُمَا بَرْزَخٌ لَّا يَبْغِيَانِ * فَبِأَيِّ آءَالَاءِ رَبِّكُمَا تُكذَّبَانِ * يَخْرُجُ مِنْهُمَا
الذَّلْوَالُ وَالْمَرْجَانُ)

Meaning: He has let loose the two seas (the salt water and the sweet) meeting together. Between them is a barrier which none of them can transgress. Then which of the Blessings of your Lord will you both (jinns and men) deny? Out of them both come out pearl and coral. (Surah Ar-Rahman – Verses Nos. ١٩ - ٢٢)

Pearls are found in the freshwater rivers of England, Scotland, Wales, Slovakia, and other countries. Diamonds are extracted from the sediments of some dry riverbeds known as kimberlites. Rubies are found in the river sediments of Mogok in upper Burma, Thailand, and Sri Lanka. As for topaz, it is found in the river sediments of Brazil, the Urals, and Siberia; as well as the river sediment zircon also used as a gemstone.

٥/١٢ Agriculture:

One of the specific soil science facts is that when stationary soil becomes wet, it expands upward and cracks. Similarly, the lower parts vibrate causing movement of the roots and root capillaries of the plants. Note the astonishing similarity between this and the description mentioned in the following Qur'anic verse:

(وَتَرَى الْأَرْضَ هَامِدَةً فَإِذَا أَنْزَلْنَا عَلَيْهَا الْمَاءَ اهْتَزَّتْ وَرَبَتْ وَأَنْبَتَتْ مِنْ كُلِّ زَوْجٍ بَهِيجٍ)

Meaning: And you see the earth barren; but when We send down water (rain) on it, it is stirred (to life), it swells and puts forth of every lovely kind (of growth). (Surah Al-Hajj – Verse No. ٥)

Ancient people had no equipment to study the soil and observe such small-scale changes. Mud is a porous mass of clay particles with different proportions of sand, lime, and other materials. When muddy soil is irrigated, water penetrates these pores and fills them, and additional water results in the expansion of the pores. Accordingly, the soil expands upwards and vibrates, in a manner that cannot be observed by the naked human eye, and splits. Also, the soil vibrates due to the movement of the roots and root capillaries in search of water in all directions. Additionally, more reproduction of the earthworms (which number up to fifty thousands per acre) is observed. These earthworms have a vital role in aerating and opening the soil's pores, beside their role in the nitrogen cycle between the air and the soil (see: ١٠/٢, Life cycles), which leads to the vibration of the soil and the growth of new plants.

Arable lands differ in their constituents i.e. the grains, organic substances, and microscopic living creatures. All these constituents control the cultivability and the quality of the harvest. These qualities differ from area to area even in the same piece of land.

This is stated in the Holy Qur'an:

(وَفِي الْأَرْضِ قِطْعٌ مُتَجَاوِرَاتٌ وَجَنَّاتٌ مِّنْ أَعْنَابٍ وَزُرْعٌ وَنَخِيلٌ صَبْوَانٌ وَغَيْرُ صَبْوَانٍ يُسْقَى بِمَاءٍ وَاحِدٍ وَنُفِضَلَّ بَعْضُهَا عَلَى بَعْضٍ فِي الْأَكْلِ إِنَّ فِي ذَلِكَ لَآيَاتٍ لِّقَوْمٍ يَعْقِلُونَ)

Meaning: And in the earth are neighboring tracts, and gardens of vines, and green crops (fields etc.), and date-palms, growing out two or three from a single stem root, or otherwise (one stem root for every palm), watered with the same water, yet some of them We make more excellent than others to eat. Verily, in these things, there are Ayat (proofs, evidences, signs, etc) for the people who understand. (Surah Ar-Ra`d – Verse No. ٤)

The Holy Qur'an also refers to the advantages of high arable lands, which modern science has only recently discovered. The productivity of such lands increases because they are far from groundwater, which leads to a doubling of the number of root capillaries that absorb water and nutrients.

In the Holy Qur'an:

(وَمَثَلُ الَّذِينَ يُنْفِقُونَ أَمْوَالَهُمْ ابْتِغَاءَ مَرْضَاةِ اللَّهِ وَتَثْبِيتًا مِنْ أَنْفُسِهِمْ كَمَثَلِ جَنَّةٍ بَرْبَوَّةٍ أَصَابَهَا وَابِلٌ فَاتَتْ أَكْطَارَهَا ضِعْفَيْنِ فَإِنْ لَمْ يُصِبْهَا وَابِلٌ فَطَلَّ وَاللَّهُ بِمَا تَعْمَلُونَ بَصِيرٌ)

Meaning: And the likeness of those who spend their wealth seeking Allah's Pleasure while they in their own selves are sure and certain that Allah will reward them (for their spending in His Cause), is the likeness of a garden on a height; heavy rain falls on it and it doubles its yield of harvest. And if it does not receive heavy rain, light rain suffices it. And Allah is All-Seer of (knows well) what you do. (Surah Al-Baqarah – Verse No. ٢٦٥)

Science has verified now that wheat and other grains spoil when exposed to the air during a long period of storage, due to moisture and other factors. It was discovered that the best way to store them was to keep the corn and other grains on their spikes. Allah, the All-Knowing Guide, stated this in Surah Yusuf. Allah revealed this to the Prophet Yusuf (Joseph) when he was in charge of the agriculture in Egypt, in order to face the years of drought (known as the Years of Yusuf) due to a decrease in the level of the Nile:

(قَالَ تَزْرَعُونَ سَبْعَ سِنِينَ دَأَبًا فَمَا حَصَدْتُمْ فَذَرُوهُ فِي سُنْبُلِهِ إِنَّهَا قَلِيلًا مِمَّا تَأْكُلُونَ)

Meaning: [(Yusuf (Joseph))] said: "For seven consecutive years, you shall sow as usual and that (the harvest) which you reap you shall leave in ears, (all) - except a little of it which you may eat. (Surah Yusuf – Verse No. ٤٧)

٥/١٣ Transportation

In the context of mentioning that the animals were created for the purpose of transportation, Allah, the Glorified and the Exalted, tells us that He will create more means of transportation of which human knowledge had not encompassed yet. "And He creates (other) things of which you have no knowledge":

(وَالْخَيْلَ وَالْبِغَالَ وَالْحَمِيرَ لِتَرْكَبُوهَا وَزِينَةً وَيَخْلُقُ مَا لَا تَعْلَمُونَ)

Meaning: And (He has created) horses, mules and donkeys, for you to ride, and as an adornment; And He creates what (other) things of which you have no knowledge. (Surah An-Nahl – Verses Nos. ٨ - ٩)

٥/١٤ Fuel:

More than once, the Holy Qur'an refers to the relationship between green trees and energy or fire, in a way that perplexed the early interpreters of the Holy Qur'an. There is more than one interpretation of these verses, each of which affirms the truth of the Qur'anic text. The nearest interpretation to the known scientific facts is that trees are the main source for the geological formation of coal and oil. Additionally, it is only green trees, which have chlorophyll in their leaves, that are capable of absorbing solar energy (the main source of energy on earth) during their process of photosynthesis. During this process, tree cells are synthesized from carbon dioxide and water, so that the trees can grow. Then, they can be used as fuel, whether in their primary form or in the form of coal or oil after many eras. Green trees are also an endless source of renewable energy, with Allah's leave.

In the Holy Qur'an:

(الَّذِي جَعَلَ لَكُمْ مِنَ الشَّجَرِ الْأَخْضَرِ نَارًا فَإِذَا أَنْتُمْ مِنْهُ تُوقِدُونَ)

Meaning: He, Who produces for you fire out of the green tree, when behold! You kindle therewith. (Surah Yasin – Verse No. ٨٠)

(أَفَرَأَيْتُمُ النَّارَ الَّتِي تُورُونَ * ءَأَنْتُمْ أَنْشَأْتُمْ شَجَرَتَهَا أَمْ نَحْنُ الْمُنشِئُونَ)

Meaning: Tell Me! The fire which you kindle, Is it you who made the tree thereof to grow, or are We the Grower? (Surah Al-Waqi'ah – Verses Nos. ٧١ - ٧٢)