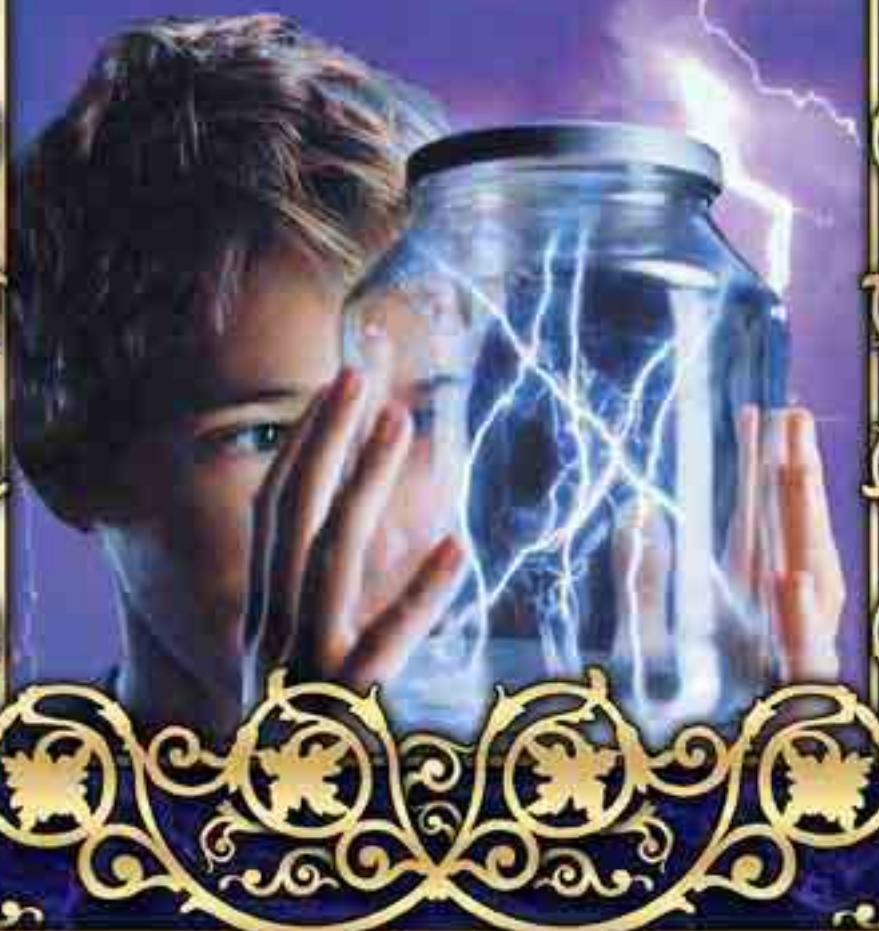
HARUN YAHYA

THE MIRACLE OF ELECTRICITY IN THE BODY



Without electricity, what would your life be like? You would have to find a way of ascending 15 floors with no elevator and preventing food in your refrigerator from spoiling. You could not watch television, warm your dinner up in the microwave, listen to your favorite music on the stereo, quickly dry your hair, cool down your bedroom by means of air conditioning, brighten that room with the touch of a switch or operate essential machines like your dishwasher, washing machine and clothes drier. On a larger scale, traffic, communications, transport, security systems, workplaces, water distribution, energy production, publishing and the press, all depend on electricity as well.

Few who make use of electricity reflect on the fact that, just like the appliances they depend on, their bodies could not function without electricity either. However the human body has been equipped with a flawless electricity network, along with the presence of intelligent systems that contain the most complex information and know-how to benefit from electrical energy.

Indeed, scientists employ terms commonly used in electronics to describe the body's nervous system: "generate," "circuit," "current," "resistance," "voltage," "insulation," "charge," and so forth. It is next to impossible to describe the system without using these terms. The fact that principles necessary for the functioning of technology, discovered in only the last two centuries, have existed in the human body ever since it was first created, is a clear indication of the superior knowledge of Allah. The details set out in this book constitute just a few examples of His infinite knowledge that we have grown able to comprehend.

About the Author

Adnan Oktar, who writes under the pen-name Harun Yahya, was born in Ankara in 1956. He studied arts at Istanbul's Mimar Sinan University, and philosophy at Istanbul University. Since the 1980s, the author has published many books on political, faith-related and scientific issues. Greatly appreciated all around the world, these works have been instrumental in helping many to return their faith in Allah, and, in many others, to gain a deeper insight into their faith. Harun Yahya's books appeal to all kinds of readers, regardless of their age, race, or nationality, for they focus on one objective: to broaden the reader's perspective by encouraging him or her to think about a number of critical issues, such as the existence of Allah and His unity, and to live by the values He prescribed for them.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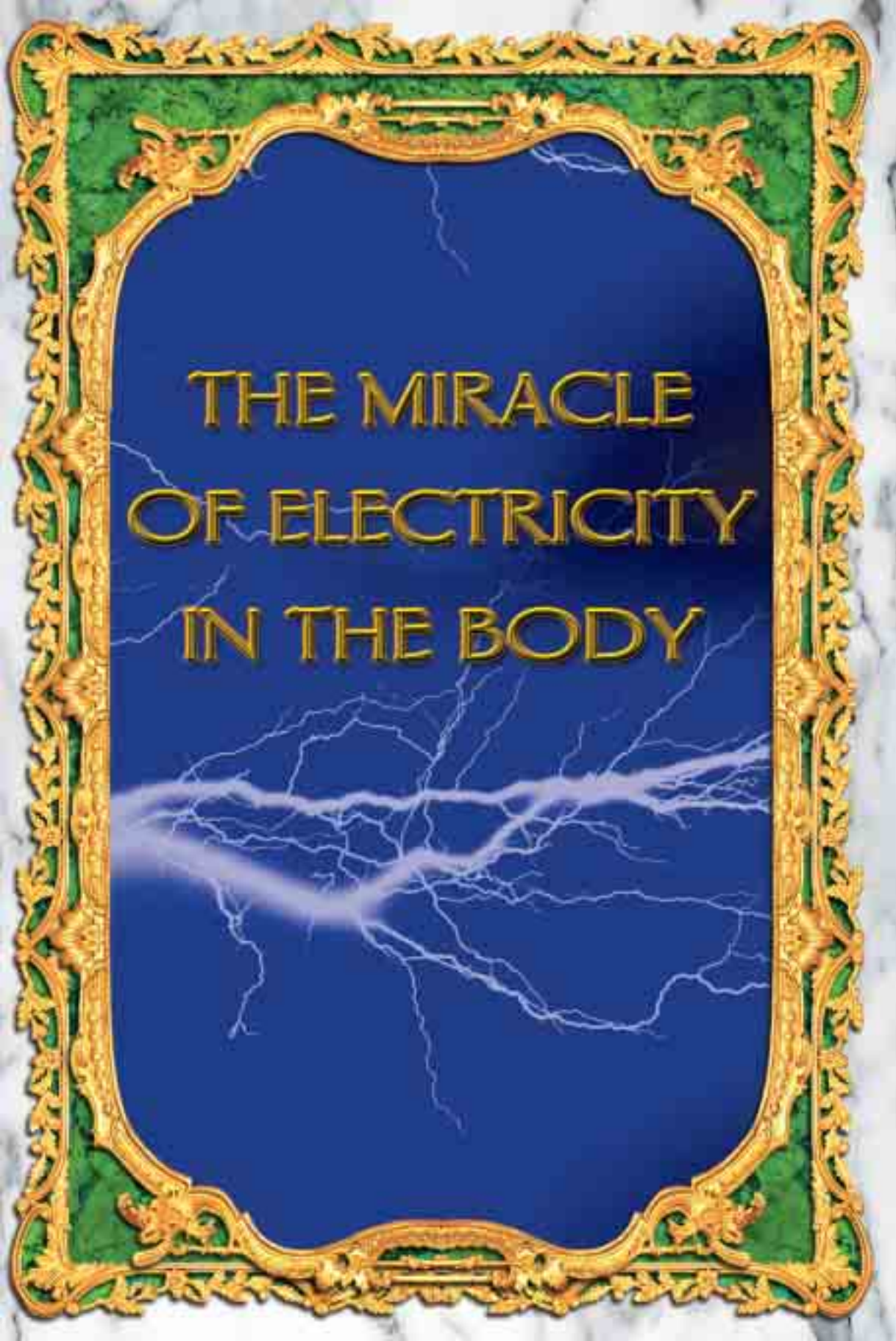
THE MIRACLE OF ELECTRICITY IN THE BODY



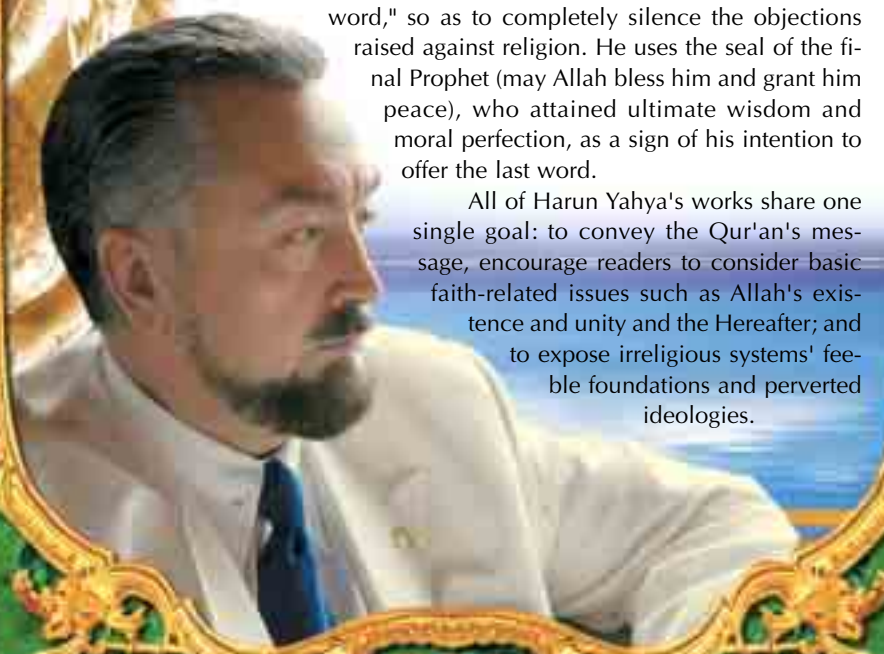
About the Author

Now writing under the pen-name of HARUN YAHYA, Adnan Oktar was born in Ankara in 1956. Having completed his primary and secondary education in Ankara, he studied arts at Istanbul's Mimar Sinan University and philosophy at Istanbul University. Since the 1980s, he has published many books on political, scientific, and faith-related issues. Harun Yahya is well-known as the author of important works disclosing the imposture of evolutionists, their invalid claims, and the dark liaisons between Darwinism and such bloody ideologies as fascism and communism.

Harun Yahya's works, translated into 57 different languages, constitute a collection for a total of more than 45,000 pages with 30,000 illustrations.

His pen-name is a composite of the names Harun (Aaron) and Yahya (John), in memory of the two esteemed prophets who fought against their peoples' lack of faith. The Prophet's (may Allah bless him and grant him peace) seal on his books' covers is symbolic and is linked to their contents. It represents the Qur'an (the Final Scripture) and Prophet Muhammad (may Allah bless him and grant him peace), last of the prophets. Under the guidance of the Qur'an and the Sunnah (teachings of the Prophet), the author makes it his purpose to disprove each fundamental tenet of irreligious ideologies and to have the "last word," so as to completely silence the objections raised against religion. He uses the seal of the final Prophet (may Allah bless him and grant him peace), who attained ultimate wisdom and moral perfection, as a sign of his intention to offer the last word.

All of Harun Yahya's works share one single goal: to convey the Qur'an's message, encourage readers to consider basic faith-related issues such as Allah's existence and unity and the Hereafter; and to expose irreligious systems' feeble foundations and perverted ideologies.



Harun Yahya enjoys a wide readership in many countries, from India to America, England to Indonesia, Poland to Bosnia, Spain to Brazil, Malaysia to Italy, France to Bulgaria and Russia. Some of his books are available in English, French, German, Spanish, Italian, Portuguese, Urdu, Arabic, Albanian, Chinese, Swahili, Hausa, Dhivehi (spoken in Mauritius), Russian, Serbo-Croat (Bosnian), Polish, Malay, Uygur Turkish, Indonesian, Bengali, Danish and Swedish.

Greatly appreciated all around the world, these works have been instrumental in many people recovering faith in Allah and gaining deeper insights into their faith. His books' wisdom and sincerity, together with a distinct style that's easy to understand, directly affect anyone who reads them. Those who seriously consider these books, can no longer advocate atheism or any other perverted ideology or materialistic philosophy, since these books are characterized by rapid effectiveness, definite results, and irrefutability. Even if they continue to do so, it will be only a sentimental insistence, since these books refute such ideologies from their very foundations. All contemporary movements of denial are now ideologically defeated, thanks to the books written by Harun Yahya.

This is no doubt a result of the Qur'an's wisdom and lucidity. The author modestly intends to serve as a means in humanity's search for Allah's right path. No material gain is sought in the publication of these works.

Those who encourage others to read these books, to open their minds and hearts and guide them to become more devoted servants of Allah, render an invaluable service.

Meanwhile, it would only be a waste of time and energy to propagate other books that create confusion in people's minds, lead them into ideological chaos, and that clearly have no strong and precise effects in removing the doubts in people's hearts, as also verified from previous experience. It is impossible for books devised to emphasize the author's literary power rather than the noble goal of saving people from loss of faith, to have such a great effect. Those who doubt this can readily see that the sole aim of Harun Yahya's books is to overcome disbelief and to disseminate the Qur'an's moral values. The success and impact of this service are manifested in the readers' conviction.

One point should be kept in mind: The main reason for the continuing cruelty, conflict, and other ordeals endured by the vast majority of people is the ideological prevalence of disbelief. This can be ended only with the ideological defeat of disbelief and by conveying the wonders of creation and Qur'anic morality so that people can live by it. Considering the state of the world today, leading into a downward spiral of violence, corruption and conflict, clearly this service must be provided speedily and effectively, or it may be too late.

In this effort, the books of Harun Yahya assume a leading role. By the will of Allah, these books will be a means through which people in the twenty-first century will attain the peace, justice, and happiness promised in the Qur'an.

To the Reader

A special chapter is assigned to the collapse of the theory of evolution because this theory constitutes the basis of all anti-spiritual philosophies. Since Darwinism rejects the fact of creation – and therefore, Allah's existence – over the last 140 years it has caused many people to abandon their faith or fall into doubt. It is therefore an imperative service, a very important duty to show everyone that this theory is a deception. Since some readers may find the chance to read only one of our books, we think it appropriate to devote a chapter to summarize this subject.

All the author's books explain faith-related issues in light of Qur'anic verses, and invite readers to learn Allah's words and to live by them. All the subjects concerning Allah's verses are explained so as to leave no doubt or room for questions in the reader's mind. The books' sincere, plain, and fluent style ensures that everyone of every age and from every social group can easily understand them. Thanks to their effective, lucid narrative, they can be read at one sitting. Even those who rigorously reject spirituality are influenced by the facts these books document and cannot refute the truthfulness of their contents.

This and all the other books by the author can be read individually, or discussed in a group. Readers eager to profit from the books will find discussion very useful, letting them relate their reflections and experiences to one another.

In addition, it will be a great service to Islam to contribute to the publication and reading of these books, written solely for the pleasure of Allah. The author's books are all extremely convincing. For this reason, to communicate true religion to others, one of the most effective methods is encouraging them to read these books.

We hope the reader will look through the reviews of his other books at the back of this book. His rich source material on faith-related issues is very useful, and a pleasure to read.

In these books, unlike some other books, you will not find the author's personal views, explanations based on dubious sources, styles that are unobservant of the respect and reverence due to sacred subjects, nor hopeless, pessimistic arguments that create doubts in the mind and deviations in the heart.

Contents

INTRODUCTION:

LIVES DEPEND ON ELECTRICITY

Without electricity, what would your life be like? You would have to find a way of ascending 15 floors with no elevator and preventing food in your refrigerator from spoiling. You could not watch television, warm your dinner up in the microwave, listen to your favorite music on the stereo, quickly dry your hair, cool down your bedroom by means of air conditioning, brighten that room with the touch of a switch or to operate essential machines like your dishwasher, washing machine and clothes drier. At night, your home would be dark and unsafe, and you would live deprived of the many time-saving technologies such as electric heaters, kettles, table lamps, videos and computers—which all make our life so much easier. On a larger scale, traffic, communications, transport, security systems, workplaces, water distribution, energy production, publishing and the press, all depend on electricity as well.

During the summer of 2003, a power blackout in the USA, which affected an area extending from Detroit to Chicago, was a striking example of electricity's vital importance. Although short-lived, it was reported as a catastrophe. Newspapers ran headlines like "Life Comes to a Standstill." In the absence of electricity, traffic lights, elevators, public transport, and computers all became inoperative. People were unable to go to work, go shopping, or even communicate with one another.

The importance of electricity, whose interruption can bring life to a complete standstill, goes far beyond this. Just as a city's functioning depends on the continuation of the established order, so there is a need for electricity in the human body, in processes analogous to energy production, communications, security, maintenance, and repair. In short, life would be impossible in the absence of our bodies' electrical system, which is even more essential than the power grid in cities.

Few who make use of electricity reflect on the fact that, just like the appliances they depend on, their bodies could not function without electricity. The fact is, however, that the human body has been equipped with a flawless electricity network, along with the presence of intelligent systems that contain the most complex information and know-how to benefit from electrical energy.

Indeed, scientists employ terms commonly used in electronics to describe the body's nervous system: "generate," "circuit," "current," "resistance," "voltage," "insulation," "charge," and so forth. It is next to impossible to describe the system without using these terms. The fact that principles necessary for the functioning of technology, discovered in only the last two centuries, have existed in the human body ever since it was first created, is a clear indication of the superior knowledge of Allah (God). The details set out in this book constitute just a few examples of His infinite knowledge that we have grown able to comprehend.

INTELLIGENT DESIGN—IN OTHER WORDS, CREATION

In Order to Create, Allah Has No Need to Plan

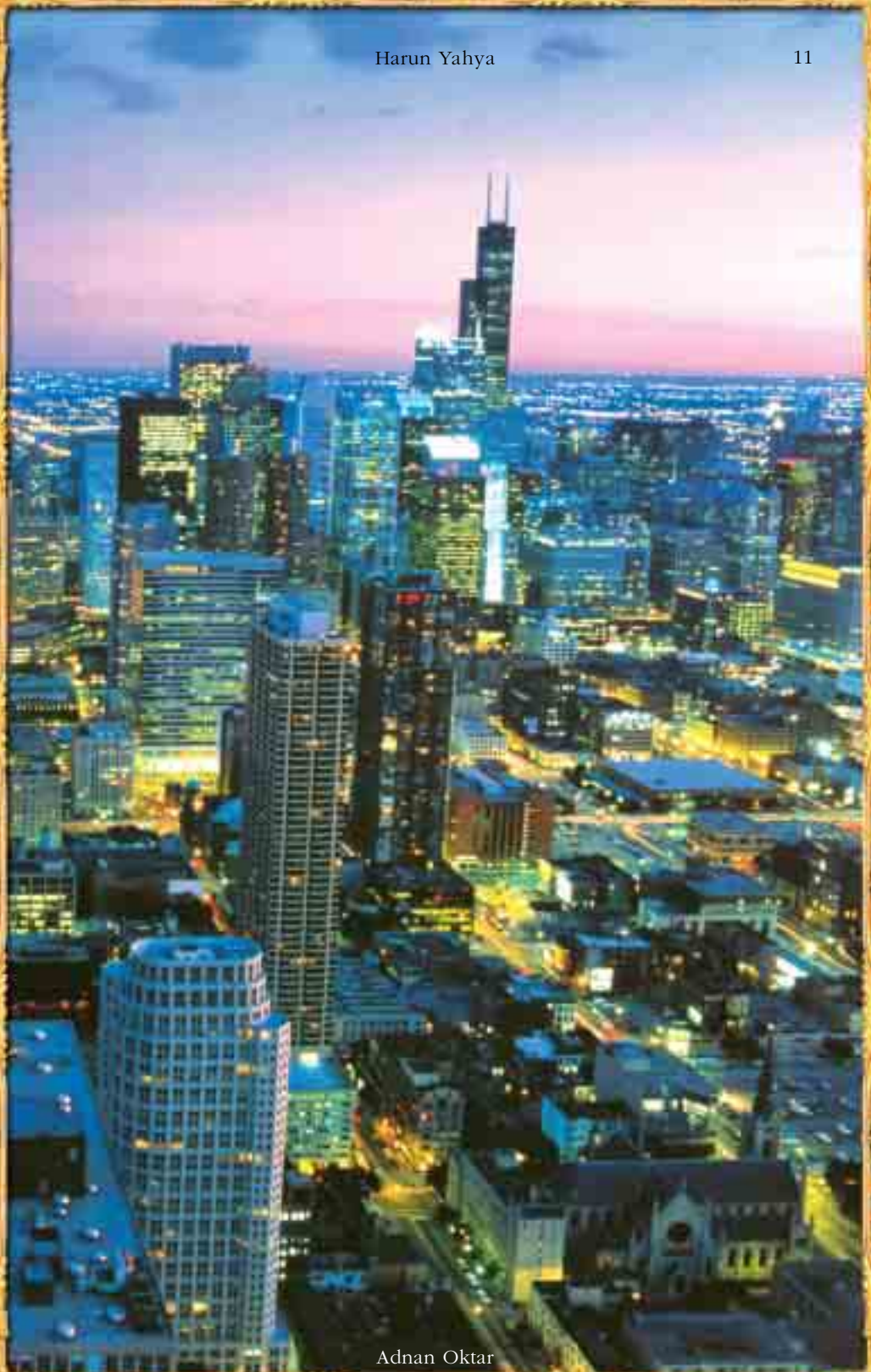
It's important to properly understand the word "design." If Allah has created a flawless design that does not mean that He first conceived a plan and then followed it. Allah, the Lord of the Earth and the heavens, needs no "designs" in order to bring anything into existence. Allah is exalted above all such deficiencies. Both His planning and His creation take place at the same instant.

Whenever Allah wills a thing to come about, it is enough for Him just to say, "Be!" As verses of the Qur'an tell us:

His command when He desires a thing is just to say to it, "Be!" and it is. (Surah Ya Sin: 82)

[Allah is] the Originator of the heavens and Earth. When He decides on something, He just says to it, "Be!" and it is. (Surat al-Baqara: 117)

It is Allah Who created the seven heavens and of the Earth the same number, the Command descending down through all of them, so that you might know that Allah has power over all things and that Allah encompasses all things in His knowledge.
(Surat at-Talaq: 12)



ELECTRICITY: THE BODY'S ESSENTIAL ENERGY

Electricity is everywhere. The nucleus of every atom—the basis of everything you can see and touch—consists of particles known as protons and neutrons. Around that nucleus there are electrons that revolve around it constantly at very high speeds.

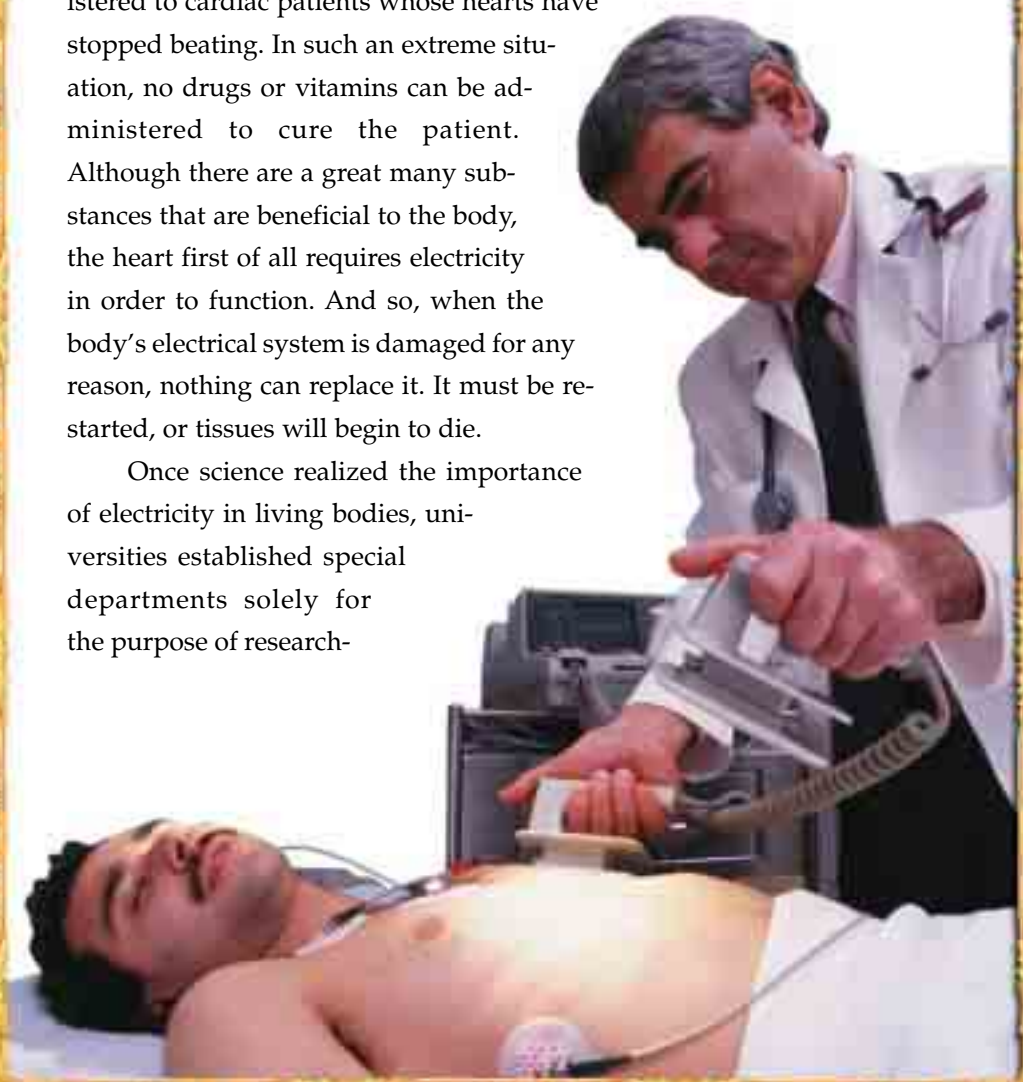
Protons possess a positive electrical charge; electrons a negative one. Under normal conditions, an atom has an equal number of electrons and protons; and since the positive and negative electrical charges balance each other, the atom is said to be neutrally charged. When that balance is upset—for example, when an atom acquires a surplus electron—it becomes negatively charged; and on the other hand, should the atom lose an electron, it will become positively charged. Under appropriate conditions, such imbalances of electrical charge initiate a flow of electrons, which is referred to as electricity. In short, electricity is a form of energy created by the movement of electrons.

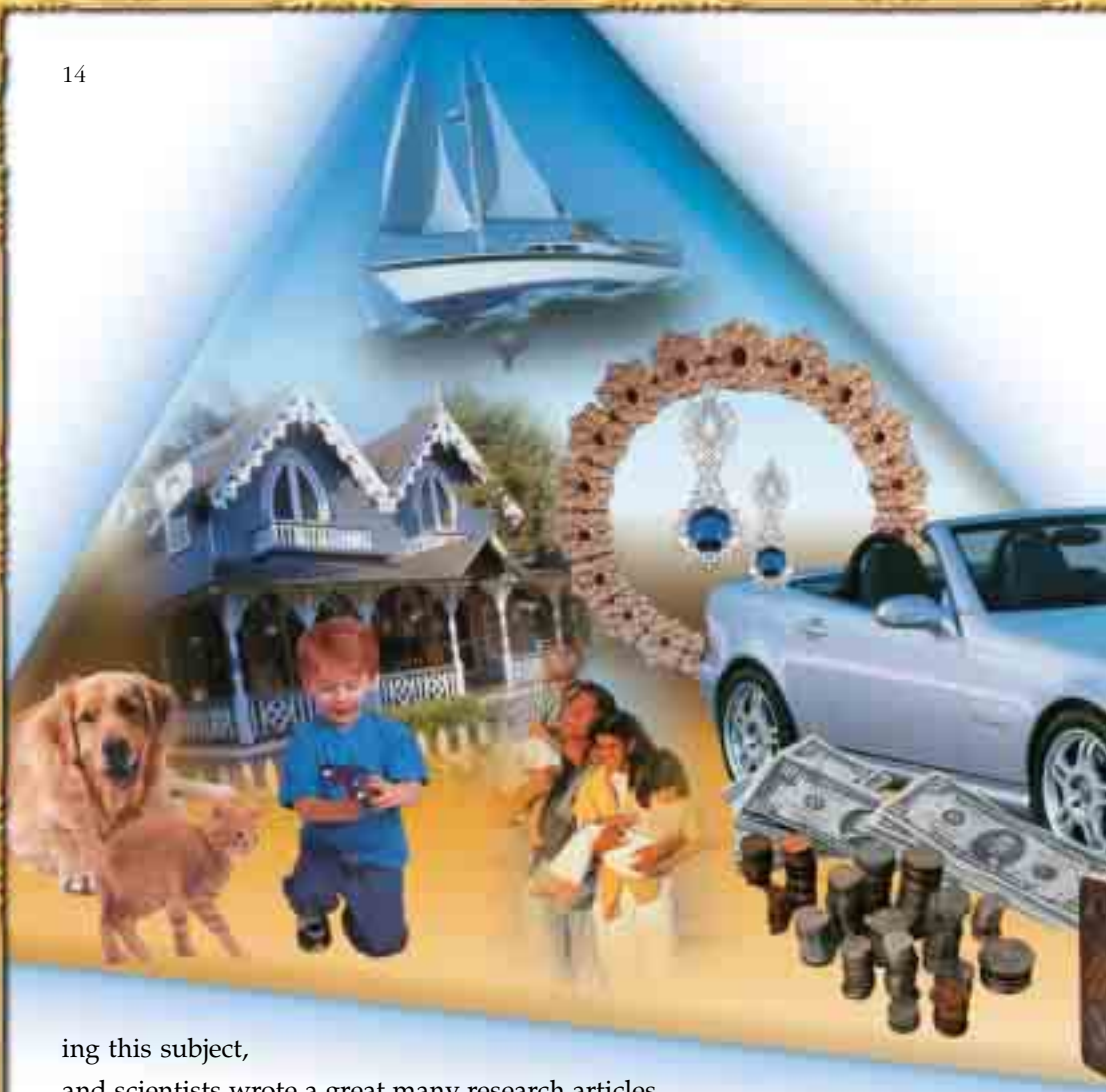
Without this electrical energy, our bodies would be unable to function. Electricity is of vital importance to the survival of every one of us, as well as for our ability to speak, move our muscles, and sense the world

around us. In the absence of electrical flow, vital functions come to a halt, and the individual will be crippled or die. All members of the animal kingdom—human beings included—communicate, move about, and employ their five senses by means of the electricity generated within their bodies. Even if you have been unaware of it before now, even before you were born into the world, your life depended on mechanisms that in turn, depend on electricity, and you became acquainted with your surroundings and grew and developed by means of these mechanisms.

That is the reason why electric shocks are administered to cardiac patients whose hearts have stopped beating. In such an extreme situation, no drugs or vitamins can be administered to cure the patient. Although there are a great many substances that are beneficial to the body, the heart first of all requires electricity in order to function. And so, when the body's electrical system is damaged for any reason, nothing can replace it. It must be restarted, or tissues will begin to die.

Once science realized the importance of electricity in living bodies, universities established special departments solely for the purpose of research-





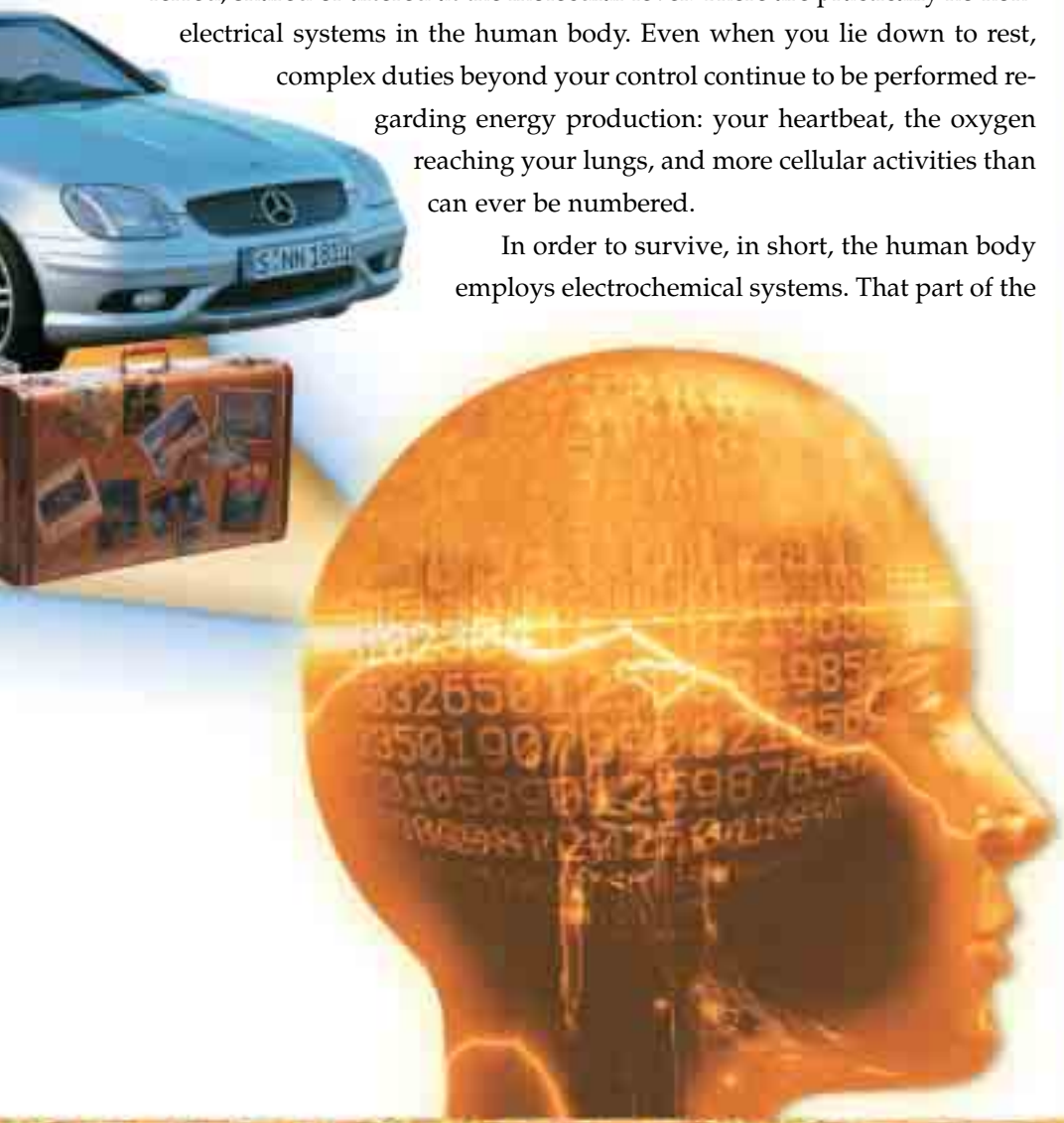
ing this subject,
and scientists wrote a great many research articles
and books about it. Today, intense research is still being carried out into the bioelectric systems of living things. Rodolfo Llinas, Professor of Neuroscience and Chairman of the department of Physiology & Neuroscience at the New York University Medical Center, has stated that there is electricity in all living things that move, and continued:

Electricity is the only thing that's fast enough to carry our ability that make us who we are . . . Our thoughts, our ability to move, see, dream, all of that is fundamentally driven and organized by electrical pulses. It's almost like what happens in a computer, but far more beautiful and complicated.[1]

The Electrical Order in our Bodies

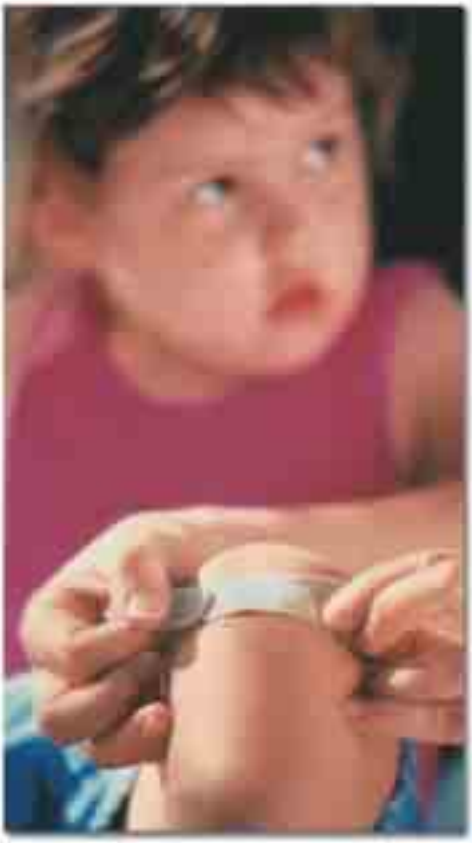
Your body is like a machine that requires regular maintenance every day and works through electricity. When you move a muscle, electrical discharges take place. The signals that carry commands from the brain through nerves are electrical, as are all the sensory signals that move from the body towards the brain. Cell division and heartbeat are electrical in nature. In fact, all chemical changes are based on electricity, through electrons being transferred, shared or altered at the molecular level. There are practically no non-electrical systems in the human body. Even when you lie down to rest, complex duties beyond your control continue to be performed regarding energy production: your heartbeat, the oxygen reaching your lungs, and more cellular activities than can ever be numbered.

In order to survive, in short, the human body employs electrochemical systems. That part of the



body that depends on electricity the most is the nervous system. The body keeps producing electricity as long as it suffers no accident or physical disability, and by the electrical energy it produces, performs its activities day and night. The electrical systems in living things possess many more advantages than the electrical systems in mechanical devices. The most important of these advantages is biological systems' ability to repair themselves. Should you cut your finger, for instance, the wound will heal itself within a short time. Again there is an electrical sequence behind the systems that permit this to happen. This feature does not exist in—nor can it be replicated by—any artificial machine.

Another advantage of the electrical system within your body is its multi-faceted activity. Circulation, the immune system, motion, communication, digestion, excretion—all these functions take place thanks to the nervous system. Man-made electrical devices, on the other hand, are generally restricted to one or at most, several similar functions: such as air-conditioning, heating, mixing, or sweeping—but despite this, they consume high levels of energy. The electrical energy used by the body—despite its being used to operate so many different systems—is at exceedingly low levels.



In the electrical equipment we use in everyday life, the strength of the electricity used—that is, the voltage level—needs to be kept at a specific level. However, these levels are regulated not by the

machine itself, but once again, adjusted by special, man-made devices. Adaptors and voltage regulators are used to ensure a balanced flow. Otherwise, the machine's entire operations will be impaired.

In the human body, however, all these adjustments are carried out without your even being aware of them.

In addition, the production and use of electricity in our bodies goes on non-stop. Even when the body is resting, the flow of minute electrical signals continues constantly, in intervals as short as 1/1000 of a second. Electrical devices generally have a life span of 10 to 20 years, and usually need to be repaired and have new parts installed long before that. Yet apart from under very exceptional circumstances, the human body's electrical system functions for an entire lifetime, never resting and never giving out.

The body's various systems, and even single nerve cells—none of which can be replicated using human intellect and accumulated knowledge—are of such complexity as to prove that their existence cannot be the work of chance. In the absence of this electrical system, whose details we shall be examining throughout this book, the other systems in the body and its organs could not function so flawlessly. Therefore, there can be no question of "stage by stage" development, one of the main claims of the theory of evolution, which maintains that living things came into being through the mechanism of chance.

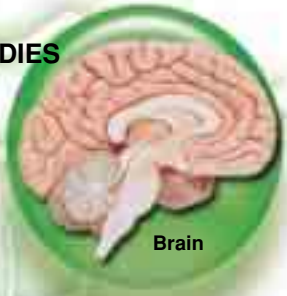
Despite being an evolutionist, the biologist Hoimar von Ditfurth describes the impossibility of claims of chance in his book *The Secret Night of the Dinosaurs:*

> The statistical impossibility of the living structures in question forming by chance is a popular and highly contemporary example of the current point of scientific development. Indeed, looking at the extraordinary properties of the formation of a single protein molecule that undertakes biological functions, it does appear impossible to explain the combining of many atoms, all in the right location and the right order and with all the correct electrical and mechanical features, as the result of chance.[2]

The human body produces its own electricity. In order for any function to take place in the body, a signal must be sent to the relevant organ or tis-

THE ELECTRICAL ORDER IN OUR BODIES IS A BLESSING FROM OUR LORD

Almost no process in the human body takes place without electricity. Even when you are resting, the activities in your body—your heartbeat, the passage of oxygen into your lungs, and innumerable cellular activities—continue uninterrupted as a blessing from our Lord.



sue. If we are to survive, therefore, there can be no question of chance occurrences anywhere in our bodies. That is because it is impossible to account in terms of chance for the way that millions of separate factors work together at exactly the right way, levels, with perfect timing, flawlessly and thoroughly, constantly without tiring and with superb coordination over 60 to 70 years. Were each organ to act independently—were it to delay the commands reaching it or to give haphazard responses to them; were it to grow and function only when it chose to—then we would be unable to survive even for a moment in the chaotic environment that would result. Moreover, just a brief delay or for just a few cells to create confusion would be enough to let such a chaotic environment arise. Indeed, evolutionists, with their claims regarding chance, are unable to conceal their amazement in the face of the immaculate order they encounter. They have no reply to give when asked how these organs and systems emerged and appeared within the body, in just the right locations and just the right form and functions. Yet the answer is manifest: it is Allah, the Creator of all the worlds, Who has flawlessly brought them into being:

He Who has created all things in the best possible way. He commenced the creation of man from clay; then produced his seed from an extract of base fluid! Then (He) formed him and breathed His Spirit into him and gave you hearing, sight and hearts. What little thanks you show? (Surat as-Sajda: 7-9)

The production of electricity and electrical exchange of information in the human body continue even when we are asleep. This is one of the examples of our Lord's infinite mercy.

Adnan Oktar

THE NERVOUS SYSTEM: ELECTRICITY'S JOURNEY THROUGH OUR BODIES

Human beings have a central nervous system, the most complex biological system known. Billions of nerve cells, or neurons, and the trillions of connections among them constitute the nervous system's main structure. The central nervous system consists of more than 100 billion neurons. In addition, there are up to ten times as many helper cells, known as neuroglia.

Our bodies are equipped with bio-electrical cables, known as nerves, millions of meters (feet) in length. Information is transported along these cables at a speed approaching that of light. The way nerves extend to every point in our bodies, possessing an astonishing order, and the way commands and information are carried by means of these cables, are miraculous. Despite the intensity of the data flow involved, no confusion ever occurs, and every message is transmitted scrupulously to its destination.

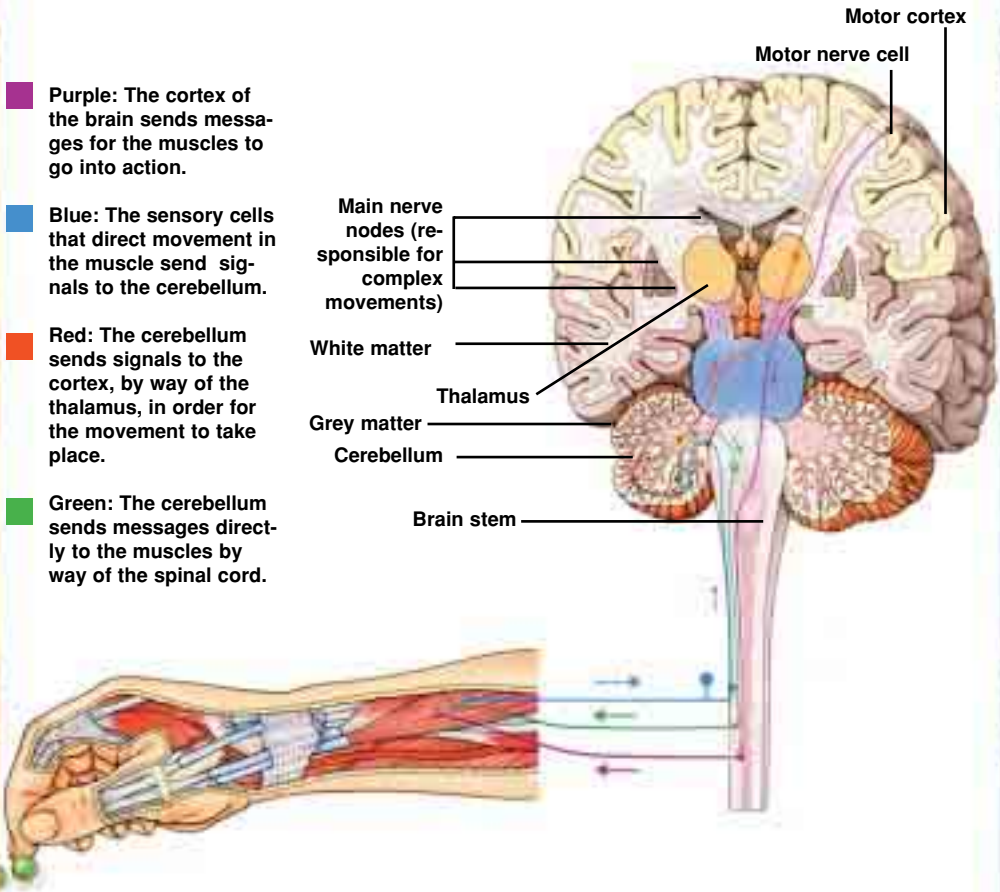
Also surprising is that no matter how different the sensory information, being forwarded—concerning the keyboard you touch, the taste of the sweets you eat, the smell of newly baked bread, the sound of the telephone or the sight of daylight entering your eyes—the same communications system is employed. All information regarding our senses or thoughts travels inside nerve extensions, encoded in the form of electrical stimuli, in a wave state. Although these many electrical signals constantly coming and going throughout the body are all identical, they reveal to us a world full of myriad colors and rich details.[3]

Our nerves also permit us to obtain information about the world around us, to react quickly to changes, and also let various regions of the body function as a single entity. They also transmit orders from the brain, the body's command center—so that essentially, nerves are highways that transmit the data that keeps our bodies alive and healthy. Departing from the brain and spinal column, they extend to all parts of the body including the skin, muscles, sensory organs, even the teeth and the interior of the bones.

If the nerves extended to everywhere in your body apart from your right hand, what would happen? First off, your hand would have no sensations. You would not feel a knife that cut your finger, and would be unable to perform any tasks for which you normally use that hand. You could not have your fingers grip a cup, hold a pencil, open a door, or comb your hair. In short, your hand would be just a quantity of living flesh and bone.

But the existence of nerves alone is not sufficient for a healthy life. They must also have to reach all parts of the body and be able to communicate with one another. It is impossible for how the nerves interpenetrate the entire body and control all its flawless systems to have come about simply by chance.

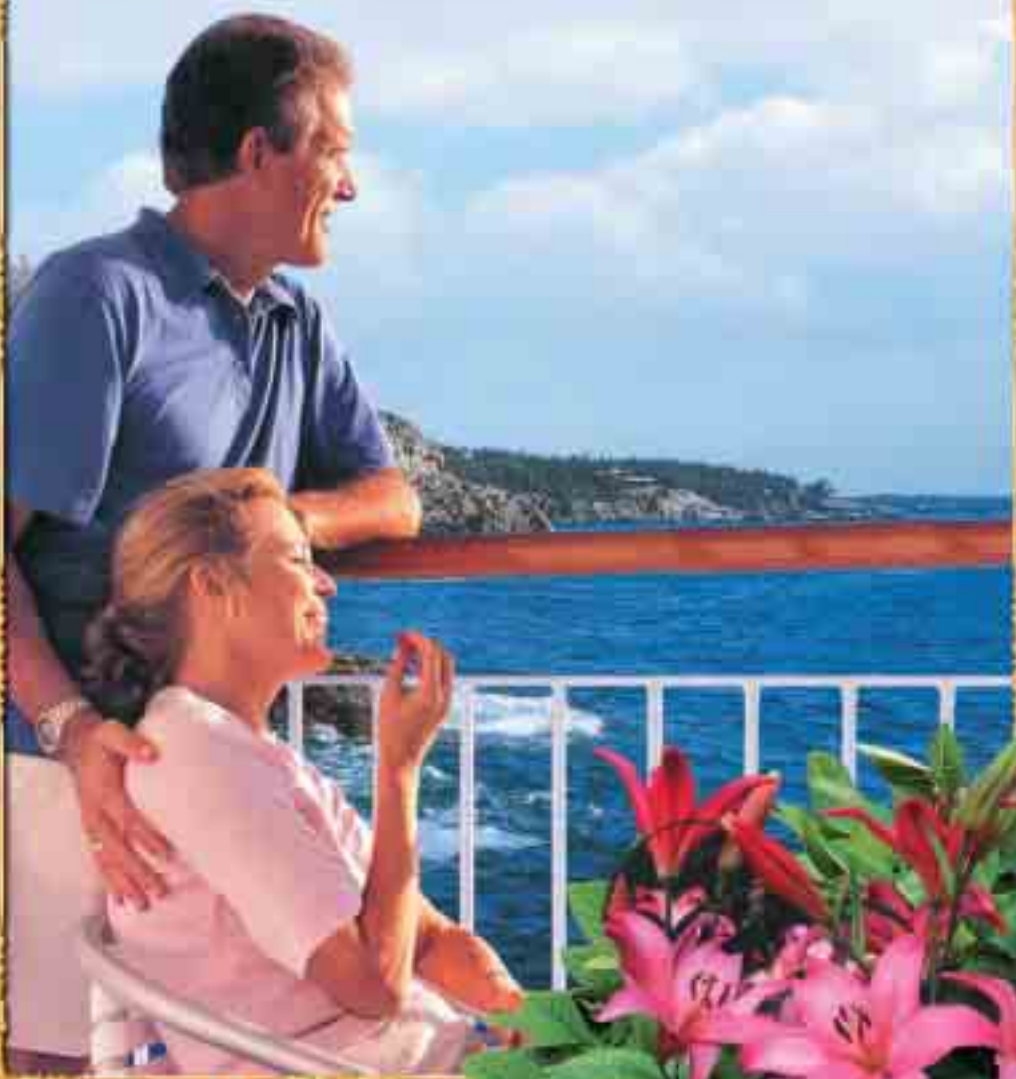
Despite the many opportunities provided by present-day technologies, scientists have been unable to produce anything resembling the cell. Evolutionists maintain that a cell, of its own accord, flawlessly fulfills responsibilities that human beings are unable to replicate. But that claim is incompatible with logic and reason. Clearly, the nervous system enfolds and



One reason why you can use your hands to do things is that your nervous system has a flawless structure. Even picking up a marble is actually a very complex movement. Delicate adjustments are required, such as how far the fingers need to be opened and how much force should be applied. If the nerves did not reach your hand, or if there were no link between the nerves and the brain, your hand would be a merely an assemblage of flesh and bone.

manages our entire bodies and even engages in conscious activities. However, this superior consciousness that astonishes scientists cannot belong to cells—mere collections of organelles and their unconscious atoms. This consciousness belongs to Allah, the Maker of all. (Surat al-Baqara: 54)

Everything in the heavens and Earth belongs to Allah. Allah is the Rich Beyond Need, the Praiseworthy. If all the trees on Earth were pens and all the sea, with seven more seas besides, was ink Allah's words still would not run dry. Allah is Almighty, All-Wise.
(Surah Luqman:26-27)



Nerves: Our Bodies' Electrical Cables

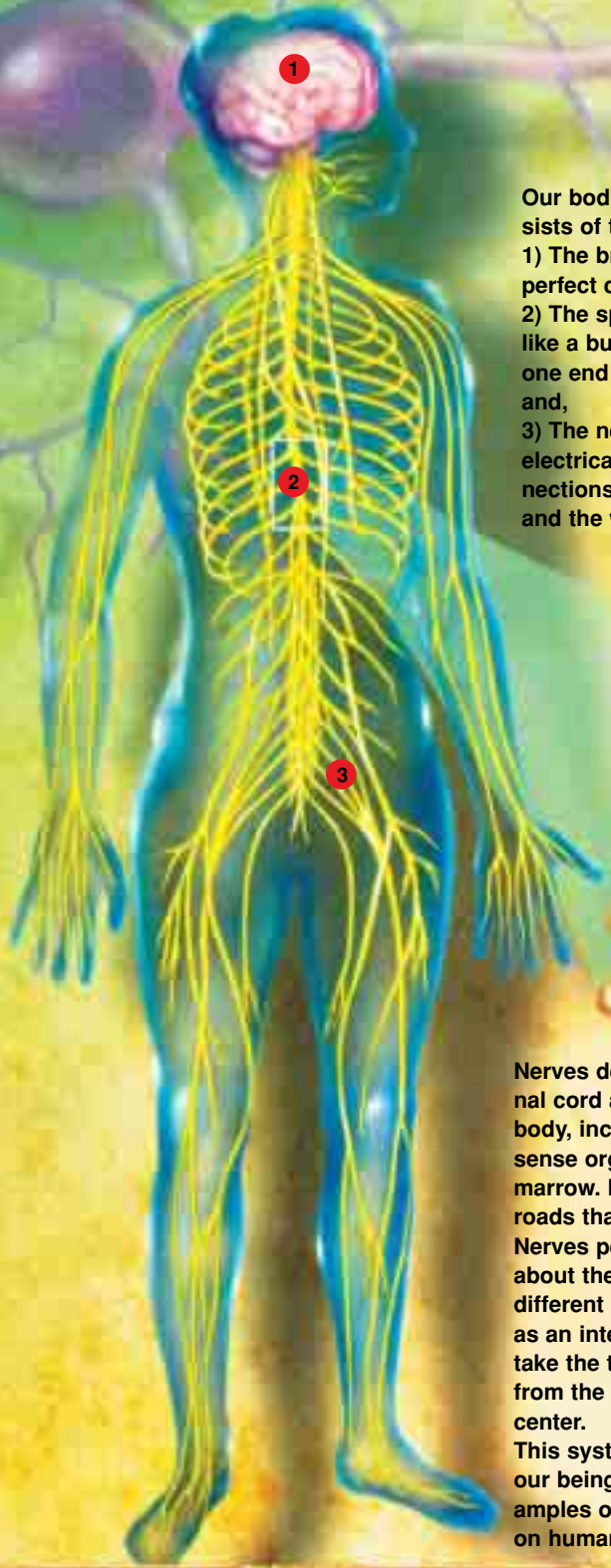
Electricity cables consist of two main components: Inside, there's generally a copper wire through which the electric current passes; and outside and surrounding it, there is some kind of insulating material that prevents electrons escaping their intended path, in the process called short circuiting.

Nerve cells possess exactly the same design as an electrical cable: Inside are very fine fibers, through which the body's electrical current passes. Surrounding them is an insulating tissue known as the Schwann sheath, which prevents neurological short circuiting. When the sheath is damaged for any reason—by a virus for example—then the nerve's current is dispersed throughout the tissues, resulting in partial or total paralysis, in much the same way that an electrical cable loses its function when its rubber casing splits or burns.

All nerve fibers have electrical charges. The electricity outside the fiber is positively charged and the inside is negatively charged. The moment a nerve is touched an electrical impulse is given off. Positively charged ions enter the nerve sheath while negative ions move to the exterior of the nerve fiber, thus setting up an electrical current. As a result, the relevant muscle or organ functions. Once the electrical current has been transmitted, everything returns to its normal state. Positively charged ions again flow to the outside of the nerve fiber, and negatively charged ions return inside. In this way, the nerve fiber is readied for another stimulus or impulse.

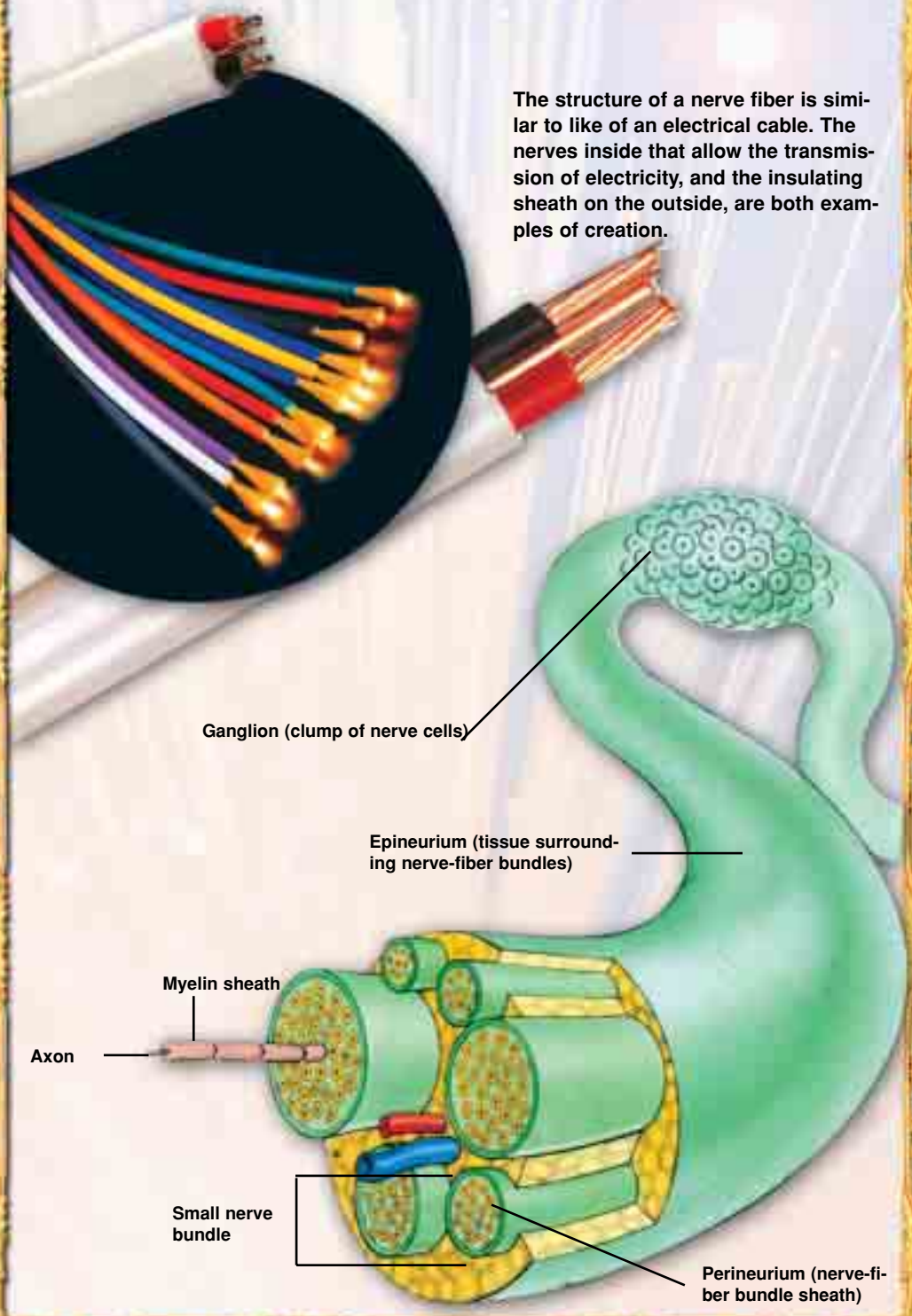
Thanks to this constantly repeated process, the activities continue that keep us alive. However, this procedure is a great deal more detailed and possesses a far more complex design than is summarized here. The more the imaging power of our electron microscopes increases, the more complexity emerges to amaze scientists. The design of the cells that constitute the nerves is full of astonishing details that display the infinite might of our Lord:

> **The kingdom of the heavens and the Earth and everything in them belongs to Allah. He has power over all things. (Surat al-Ma'ida:120)**



Our bodies' electrical system consists of three regions:
1) The brain, which functions like a perfect computer,
2) The spinal cord, which serves like a bundle of electrical cables, one end of which goes to the brain, and,
3) The nerves, which function like electrical wires and establish connections between the spinal cord and the whole body.

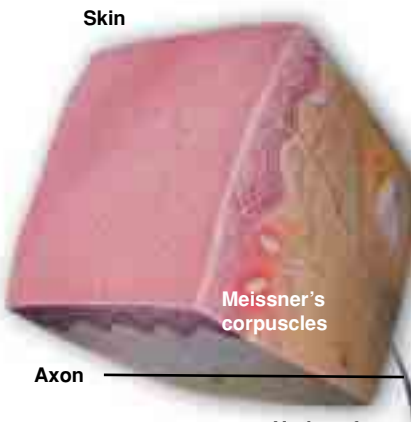
Nerves depart from the brain and spinal cord and extend to all parts of the body, including the skin, muscles, sense organs, even the teeth and bone marrow. In short, the nerves are like roads that carry the body's information. Nerves permit us to obtain information about the world around us, and enable different parts of the body to function as an integral whole. They also undertake the transmission of commands from the brain, the body's command center.
This system, which functions without our being aware of it, is one of the examples of our Almighty Lord's mercy on human beings.


The structure of a nerve fiber is similar to like of an electrical cable. The nerves inside that allow the transmission of electricity, and the insulating sheath on the outside, are both examples of creation.
Ganglion (clump of nerve cells)
Epineurium (tissue surrounding nerve-fiber bundles)
Myelin sheath
Axon
Small nerve bundle
Perineurium (nerve-fiber bundle sheath)

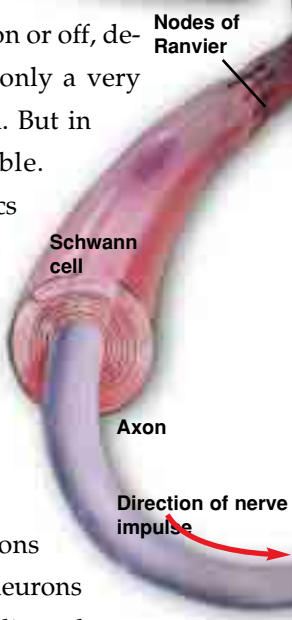
NEURONS: CELLS THAT PRODUCE ELECTRICAL CURRENT

Nerves interpenetrating our bodies consist of hundreds, and sometimes, thousands of nerve cells called "neurons." An average neuron is 10 microns wide[4]. (One micron is equal to 1/1000 millimeter, which equals 0.000039 of an inch.) Were we able to line up the 100 billion neurons in a human brain, their line would extend for a full 100 kilometers (62 miles). But this line would be only 10 microns wide, invisible to the naked eye. You can envisage the minute size of neurons with the following comparison: 50 neurons would fit into a period at the end of this sentence[5] and 30,000 on the head of a pin.[6]

Neurons have been created to carry the electrical impulses throughout the body. The task of most neurons is to receive signals from neighboring neurons and then to transmit these on to another adjacent neuron or to the ultimate target cell. Neurons communicate with one another, carrying out thousands of these processes every second.



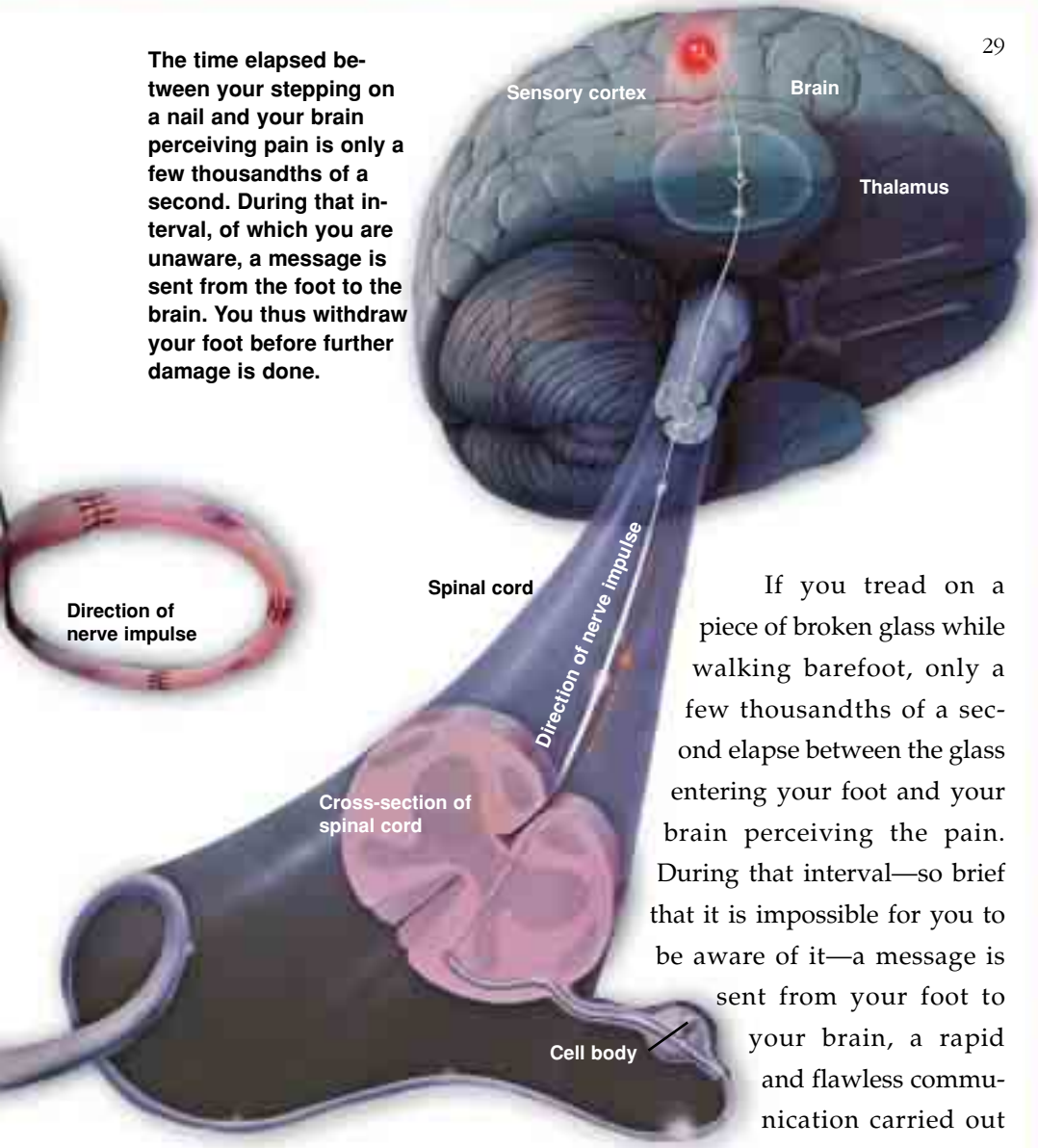
We can compare a neuron to an electrical switch that goes on or off, depending on circumstances. On its own, a neuron constitutes only a very small part of the interconnected circuits of the nervous system. But in the absence of these tiny electrical circuits, life is impossible. Professor Werner Gitt of the German Federal Institute of Physics and Technology describes this giant complex squeezed into this small area:



> If it were possible to describe [the nervous system] as a circuit diagram, [with each neuron] represented by a single pinhead, such a circuit diagram would require an area of several kilometers. . . . [It would be] several hundred times more complex than the entire global telephone network. [7]

As he emphasizes, the nervous system in our bodies functions like a very complex data network, which depends on all the neurons performing their duties to perfection. With the rhythmic, coordinated motion of the impulses from one neuron to the next, each organ, muscle, joint, system and cell performs its functions without any conscious command or supervision from you. Moreover, although millions of cells die in your body every day, these are expelled from your body in a way that causes no disruption to its balances and functions. Again by means of an impeccable system, new cells replace the ones that have died. In this, there is not the slightest error in terms of timing or measurement. We have no control over these activities, and continue to enjoy healthy lives so long as none of them suffer any disruption.

The time elapsed between your stepping on a nail and your brain perceiving pain is only a few thousandths of a second. During that interval, of which you are unaware, a message is sent from the foot to the brain. You thus withdraw your foot before further damage is done.



If you tread on a piece of broken glass while walking barefoot, only a few thousandths of a second elapse between the glass entering your foot and your brain perceiving the pain. During that interval—so brief that it is impossible for you to be aware of it—a message is sent from your foot to your brain, a rapid and flawless communication carried out by neurons. In this way, you lift your foot off the ground before it can be injured any further.

It is completely beyond the bounds of possibility for such a system to have developed spontaneously. However, certain circles who blindly support the theory of evolution seek to account for this perfect order in the human body in terms of random coincidences. We can show just how meaningless these claims are with the following example:

Look at the electrical devices around you, each of which has been specially designed with plastic and electronic equipment, buttons, cables and other components for a specific objective that will make your life easier. Dozens of engineers have worked behind the scenes for a single hairdryer, along with the use of various plants, several branches of science and the designs of experts in the field. The result was a device that's functional and easy to use. No rational person could logically suggest that such a device came into being as the result of chance.

Your body, however, possesses an electrical system far more complex than that in any electrical device. The odds against such a system coming into being by chance are therefore still more infinitesimally remote.

Neurons Specially Created to Carry Signals

All neurons contain a nucleus, short fibers known as dendrites that carry electrical signals, and a long fiber known as axon that carries signals for long distances. The nerve cell, which can be as fine as silk thread, can be as long as roughly 1 meter (3,2 feet). Signals sometimes must travel even greater distances along the nerves.[8]

It's fair to liken the body of the neuron to a telephone switchboard equipped with advanced technology. However, with its cellular dimensions varying between 0.004 and 0.1 millimeters (0.0001575 and 0.003937 of an inch) and wide-ranging communication mechanisms, this miniaturized telephone exchange has no equivalent in the modern world. In contrast to other cells, neurons contain both dendrites and axons, which give rise to lines of communication that permit the cell to pass its signals along to others. Dendrites receive messages, and axons send them.

A neuron can send an impulse in as little as 1/1,000 of a second. This means that a single neuron can transmit 1,000 nerve signals a second. In general, however, transmission may range between 10 and 500 impulses per second.[9] The largest and thickest nerve fibers transmit electricity at a speed of 152 meters (500 feet) per second, and the thinnest of them at about 1 meter (3 feet) a second.[10] Information is transmitted without impairment inside the neuron and forwarded to the correct destination in a most astonishing way. However, the speed at which these phenomena take place is no less astonishing.

Imagine that all the complex systems in your body exist, but that the data transmission in your nerve cells is slower than it actually is: Only hours after the event could you appreciate the beauty of a view, the taste of the food you ate, or that something you touched was hot enough to burn your fingers. You would need dozens of minutes to reply to a question put to you. Crossing from one side of the street to another, or driving, lifting a fork to your mouth, commenting on an article of clothing you like, and countless other forms of behavior could lengthen into situations seriously incompatible with your lifestyle, or which even endangered your life. Lapses in timing between an event you perceive and being able to speak might make life untenable. Furthermore, this example only considers actions that we under-

Processes Squeezed into a Thousandth of a Second
Everything we see, hear and touch turns into electrical signals that move between the brain and the body by way of nerve cells. With our Lord's knowledge, these processes take place in less than a thousandth of a second.

take voluntarily. The body also performs activities outside our conscious control, such as the beating of the heart. Any slowing in the signals regarding these functions would have fatal consequences. However, through the blessing of our Lord, the Compassionate and Merciful, everything in the human body is just as it needs to be.

In one verse of the Qur'an it is revealed that Allah has created all things in their proper measure:

> **Allah knows what every female bears and every shrinking of the womb and every swelling. Everything has its measure with Him. (Surat ar-Rad: 8)**

Dendrites and Axons: The Cables That Surround Our Bodies

Dendrites consist of a large number of short protrusions and are comparable to the roots of the cell. With their branched structure, dendrites receive reports arriving from other neurons and transmit these to the cell body. Put another way, dendrites are like electrical cables, transmitting signals entering the cell. Every neuron possesses up to 100,000 branching dendrites that carry incoming messages to the cell.[11]

The axons generally bring information from sense receptors to the brain and spinal cord or transmit commands back to the muscles, glands and internal organs. An axon is a long fiber, generally consisting of a single protrusion, that emerges from the cell body and along which signals are sent. Individual axons are microscopic in diameter - typically about one micrometre across (1?m) - but may extend to macroscopic (>1mm) lengths. The longest axons in the human body, for example, are those of the sciatic nerve, which run from the base of the spine to the big toe of each foot. These single-cell fibers of the sciatic nerve may extend a meter or even longer.[12]

Another striking feature is that a single axon is capable of dividing itself into as many as 10,000 terminals, or end sections. In this way, each terminal can be connected to a different neuron and can permit more than one region to be stimulated at the same time. Since any one single neuron can receive signals from more than 1,000 other neurons, it can carry a million different pieces of information at the same time[13] —an incredible figure. This

ability plays a very important role in situations wherein more than one muscle fiber needs to be activated. With these structures, each nerve cell appears like a dense network consisting of long chains.

If the nerves did not have such a structure, then every signal would have to be transmitted in turn. That would slow and seriously impair the rapid, complex transfer of signals in the body.

We can compare the axon terminals at the end of dendrites to plugs fitting into sockets. Thus, in the same way that an electrical current flows from the socket to the plug, the electrical signal continues on between two nerve cells. These connection points at the axons' ends are attached to receptors on other cells and permit information to transmit between cells. In the way they allow communication between different points in the nervous system, axons are comparable to the links connecting one part of an electrical circuit to another.

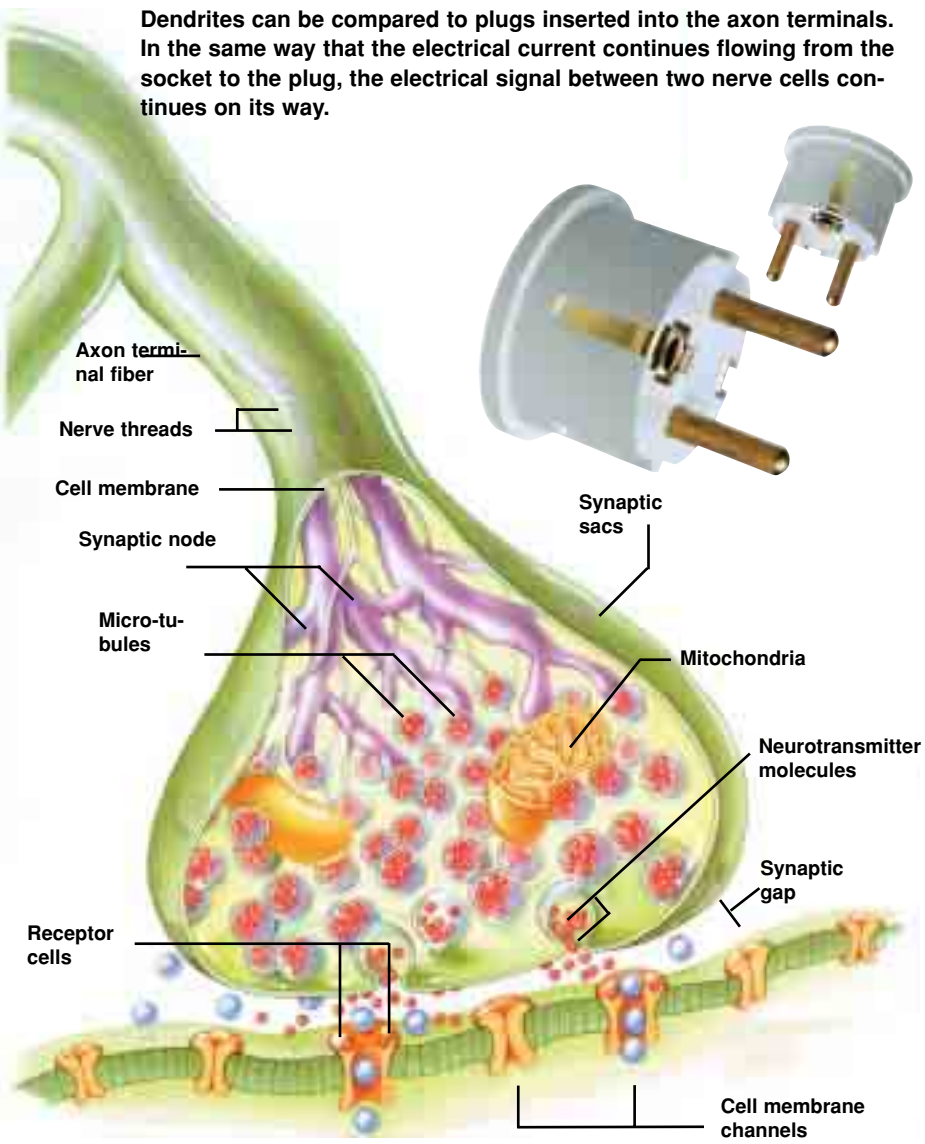
Each of these features is essential for our bodies' communication and coordination. Our ability to lead healthy lives and our very existence depend on all these details functioning flawlessly. One of the aims behind their creation is to exhibit the knowledge and artistry of our Lord. Ours is the responsibility to appreciate the greatness of our Lord and give proper thanks:

> **. . . Allah pours out His favour on mankind but most people do not show thanks. That is Allah, your Lord, the Creator of everything. There is no god but Him—so how have you been perverted? (Surah Ghafir: 61-62)**

The Role of the Synapses in Data Transmission

The gaps or spaces between the axons of two neurons are known as synapses. Communication between the two neurons is established and maintained at these terminal connection points. In the same way that a telephone switchboard permits a large number of callers to talk to one another at the same time, so a neuron can communicate with many other neurons by means of these synapses. Each neuron has around tens of thousands of syn-

Dendrites can be compared to plugs inserted into the axon terminals. In the same way that the electrical current continues flowing from the socket to the plug, the electrical signal between two nerve cells continues on its way.



Synapses: Our Bodies' Electric Fuses

Nerve cells are connected to one another by special electrical circuits known as synapses, which prevent the body's electrical system—the brain, spinal cord and nerves—from being damaged. More than 95% of your body's physiological processes are carried out automatically. We do not tell our stomach, liver, kidneys or lungs to carry out their functions, nor do we command our heart to beat regularly. Our electrical systems depend on that system being protected since it performs a great many functions, and through the mercy of Allah this protection in our bodies operates flawlessly

apses,[14] meaning that a neuron can establish connections with tens of thousands of separate nerve cells. Even assuming that hundreds of millions of telephone conversations could be transmitted over a single telephone network at the same time, this capacity still lags far behind that of the human brain, which can effect 1 quadrillion (1,000,000,000,000,000) communications by means of the synapse inside it.[15] Consider how hard-pressed one human being is when working on a 10-line telephone switchboard! You can better understand how a single nerve cell simultaneously carrying out 10,000 connections is evidence of an extraordinary creation.

A neuron collects incoming signals, decides if the total input message is strong enough, and permits its passage to another neuron.[16] Synapses, the connection points between two neurons, control the distribution of this communication by determining the direction of the signals transmitted.[17] Triggering or inhibiting signals arrive from various regions of the nervous system, sometimes opening synapses and other times, closing them. In this way, synapses halt weak signals and permit strong ones to pass.

At the same time, they also provide a selective function by choosing and magnifying some of the weaker signals and passing them on—not in one single direction but in many. The way that neurons collect signals and decide to transmit them might lead you to assume they have something resembling conscious human intellect. However, this is accomplished merely by very specially arranged groups of molecules, with no ability to think, nor any organs that permit them to perceive. The ability of a group of molecules flawlessly discharging such vitally important responsibilities is a sign of Allah's supervision and eternal dominion over living things.

It is Allah, Lord of the Worlds, Who causes these impeccable processes to be carried out:

> **I have put my trust in Allah, my Lord and your Lord. There is no creature He does not hold by the forelock. My Lord is on a Straight Path. (Surah Hud: 56)**

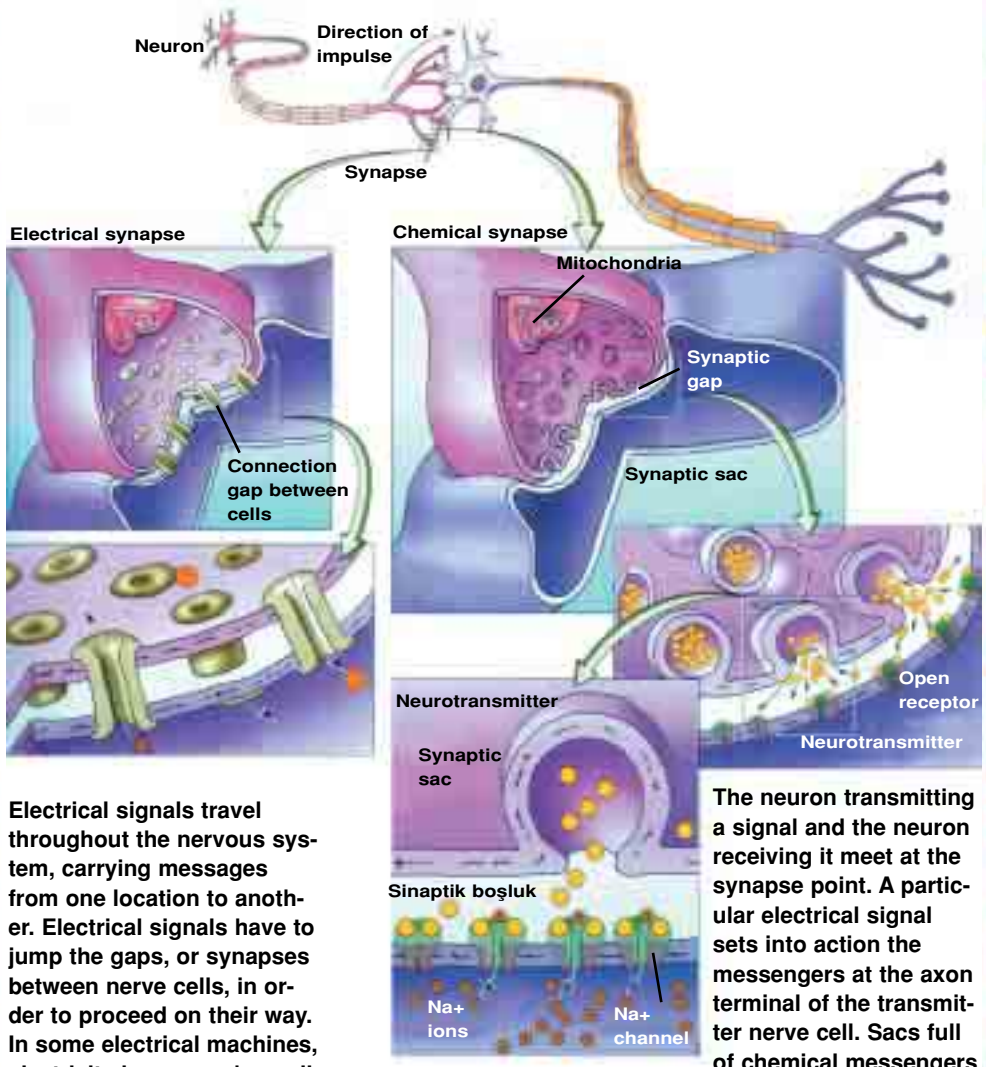
Synapses and Constant Electrical Current

Synapses, or the gaps between two nerve cells, are so small that they become visible only when magnified thousands of times. Yet this gap between two cells is also wide enough to prevent any electrical impulse's leaping from one cell to another. Despite the billions of neurons in the nervous system, they never touch each other in any way. Therefore, from the point of view of the body's electrical system, every synapse is an obstacle that must be overcome. Yet although they are separated from one another, no lapse is ever experienced in the body's nerve network, because the signals transmitted electrically along the neurons continue across these spaces between them in chemical form.

Assume that an electrical signal—traveling at 354 kilometers (220 miles) per hour—reaches the end of the axon.[18] Where will this stimulus go? How will it get past the synapse to continue on its way? This situation is analogous to coming to a river as you drive along in a car. At this point one has to change vehicles. In the same way that you get out of the car to cross the river in a boat, the electrical signal continues on its journey in another form, that is, in chemical form. Thanks to this chemical communication in the synapses, electrical signals can continue their journeys without interruption.

When a signal reaches the axon terminal, it gives rise to a so-called "message packet" that jumps the small synapse between two neurons and carries chemicals to set the receptor nerves in the neighboring neuron dendrites into action. These messenger molecules, known as neurotransmitters, cross the gap and set the second neuron into action in less than a millisecond.[19] Neurotransmitters are produced in the body of the nerve cell, are carried along the axon and stored in synaptic vesicles in the axon terminals. Each vesicle contains some 5,000 transmitter molecules,[20] which chemicals function as trigger or preventive signals. They either impel neurons to produce an electrical impulse, or else prevent them from firing.[21]

Recent research has shown that neurons can contain and release some



Electrical signals travel throughout the nervous system, carrying messages from one location to another. Electrical signals have to jump the gaps, or synapses between nerve cells, in order to proceed on their way. In some electrical machines, electricity jumps such small gaps in the form of a spark. The electrical signals in the body pass over the gap in the from of a chemical signal known as a neurotransmitter.

In order for us to enjoy healthy lives, these innumerable connections in the brain must be established without the slightest deficiency. Any break or error in connections may lead to a wide range of ailments.

The neuron transmitting a signal and the neuron receiving it meet at the synapse point. A particular electrical signal sets into action the messengers at the axon terminal of the transmitter nerve cell. Sacs full of chemical messengers join with the cell membrane and release molecules into the synapse gap, transmitting the message to receptors on the neuron's membrane. Different messenger molecules establish connections with different receptors. The harmony among transmitter and receptor neurons is a clear sign of intelligent creation.

100 different types of neurotransmitters.[22] In other words, each neuron is like a chemical factory producing messengers to be employed in communications. Some neurotransmitters are employed in the triggering of electrical signals, others in the halting of electrical signals, and still others in acceleration or deceleration, in frequency-changing and energy storage. Each neuron releases only one or at most, a few different varieties of these neurotransmitters. When a neurotransmitter emerges, it crosses the synapse and the protein receptor on the receptive neuron's cell membrane sets a protein into motion. At this point, synapses can be compared to a highway by which these chemical messengers are transmitted between nerve cells. The distance between them is approximately 0.00003 of a millimeter (118.10-8 of an inch).[23] Although this distance is very small, it is still a gap that the electrical signals must cross.

The amount of neurotransmitter released is much greater than what's needed for attachment to the target dendrite. However, as in every other detail in the human body, this excess is an example of very wise creation. The extra neurotransmitters remaining in the synapse block the nerve to prevent the sending of excess signals. If these surplus molecules did not block the nerve, then the time needed for the signal to come to a stop would lengthen into seconds, even minutes. However, the signal transmission takes place in just a fraction of a second. The excess neurotransmitters are absorbed by the axon terminal, and the remainder decomposed by enzymes.[24] Just as in a relay race, electrical information is transmitted from cell to cell by means of neurotransmitters that serve as bridges. In this way, the flow of information continues uninterrupted, despite the gaps between the cell extensions.

Yet how do these two independent systems know that they must act together to perform this vital function? In addition, how is that there is no omission or delay in the information transmitted, and for data to be transmitted perfectly to its appropriate destination?

Each of these systems is no doubt a reflection of the knowledge and artistry of Allah. It flies in the face of logic and reason to expect these miraculous systems to have come into being spontaneously, or to maintain that unconscious cells engage in purposeful activities as the work of chance.

THE NERVOUS SYSTEM'S COMPLEX STRUCTURE IS ONE OF THE SIGNS OF OUR LORD'S ARTISTRY AND KNOWLEDGE

Until recently it was thought that communication between neurons was established at fixed points. Professor Eric R. Kandel won the 2000 Nobel Prize in Medicine for his discovery that the shape of the synapses changes according to the structure of the chemical messengers. He found that synapses possess a mechanism that regulates their forms depending on the strength of the signal. For example, in the case of a powerful signal, the synapse grows and permits this signal to be transmitted to other cells with no loss of strength, and in the most effective manner.

The discovery of this ability in the synapses was made through experiments on marine crustaceans. Professor Kandel states that the nervous system in human beings is too complex to allow the possibility of research.[1] One of his statements refers to the complexity of the nervous system in these terms:

> The key principle that guides our work is that the mind is a set of operations carried out by the brain, an astonishingly complex computational device that constructs our perception of the external world, fixes our attention, and controls our actions.[2]

1. www.wsws.org/articles/2000/oct2000/nob-o26.shtml
2. Eric R. Kandel's speech at the Nobel Banquet, Dec 10, 2000; http://nobelprize.org/nobel_prizes/medicine/laureates/2000/kandel-speech.html

Eric Kandel, who won the 2000 Nobel Prize for Medicine for his work on synapses

NEURONS: ANOTHER EXAMPLE THAT PLACES THE THEORY OF EVOLUTION IN AN IMPASSE

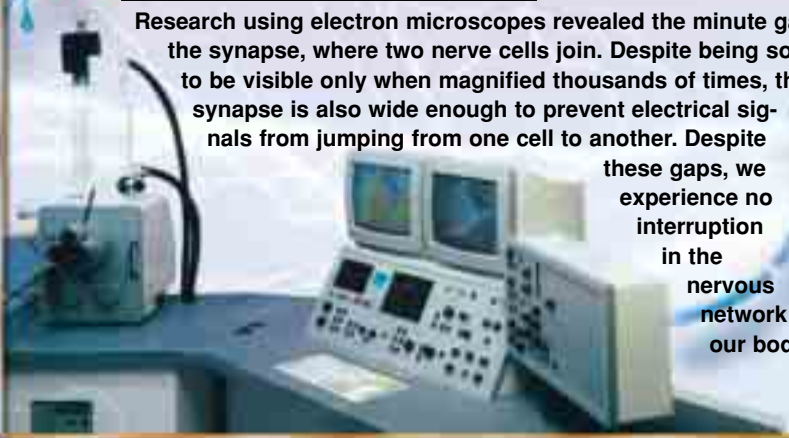
Nerve cells pervade our bodies like a network of computers connected to one another by cables—the most economical and effective way of electronic communication. A similar, uninterrupted flow of information takes place in the body's nervous system. At every moment, the electrical signals transmitted along the nerves carry countless commands and stimuli between the brain and the various organs.

However, nerve cells do not resemble lengthy cables stretching from one end of the body to the other. They are joined to one another, end to end although there are gaps or synapses between them. But how does the electrical current cross from one nerve to another? And how is an uninterrupted exchange of data carried out?

At this stage, a very complex chemical system enters the equation. Nerve cells receive and forward messages by means of the connections known as synapses, and at these points, the neurons exchange chemical signals. In this special fluid between the nerve cells are a number of very specialized enzymes that possess extraordinary properties, such as electron bearing.

When the electrical signal reaches the end of one nerve, electrons are loaded onto these enzymes. The enzymes cross the liquid between the nerves, carrying the electrons they bear to the next nerve. In this way, the electrical current continues to flow, moving on to the next nerve cell. This process takes place in a very short time, with the electrical current suffering not the slightest interruption.

Most of the time, we are completely unaware of what is going on inside our bodies. This system functions flawlessly without requiring us to think about it, requiring a large number of components to work together in harmony. All these details are just a small portion of the many examples that place the theory of evolution in a complete impasse.

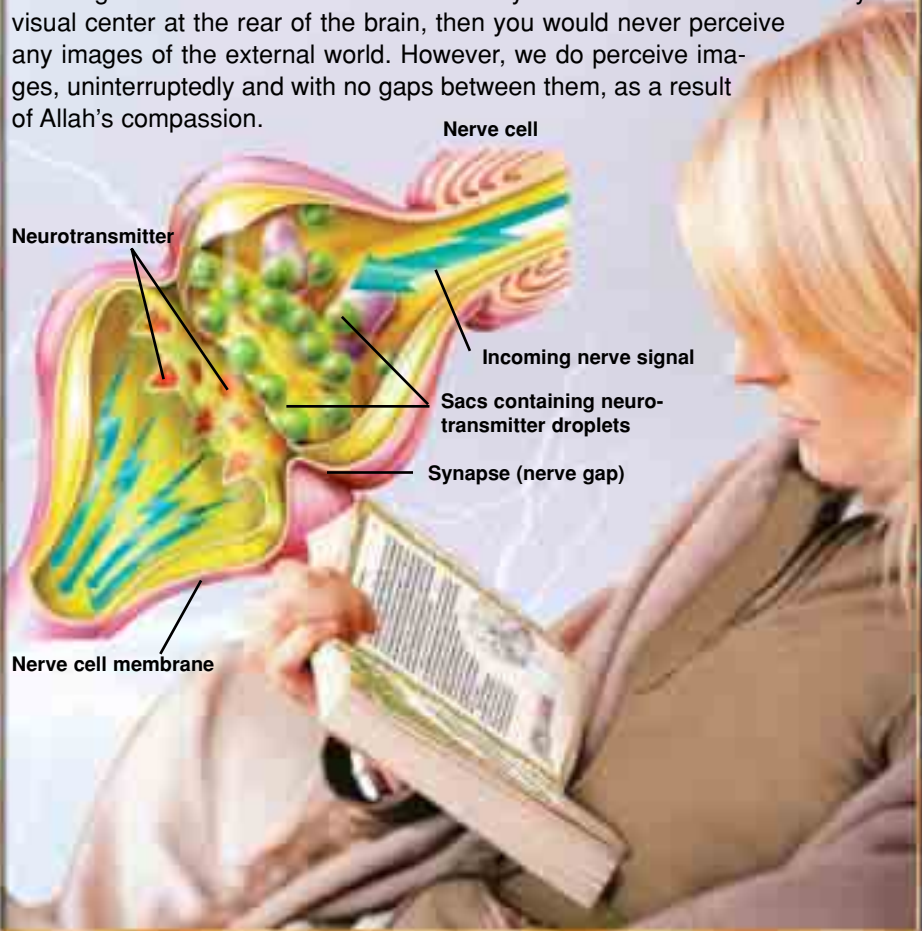


Research using electron microscopes revealed the minute gap, called the synapse, where two nerve cells join. Despite being so small as to be visible only when magnified thousands of times, the synapse is also wide enough to prevent electrical signals from jumping from one cell to another. Despite these gaps, we experience no interruption in the nervous network in our bodies.

THE UNINTERRUPTED COMMUNICATIONS NETWORK IN THE BODY

Neurons perform communication in the body by means of a unique method, involving electrical and chemical processes of extraordinary complexity. In this way is established a flawless coordination, both inside the brain and between the brain and the other organs. While you perform movements that appear exceedingly ordinary—such as holding this book in your hand, turning its pages or casting your eyes over the words— a dense communications traffic takes place in your body's nerve cells. The more closely one examines the neural network that gives rise to this extraordinary communications, the better their miraculous creation can be understood.

The way the nerve cells establish uninterrupted communications, even without touching one another, is of the greatest importance in maintaining the body's functions. When you look at this book, for example, if the signals belonging to the image remained in the first nerve cells in your retina and never reached your visual center at the rear of the brain, then you would never perceive any images of the external world. However, we do perceive images, uninterruptedly and with no gaps between them, as a result of Allah's compassion.



Cells That Produce Their Own Energy

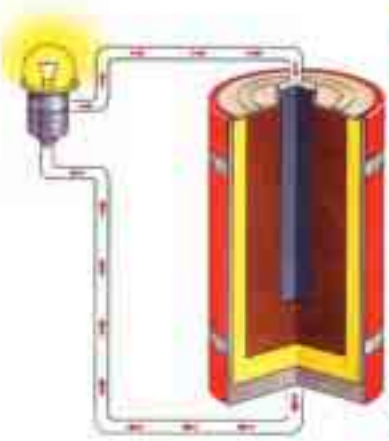
As you have already seen, your body functions with electricity. However, in contrast to the other electrical systems we are accustomed to seeing, your body takes in no electricity from the outside.

Consider any electrical device. In order for it to function, it requires an electrical current provided from some outside source, or else to be by means of batteries. Otherwise, in the absence of electrical energy, even the most advanced machine will serve no purpose. But in contrast your body creates the very energy it needs. Trillions of cells produce—and use—electricity in order for life to continue.

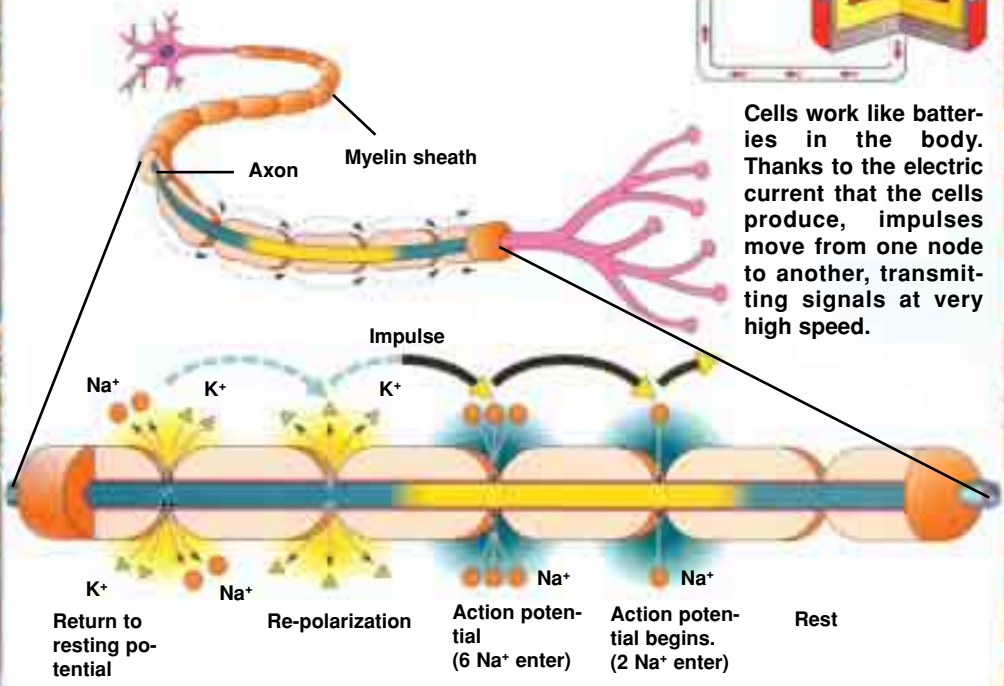
Every cell is like a miniaturized battery that permits the body to function as a whole. Surrounding the cell is a liquid rich in potassium, and the inside is full of liquid high in sodium. When you mix potassium and sodium, the two chemicals react and an electricity emerges as a side product. This is analogous to a car battery's producing electricity when sulfuric acid and lead come in contact. In much the same way that radios, cassette players, flashlights, clocks and appliances work with energy they obtain from

batteries, no car can operate without the energy stored in its battery. And both household and car batteries use chemical energy to produce electrical currents of various strengths.

Electricity used by the body is termed bioelectricity, the cellular exchange of negatively and positively charged particles known as ions. For example, when potassium is released outside the cell membrane and is replaced by sodium, a small electrical current develops; the potassium is sent inside the cell and sodium outside. According to a statement by Lendon H. Smith, M.D., a pediatrician and one of the best-known experts on health and nutrition; "In this way the cells act as tiny batteries with their own electromagnetic current." [25]



Cells work like batteries in the body. Thanks to the electric current that the cells produce, impulses move from one node to another, transmitting signals at very high speed.



Neurons never touch one another, but the synapses between them are so minute that nerve impulses can travel from one neuron to another as if there were no break at all.

The Cell Membrane's Special Design for Electricity Production

It is electrical current that makes the lights in your home shine so brightly—a current that consists of the movement of electrons. The electricity in your cells, on the other hand, is carried by ions—electrically charged atoms or molecules. During the movement of ions, cells produce electricity from potential energy that is ready to be used. Similarly, the water in a dam produces electricity by passing through a hydroelectric station.

In cells, electricity is produced in this way: In all cells, there is a voltage difference in electrical charge along the cell membrane. This voltage difference causes the formation of what's referred to as *electrical potential*. This electrical potential in the cell membrane is known as *resting potential*, whose level is approximately 50 millivolts.

All cells use this potential energy to carry out activities inside themselves. But nerve and muscle cells also use this same energy for physiological tasks. Thanks to this current, contraction takes place in muscle cells, and this same current permits signals to be transmitted by nerve cells.

In the cell membrane, there are channels that permit only certain ions to pass through. By means of these channels, ions are sent inside or outside the cell. With the movement of positively or negatively charged particles, an electrical imbalance arises between the inside and the outside of the cell. This difference between the intra- and extra cellular fluids produces a flow of ions until equilibrium is re-established. The cell membrane, which separates the protoplasm inside the cell from the outside environment, has a semi-permeable structure that permits certain ions to pass through, while obstructing others. Therefore, when the cell feels the need for electricity, it opens one of these channels in order to complete the electrical circuit.

The channels in the cell membrane function like security personnel, allowing certain ions to pass and blocking the passage of others, which are actions requiring purposeful intelligence. There is no random passage here, but on the contrary, a mechanism of conscious selection. No doubt that it is impossible for insentient collections of molecules to undertake such respon-

sibilities of their own accord. All this points to a fact that evolutionists deny: intelligent Creation.

There is a perfect equilibrium established by the positively electrically charged atoms—in other words ions—, inside the neuron, or nerve cell. The ions that assume important responsibilities in neurons are potassium and sodium, each with one positive charge, calcium with two positive charges, and chloride ions with one negative charge. At rest, the neuron is negatively charged, with negatively charged proteins and various ions present inside the nerve cell. There are more potassium ions inside the neuron than there are outside it, and fewer chloride and sodium ions. The equilibrium of the ions inside the cell has been arranged in such a way as to serve the specific purpose of transmitting electrical current and signals.

The message that arrives as an electrical signal, and is deposited at the receptors in the membrane of the receiving cell, initiates a series of processes inside the cell that is highly reminiscent of a row of dominoes. These processes, take place one after the other in a flawless order, leading to the opening of specific channels in the cell membrane. Thus the sodium ions taken into the cell, with its initial negative charge (of -70 millivolts), lead it to assume a neutral charge. The transfer of ions between the exterior and interior of the cell then produces a new electrical signal. The nerve cell that forwards the message—and has thus discharged its duty—returns to the resting position. This passage takes place with the opening and closing of the sodium and potassium channels in less than 1/1,000th of a second.

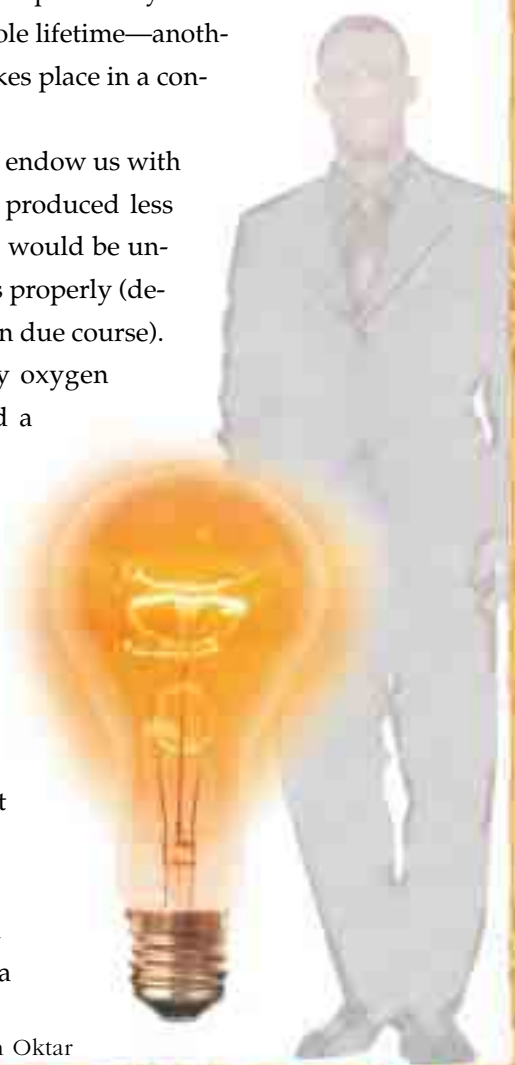
These processes, which have been simplified as much as possible for the sake of explanation here, actually contain exceedingly complex stages. If the production of electricity in a single cell were left for you to perform consciously, you would have to supervise the opening and closing of the channels and ensure ion equilibrium, all in less than 1/1,000 of a second. But of course it would be impossible for you to establish such equilibrium, nor to control and direct such a rapidly functioning system in billions of nerve cells. Yet this system continues even when you are asleep!

What is the level of electricity in the body? The difference between the charges inside and outside the cell is approximately 50 millivolts. According

to the calculations by Professor Steven M. Simasko of Washington State University, if all the energy produced by the body's trillions of cells were added together, it would be enough to light a 40-watt light bulb.[26]

Some cells produce more electricity than others, an amount that varies depending on the task the cell performs and for what purpose the current electricity is used. For example, nerve cells must produce large quantities of electricity, because they transmit their messages over long distances. In a truly extraordinary way, cells are apparently aware of the importance of the tasks they perform, and how much energy they will require. They calculate this to perfection and discharge this responsibility with no interruptions over the course of a whole lifetime—another proof that electricity production takes place in a conscious manner.

This is one of the conditions that endow us with life. For example, if your heart cells produced less electricity than they actually do, they would be unable to carry out the pumping process properly (details of which we shall be examining in due course). The blood would be unable to carry oxygen and nutrients to all your cells, and a mortal danger would result. But as you have seen, along with the flawless creation in our bodies, every detail in their functioning is also evidence of exceptional wisdom.



Nothing in the structure of the cells is either superfluous or lacking. Everything is exactly as it should be. Although each of the 100 trillion cells in the human body is highly specialized in order to perform a variety of different functions, as a

Image of cell membrane and ion channels

Cells' electrical properties allow information to be transmitted and signals carried. Channels on the cell membrane open their gates for sodium ions, suddenly changing the electrical potential in as little as one-thousandth of a second. This feature is of vital importance to the bio-electrical processes taking place in the cell membrane, and therefore, to a living thing's vital functions.

whole they possess flawless organization and functioning. At the same time, they have effective communication and interrelationships with other cells in the body, communicating with one another by means of electrical messages, receiving and transmitting the necessary information, and accomplishing to perfection whatever needs to be done.

If a cell anywhere in the body loses its electrical potential, its vital link to the nervous system will be broken. In the event that the cells in the visual center in the brain lose their electrical properties or that there are no voltage gates in the cell membranes, then it will be impossible for the signals transmitted by the retina to be received, and the individual will no longer be able to see. In every detail in the human body, there is much wisdom that is only newly being discovered.

When planning a building, architects also bear lots of details in mind and if they overlook even one of them, the project will be damaged. Indeed, from time to time, supports being slightly thinner than they should be, or the use of less cement in construction, may lead to the collapse of a structure dozens of floors high. Therefore, the quality of the materials used, their strength, and every stage of the project are all of great importance. The fact that the building you are in right now is secure and upright is the result of the labor, knowledge, calculations, planning and foresight of dozens of people who are endowed with reason and consciousness by our Lord. Nobody can maintain that this building in which you find yourself came into being gradually, as the result of chance. The organization inside the cell also possesses an even more sophisticated architecture that requires all the molecules in it to be used at exactly the right quantities and in exactly the right locations, by means of extraordinarily fine calculations. The cell is an organic structure consisting of many complex substances composed of as nitrogen, carbon and water, and one which will die and be eliminated unless it establishes vital links with the other systems in the body.

What we have described so far is merely a simplified account of the communication systems in neurons, which continue working throughout a person's life. It is difficult even for a person possessed of reason and intelligence to understand this intricacy, yet cells and hormones carry out these

processes in billions of people with thorough competence and perfection.

But how did the exceedingly complex systems in each of the billions of nerve cells you possess actually come into being? How did the amazing harmony among them come about? How was such perfect communication established without the slightest confusion arising? How can this system, dependent upon extraordinarily sensitive balances and timing, continue working without the slightest error?

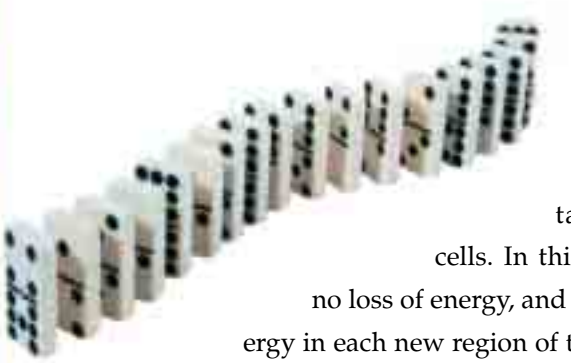
It's quite natural that so many questions beginning with the word *"How"* should come to mind. What is peculiar here is the stance of certain scientists who vainly seek to defend the theory of evolution, which maintains—in the face of all this contrary evidence—that these flawless systems actually came into being as the result of blind coincidences. Evolutionists seek to trace the origin of life to a fictitious "first cell" that came into being by chance or coincidence (a scenario to which even the word impossible would fail to do justice), but they have no answer to give to the above questions.

There is no doubt there exists a single explanation for the existence of such perfect mechanisms: it is Allah, Lord of the worlds, Who created cells from nothing. Our Lord, the Creator of us all, regulates the activities within the cell and the communications systems among them, right down to the finest detail.

> **He is Allah—the Creator, the Maker, the Giver of Form. To Him belong the Most Beautiful Names. Everything in the heavens and Earth glorifies Him. He is the Almighty, the All-Wise. (Surat al-Hashr: 24)**

The Domino Sequence of Processes Within the Nerve Cells

How does information to the effect that your shoes are hurting your feet reach the brain? How can you perceive discomfort in your feet at the same intensity in your brain, despite the distance of several feet between them? Under normal conditions this signal should decrease in proportion to the distance involved. However, there is a special system in your body to overcome this.



The signals that set out from the pain-sensitive cells are carried along thanks to the ion movements taking place along the nerve cells. In this way, the signal travels with no loss of energy, and each transfer acquires new energy in each new region of the cell membrane.

The way the nerve signal is transmitted along the axon can be compared to the chain reaction that takes place when dominoes are lined up next to one another. When you push over the first domino, all the others —if set out at specific distances— will fall over in turn. When the first one falls over, a chain reaction ensues: consecutive tiles topple over until none remain standing. A similar chain reaction can be seen in the transmission of signals among neurons:

The first domino will not fall until pushed with enough force. In a similar way, a nerve signal will not be triggered until stimulated with sufficient force—expressed as a threshold. The threshold phenomenon is observed in the transmission of signals pertaining to the senses. For example, we cannot hear very faint sounds because the signals they generate are not sufficiently powerful to set into motion signals from the auditory nerves.

The chain of dominoes loses none of its energy as the individual dominoes fall over. The energy thus continues transmitted, undiminished, until the last one falls. That is because each standing domino falls over with the same kinetic energy (the energy a body possesses because of its speed). Neither do nerve signals lose any of their energy as their signal is transmitted.

A domino falls in only one direction. In the same way, nerve stimuli move only from dendrite to axon.

As you see, every detail of the body is an example of very wise creation. The existence of all these must lead us to reflect more deeply, love our Lord more deeply, and give greater thanks to Him, the Creator of all.

One of the exemplary pieces of behavior of believers is revealed in the

Qur'an:

> **Those who remember Allah, standing, sitting and lying on their sides, and reflect on the creation of the heavens and the Earth: "Our Lord, You have not created this for nothing. Glory be to You! So safeguard us from the punishment of the Fire." (Surah Al 'Imran: 191)**

The Myelin Sheath: A Special Insulating Material

Nerve fibers that transmit messages from the brain to the muscles and other organs and back to the brain are covered with a special fatty tissue, known as myelin. This not only protects the nerve fibers, but also assists them in forwarding electrical signals.

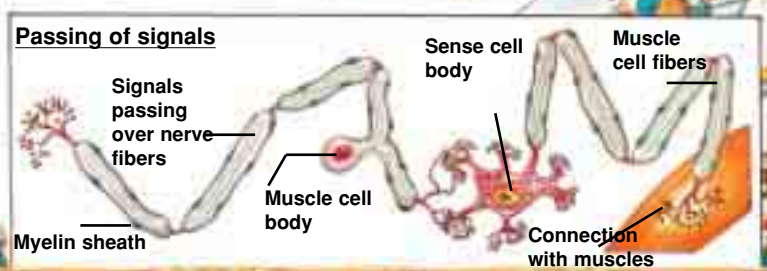
Myelin functions like the non-conductive plastic or rubber coatings around electrical cables, insulating them so that no one touching them will experience a shock and also so that no electric current leaks out, leading to a loss of power. Were it not for the myelin, electrical signals would leak into

Signal Transmission

The nervous system's connections reach everywhere in the body. Some functions perform automatically, without our conscious control, such as our heartbeat and digestion. Other nerves go into action when we decide to do something, like clenching our fist.

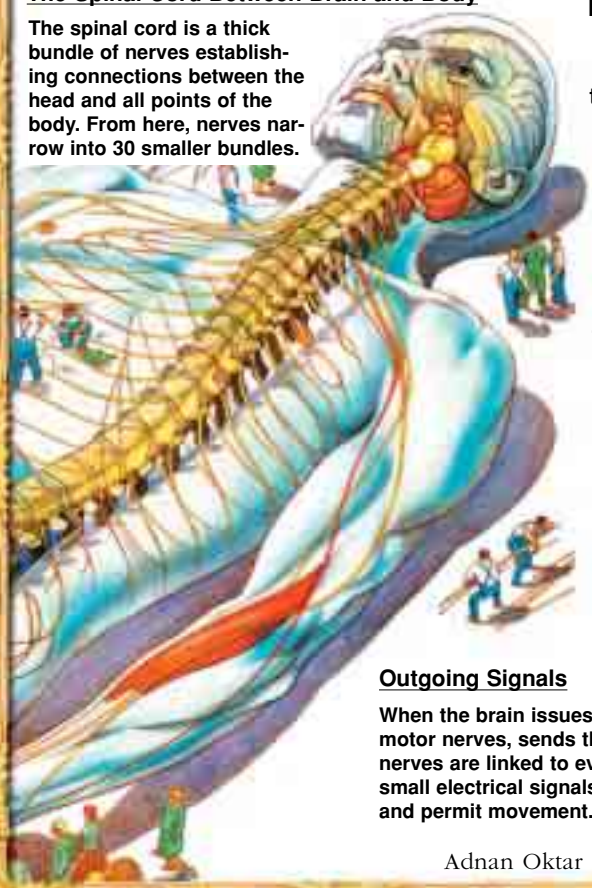
Actions Swifter Than Thought

Some nerve cells are connected to the brain, and others are in direct contact with other nerves that set the muscles in motion.



The Spinal Cord Between Brain and Body

The spinal cord is a thick bundle of nerves establishing connections between the head and all points of the body. From here, nerves narrow into 30 smaller bundles.



Nerve impulses are transmitted from one neuron to another, just like in a relay race. This allows signals to travel long distances with no loss of speed or effect.

The Brain Responsible for the System

The brain is a mass of nerve cells that control and coordinate the electrical signals that come and go. They can be measured using a machine known as an electroencephalograph.

Incoming Signals

One set of nerves carries signals from the eyes, ears, nose, skin and other sensory organs, reporting on what is going on in the surrounding environment.

Outgoing Signals

When the brain issues a command another group, the motor nerves, sends the signal along the nerve. These nerves are linked to every muscle in the body. When small electrical signals reach the muscles, they contract and permit movement.

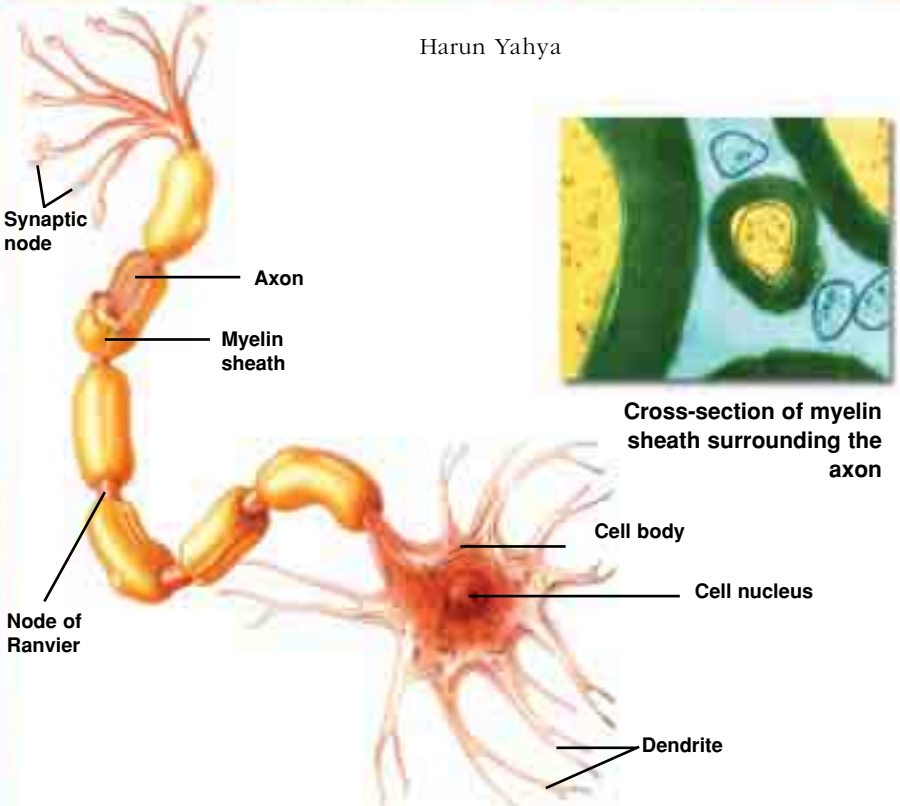
surrounding tissues and thus dilute the signal, and possibly harm the body. In addition, this insulating substance significantly increases conductivity, allowing signals to move more quickly.

Small unmyelinated fibers conduct at speeds of only 1 to 2 meters (3.3 to 6.5 feet) per second, while those covered in myelin can do so at speeds of up to 100 meters (328 feet) per second.[27]

The myelin-covered nerve fibers transmit signals from our sense organs to the brain and from the brain and spinal column to voluntary muscles. Actions under our control are so rapid, often so automatic, that it seems as if the muscles contract as soon as the thought occurs to us. The reason our movements follow our perceptions so quickly, without our expending a conscious effort, is that nerve transmission takes place at speeds of up to 354 kilometers (220 miles) an hour.[28] In the 1-meter-long (3.3-foot) sciatic nerve in the legs, that speed rises to 467 kilometers (290 miles) per hour. [xxix]

In some situation, the timing of signals reaches extraordinary precision. For us to make a distinction between B and P sounds when we speak, our lips need to open in as briefly as 1/30,000 second before our vocal cords move. Therefore, our listeners do not confuse the letter P with the letter B, which emerges as a result of the simultaneous opening of our lips and vibration of our vocal cords. In other words, we owe our ability to distinguish between the words pat and bat to a timeframe of just thirty thousandths of a second.[30] This distinction is of great importance to our communication. But since the brain arranges this time frame for itself, there is no need for you to think about it. When the signal for the vocalization of P or B occurs, all these events take place in sequence, one after the other.

To better understand the significance of the myelin sheath, consider Multiple Sclerosis (MS). In this disease, the protective sheath around the nerves that carry messages in the brain and spinal column is damaged in places, and there appears hardened tissue known as sclerosis. These hardened tissues may occur in many sites throughout the nervous system and—by preventing the transmission of signals along the nerves and interfering with communication between the brain and other organs— lead to a wide variety of defects. In the same way that holes may damage the insulation



If There Were No Insulation in the Nerve Cells

Multiple sclerosis (MS) is a disease in which the faulty working of the immune system damages the myelin sheath. As a result, the nerve cell membrane opens and sodium is lost along the axon. As the disease progresses, the amount of myelin declines and the speed at which impulses are transmitted falls to a few meters per second. Leakage gradually becomes so acute that the axons, cell extensions, become unable to forward messages, and the target muscle is paralyzed. Even this myelin sheath, a very small detail in the body's electrical system, is of enormous importance. Every one of these details is an example of the superior nature of the creation of our Lord, the Compassionate and Merciful.

around electrical cables, gaps can also appear in the defective myelin sheath, which interferes with the transmission of messages.

When you remove one of the standing dominoes in the line, the consecutive falling of the line is interrupted when the sequence reaches this gap. In the same way, a damaged myelin sheath causes an interruption in the transmission of nerve signals. The effect of one missing domino can be compared to that of serious neural or spinal damage. Nerve signals cannot be transmitted along until the damage gets repaired.

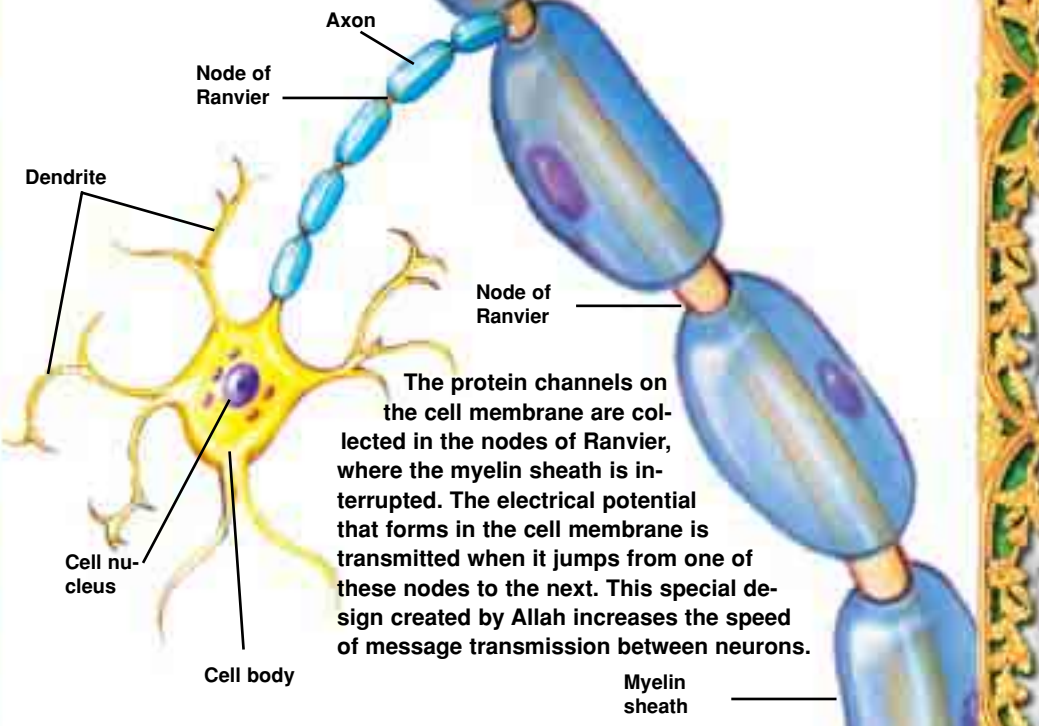
Among the symptoms of MS are fatigue, pins-and-needles sensations, numbness, a lack of or reduction in feeling, balance problems, speech impairments, trembling, stiffness hardening of muscles in the arms and legs, weakness, vision defects, oversensitivity to heat, short-term memory problems, and difficulties in judgment and decision-making. These symptoms can vary depending on the region in which nerves have been damaged. Since the brain controls thinking and movement, damage in this region may affect any number of functions—memory, understanding, character, touch, hearing, sight and muscle power.

When damage takes place in the cerebellum, at the rear of the brain, it causes loss of balance during walking and running by affecting coordination. It may lead to weakness in the nerves concerned with vision, speech, swallowing and hearing. Damage in the brain stem can cause functional defects regarding eye movements, respiration, heartbeat, sweating and the excretory system. When the damage is to the spinal column, loss of communication occurs between the body and brain. Moreover, the brain's signals concerning the legs, hands and other organs are prevented from reaching their destinations. In progressive cases, the disease can lead to partial or total paralysis—an important example of the importance of the myelin sheath.

The Wisdom of Creation of the Nodes of Ranvier

In human beings, nerve signals can generally travel at 100 meters (328 feet) a second.[31] How is such a speed achieved? The secret lies in the way the myelin sheath is installed, being interrupted at points known as the *Nodes of Ranvier*. There is approximately one node, a few microns (1/1000 millimeter = 0.0000039 of an inch) wide, every millimeter (0.039inch) on this sheath.

The sodium and potassium channels regulating the passage of ions on the cell membrane are also collected on these nodes. Nerve signals following sodium ions head directly for these nodes. Thanks to this, the transmission of a signal from your central nervous system or spinal column to your toes takes place in as little as one hundredth of a second.[32]



The protein channels on the cell membrane are collected in the nodes of Ranvier, where the myelin sheath is interrupted. The electrical potential that forms in the cell membrane is transmitted when it jumps from one of these nodes to the next. This special design created by Allah increases the speed of message transmission between neurons.

The myelin sheath serves like insulation, permitting nerve impulses to travel more quickly. In the absence of this sheath, or when it has suffered damage, the nerves cannot transmit messages to or from the brain.

Gerald L. Schroeder received his doctorate in the fields of molecular biology and quantum physics from the Massachusetts Institute of Technology, and has written scientific articles for such journals as *Time, Newsweek* and *Scientific American*. He is one of those scientists who lose no opportunity of expressing their amazement at our bodies' extraordinariness:

> . . . most of us life's mechanisms work in proper order is a wondrous miracle. When they do not is a tragedy. The system described and diagrammed above [the nodes of Ranvier] is an ingenious one for communicating massive amounts of complex information. The parallel processing and

> perfect timing involved are as elegant as the finest supercomputer. Perhaps someday, in the age of communications technology now upon us, we will imitate and exploit our own design: In the meantime we can only wonder at the workings of our chemistry. [33]

In order for the nerve cells to transmit signals each nerve membrane must be set in motion in turn. The time this requires seriously reduces the speed of the signals along the nerves. However, in the face of this deceleration, a precaution has been taken in our bodies. The presence of the myelin sheath—and its interruption at the points known as the nodes of Ranvier—cause this transmission to be extremely rapid.

Speed in Signal Transmission

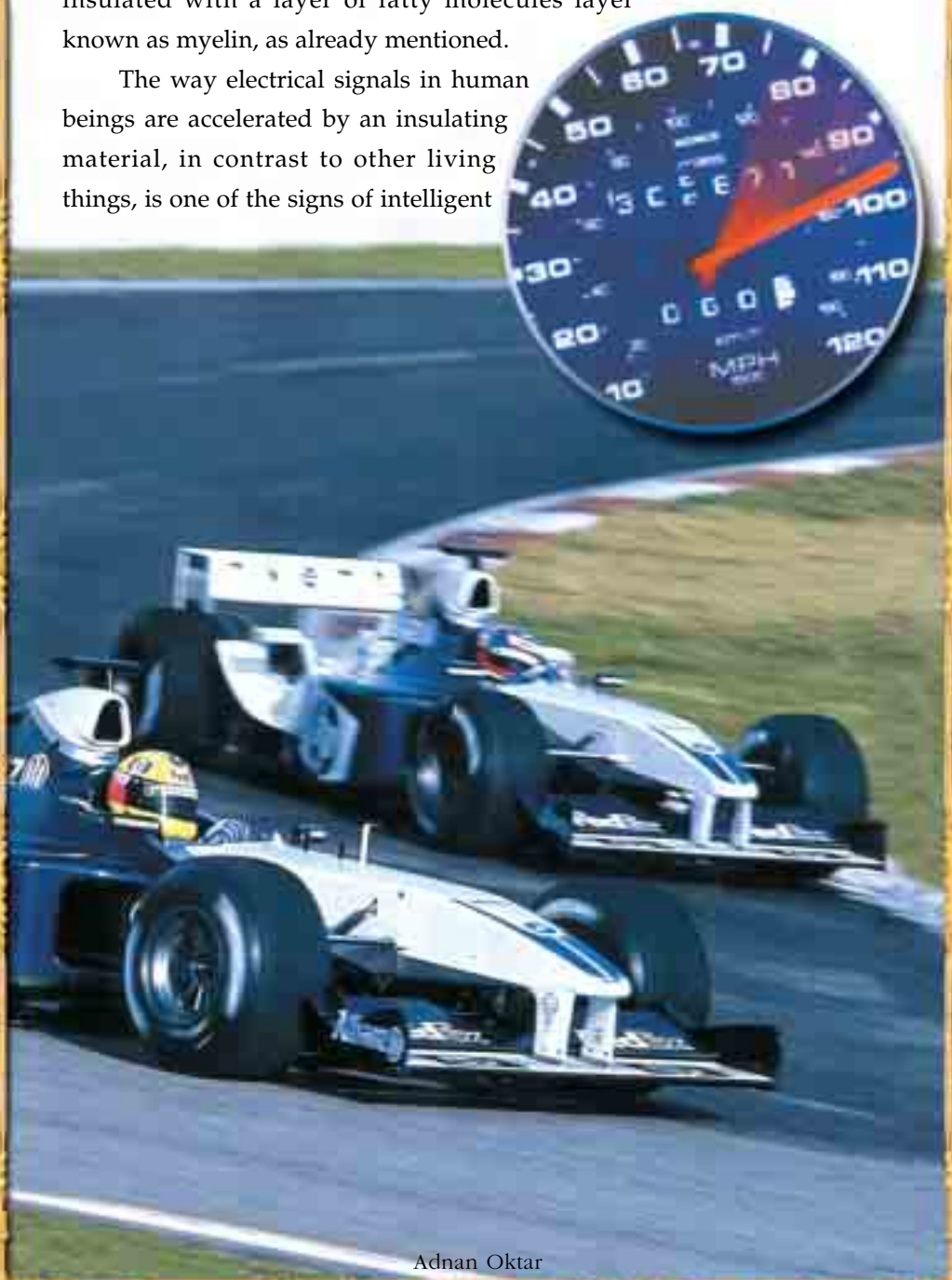
The cell's charging and discharging itself, the secretion of chemical substances, their being broken down and then reconstituted—all takes place several hundred times a second. Though these activities can be summarized in one sentence, each is an exceedingly complex process, which takes place at amazing speed. The information needed to plan and produce these is encoded in our DNA, which carries our genetic data.

As you have already seen, electrical stimuli can travel in the brain in a matter of milliseconds. But some signals take an express route. In bright light, for example, the shrinking of the pupil of the eye takes place in a matter of moments: Yet the command for the pupil to contract must cross four or five synapses between brainstem neurons controlling the iris.

One factor affecting how signal production takes place so quickly is the radius of the axons. As the radius increases, signal production accelerate. For example, some animals such as the squid have axons as large as 1 millimeter (0.039 inch) in diameter. Thanks to this, nerve impulses are transmitted faster, and attain a speed of up to 25 meters (82 feet) per second.[34] If this feature observed in squid were true of human cells, then the diameter of our arms would be measured in meters.[35] That is because a large number of nerves traverse the same region in the human body, and axons of this size would turn into a prohibitive factor in such regions. In the human body, a much more effective method accelerates signal production: insulation.

When you need to pull your hand back from a hot surface, the nerves that permit the relevant muscles to act transmit signals very fast because they are insulated with a layer of fatty molecules layer known as myelin, as already mentioned.

The way electrical signals in human beings are accelerated by an insulating material, in contrast to other living things, is one of the signs of intelligent



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creation. The human body's electrical system provides rapid transmission, does not hinder our ability to move, nor impairs our aesthetic appearance. These attributes being all present at same time can not be accounted for in terms of chance. Clearly on display here are the Superior Intellect and Knowledge of our Almighty Lord, the Creator of all things.

In the Qur'an Allah reveals this concerning the creation of Man:

We created man in the finest mould. (Surat at-Tin: 4)

If you are looking at a field of flowers, with sunlight being reflected from every leaf, your eyes see thousands of leaves at the same time. Millions of ion channels in a million optic nerves stretch from the retina to the visual center at the back of the brain, and the images are transmitted as bio-electrical signals at 30 times a second. Information about the movement of these flowers reaches the brain through these signals. Thanks to billions of chemical reactions all taking place in tandem, data are recorded simultaneously. If every one of these reactions took place consecutively, rather than simultaneously, then movements, forms, colors and three-dimensional structures would all be perceived separately, and our world would seem utterly chaotic. By Allah's mercy, however, none of this happens. We perceive a bright, colorful, uninterrupted three-dimensional world.

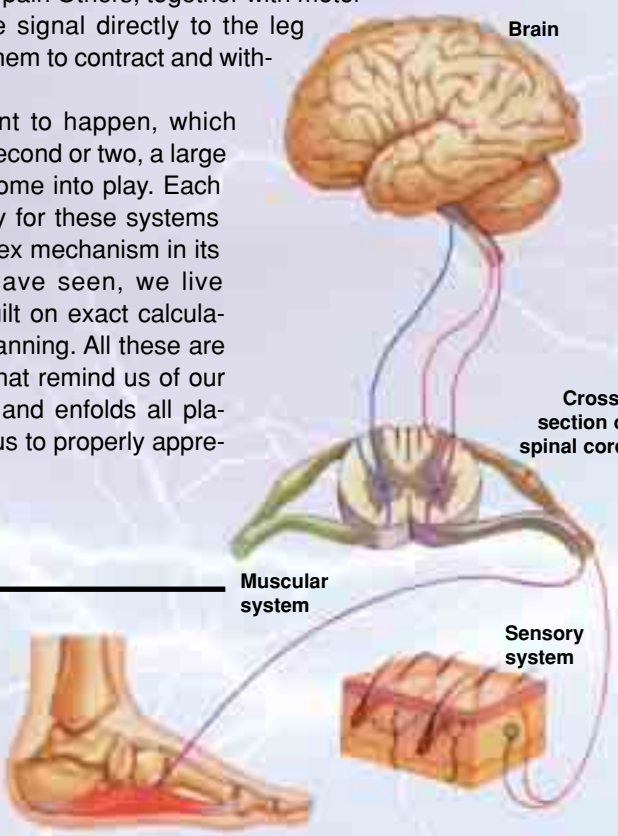
WHAT HAPPENS WHEN YOU TREAD ON A NAIL

To better understand how a nerve signal takes place, consider the pain caused when you tread on a nail. Because of the object trodden on, the nerve endings of the cells in your foot contract, leading to the opening of the channels in the cell membranes. Sodium ions are permitted to enter the cell, leading to a greater negative charge in the fluid remaining outside the cell. When this difference reaches a critical point, a signal is sent.

Subsequently, in order to restore to its former state this electrical differential between the inside and outside of the cell, the sodium channel is neutralized. In the cell membranes, proteins known as sodium-potassium pumps re-establish the ion balance. For every sodium ion that leaves the interior of the cell, a potassium ion is pumped in the opposite direction.

As a result of these reactions, the information regarding a nail having penetrated the skin is transmitted upwards by means of the nerves. Reaching the spinal column, this information is passed on to other nerve cells. Some nerve cells carry this information by means of axons to the region of the brain that records sensations of pain Others, together with motor nerve cells, send the signal directly to the leg muscles, instructing them to contract and withdraw the foot.

In order for this event to happen, which takes place within a second or two, a large number of systems come into play. Each component necessary for these systems to function is a complex mechanism in its own right. As you have seen, we live thanks to systems built on exact calculations and sensitive planning. All these are miracles of creation that remind us of our Lord, Who pervades and enfolds all places, and that enable us to properly appreciate His knowledge.



MITOCHONDRIA: THE CELL'S ENERGY PLANTS THAT PRODUCE ELECTRICITY

The energy you need to stand up and walkabout, to breathe, and open and close your eyes—and to remain alive—is produced in tiny generators in the cells known as mitochondria. In much the same way that the energy factories required by is supplied by energy plants, so our bodies' energy is supplied by these organelles, or mitochondria. In the absence of these mitochondria, cells cannot perform any of the functions they need to. Muscle cells lacking mitochondria cannot contract, liver cells cannot cleanse the blood, and brain cells cannot issue commands.

Mitochondria produce practically all the cell's energy. They use the energy to oxidize the oxygen we breathe and burn the food we eat. Just as an energy plant using coal or oil, mitochondria use the energy that formed during the oxidation process to produce electricity. In this way, your cells literally operate on electrical energy.

The mitochondrial engines that work with electricity are very small, and in them the chemicals obtained from foodstuffs is turned into energy packets that the cell can use. These packages, known as ATP (adenosine triphosphate), are a highly functional form of energy for the cell. Professor of Bioenergetics at University College, London, Peter Rich described the connection between biological electron transfer in mitochondria and ATP synthesis in an article published in the scientific journal Nature:

> An average human at rest has a power requirement of roughly 100 kilocalories (420 kilojoules) per hour, which is equivalent to a power requirement of

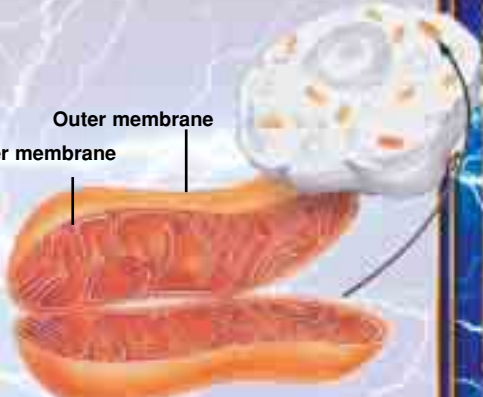
Mitochondria consist of proteins that are synthesized inside the cell and work just like a power plant providing the energy needed for the cell's activities. Despite their being involved in so much activity, mitochondria continue working with no need for repair or maintenance.

116 watts — slightly more than that of a standard household light bulb. But, from a biochemical point of view, this requirement places a staggering power demand on our mitochondria.[1]

Because mitochondria must serve as energy-producing centers, there are different numbers of them in different cells. Muscle cells, due to the high levels of energy they require, contain a large number of mitochondria, whereas their number in skin cells is much lower. If every cell contained only one mitochondrium, then we could not provide the 1,100-1,500 metabolic calories that the body needs to function, even if we were lying down and not moving, let alone going about our daily life.

A typical dramatization of this can be seen in those afflicted with the disease myasthenia gravis. These patients are unable to move since their muscles are paralyzed: Their mitochondria cannot multiply themselves in order to supply energy necessary for movement. Since there are insufficient numbers of mitochondria in each cell, they are unable to provide sufficient energy for the muscles to contract. This disease is enough to demonstrate the sensitive balances in our bodies and the proofs of conscious creation.

Mitochondria use the oxygen we breathe to oxidize the nutrients we eat. Just like a power plant that uses coal or oil, mitochondria produce electricity from the energy released during the oxidation process, allowing the cells to obtain the energy they need to maintain their activities.



1. Peter Rich, "Chemiosmotic coupling: The cost of living," *Nature*, 421, 583, 6 February 2003

THE HEART: THE BODY'S ELECTRONIC CLOCK

One of the factors that keep you alive at this moment is the blood circulating in your veins. In contrast to any other fluids in the body, blood has functions that require intelligence and consciousness. Heading the list of these functions is distributing the energy that trillions of cells require to live. The defense system that protects the body from germs, the system that collects wastes and expels them from the body, repair and maintenance of the tissues, the establishment of communications and regulation of body temperature are all made possible by the blood. The propulsive force that propels this vital fluid to reach every cell in the body is provided by the heart. In order to grasp the importance of the heart's very special pumping system—another component of the body's electrical system— a closer look at the properties of the blood is needed.

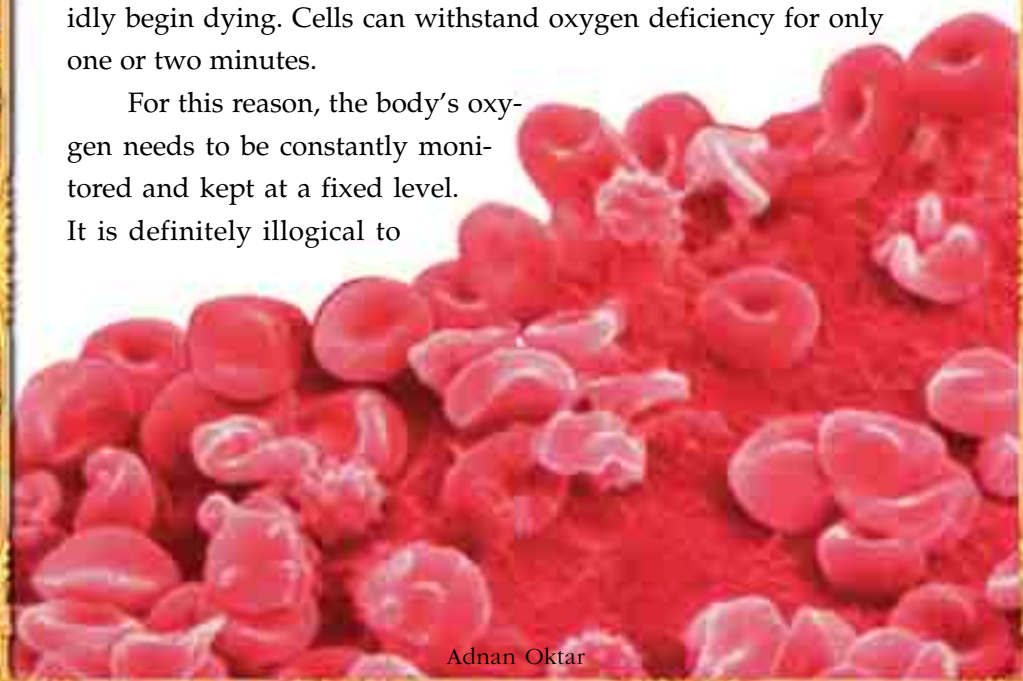
Blood, the Source of Human Life, Cannot have Emerged by Chance

We are indebted to this fluid that constantly circulates through our bodies, for our living healthy lives. Blood's most fundamental duty is providing the oxygen that cells need to live, by circulating from the deepest folds of the brain to the outermost layers of our skin. Cells need oxygen to produce energy by breaking down sugar. If blood fails to reach a cell, it suffers oxygen deficiency that leads to the death of that cell.

However, this system functions at every moment and in a flawless manner for each of the 100 trillions cells in the body. In one day, the blood travels a total of 19,000 km (12,000 miles)—that's four times the distance across the US from coast to coast.

Five liters (1.3 gallons) of blood must circulate in the veins running through all parts of a body of average weight. If a fifth of this portion, a one-liter quantity, is absent, the remaining blood becomes more difficult to move. If it is unable to fill the veins, then the very fine blood vessels will adhere to one another. Blood circulation will slow, and cells will rapidly begin dying. Cells can withstand oxygen deficiency for only one or two minutes.

For this reason, the body's oxygen needs to be constantly monitored and kept at a fixed level. It is definitely illogical to

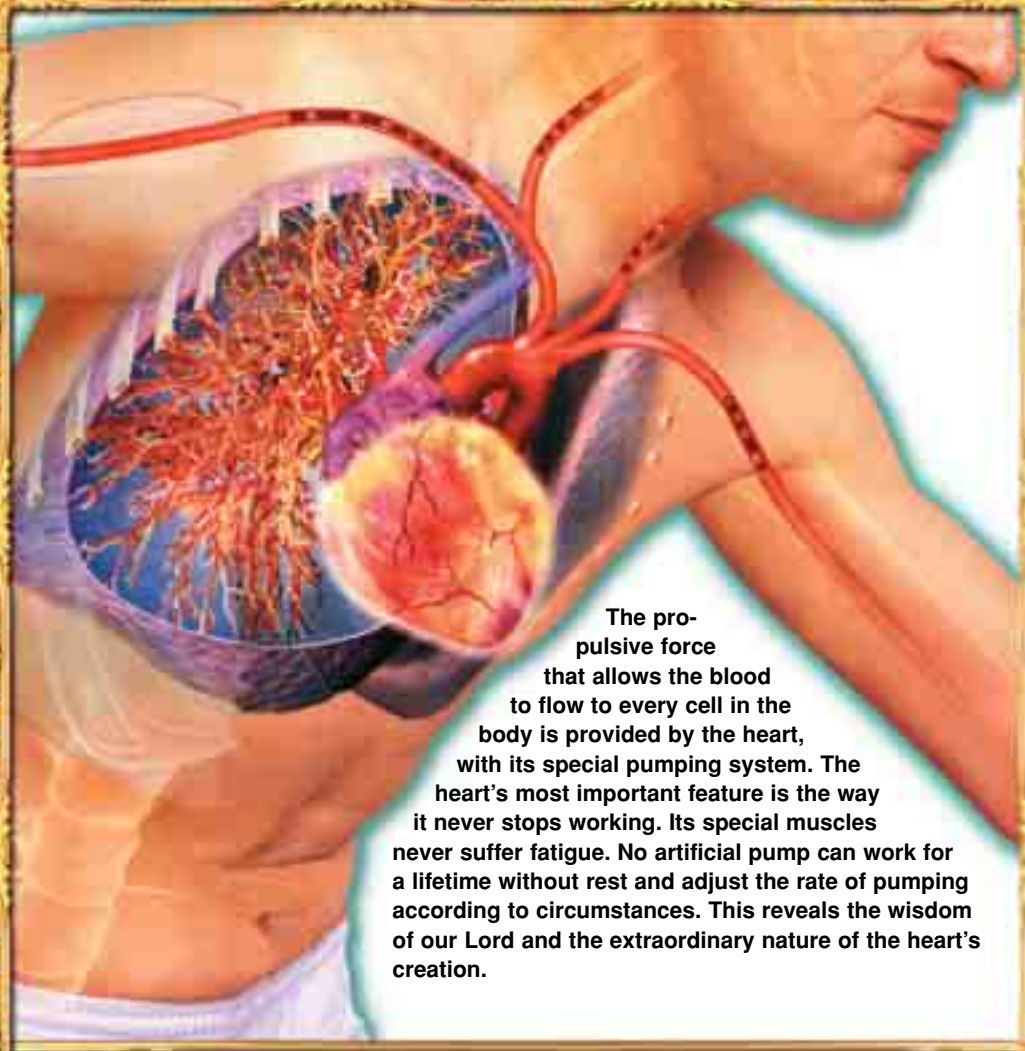


maintain that blood cells acquired such ability by themselves, as the result of chance and possess the consciousness to perform a series of calculations and constantly fulfill this function flawlessly. This is just one of the many features of the human circulatory system. Blood carries nutrients to cells with wholly different responsibilities, and transports their collected waste products to the kidneys, lungs and liver. It receives hormones secreted by the glands and transmits them to organs in need of them. It keeps the body temperature constant and protects the body when any foreign substance enters. In addition, it carries out all these processes without interruption for an average of 70 years. (For detailed information, see Harun Yahya, *The Miracle of the Blood and Heart*, Istanbul: Global Publishing, 2007)

On the other hand, the body's organs need various substances in order to perform their own functions. These substances which are carried by the blood include nutrients such as glucose, amino acids, vitamins and minerals and, most important of all, oxygen. That so, you can once again see the importance the veins stretching all through the body, of blood reaching everywhere in it and flawlessly performing all its duties. These substances carried by the blood are of vital importance to the survival of all the body's organs.

However, not all organs require the same amount of blood. Those with a high rate of metabolism, for example, require more blood than others. Therefore, there is a regulation in the level of blood transfer that, however, does not function like a pre-programmed machine. In extraordinary circumstances, blood circulation alters its way of working according to the situation. In the event of poisoning, for example, the amount of blood flowing to the poisoned tissues is increased, to increase oxygen and remove as much of the toxins as possible.

Blood is not limited to carrying oxygen and collecting nutrients. It also collects cell wastes and permits them to be expelled from the body. Each one of your trillions of cells produces many waste products, such as carbon dioxide and urea that collect in the blood and could have harmful effects on the body. But urea is removed from the body by being



The propulsive force that allows the blood to flow to every cell in the body is provided by the heart, with its special pumping system. The heart's most important feature is the way it never stops working. Its special muscles never suffer fatigue. No artificial pump can work for a lifetime without rest and adjust the rate of pumping according to circumstances. This reveals the wisdom of our Lord and the extraordinary nature of the heart's creation.

carried to the kidneys, while the carbon dioxide is carried to the lungs, from whence it is expelled.

As you have seen, a very delicate system inside us functions at every moment, according to a flawless plan. But under whose control is it? It is impossible for organs like the heart and liver, consisting of unconscious cells, to accomplish this by themselves. It is equally also impossible for unconscious blood cells to assume such a vital function as constantly carrying oxygen to all the other cells in the body. No doubt that these cells, exhibiting a high level of consciousness that does not belong to them, are working for our survival under the inspiration of Allah. They fulfill the flawless duties assigned to them.

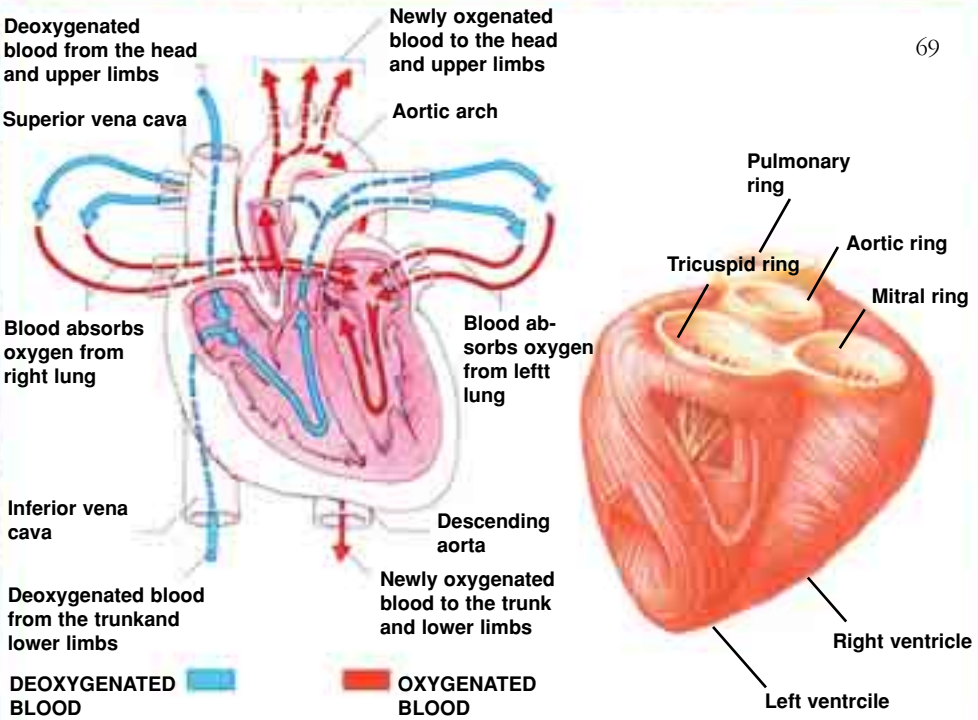
Adnan Oktar

Immune cells are also circulated throughout the body by means of the blood. (For detailed information, see Harun Yahya, *The Miracle of the Immune System*, New Delhi: Goodword Books, 2001) The white blood cells, which engage in the first action against bacteria or viruses that enter the body, are carried to the specific location of infection by the blood. Antibodies and leucocytes in the blood immediately identify the place where the danger has arisen and immediately reach their target destination with the rapidly flow of blood. Cells carry out a series of conscious, rational actions, such as recognizing the danger, identifying its location, traveling to the region by means of the circulation and immediately initiating a defense. How does the immune system make its decisions, which require intelligent consciousness? How can it determine that dangers are indeed dangers, and learn how to combat them? These are just a few of the questions that leave evolutionists speechless.

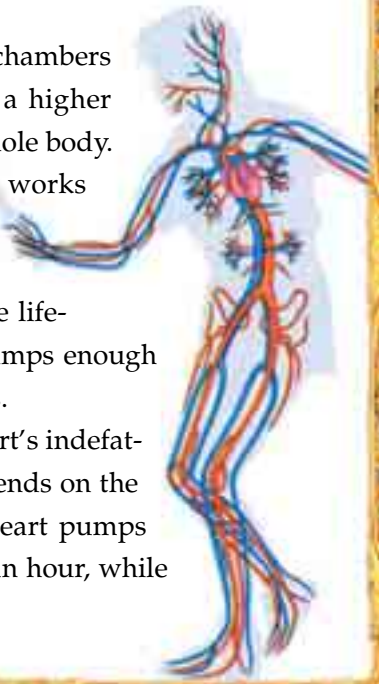
The cells in the blood stream are only a few microns in size, and consist of water. They have no reasoning ability, sensory organs, nor any other similar attributes. Yet they can determine direction, identify sickly cells, become aware of danger, and eliminate those dangers by acting in concert—all exceedingly conscious actions. It is unreasonable and illogical to assume that all these functions developed spontaneously, as the result of chance. Blood cells too small to be seen with the naked eye, devoid of any capacity for thought or reason, fulfill all these roles, which you cannot do for yourself, with the greatest care and scrupulousness. Clearly, any phenomenon that did arise by chance would inflict damage on the existing order, rather than improving this magnificent system, because even the slightest error in the body's microbiological system would have exceedingly undesirable consequences.

The Heart: A Matchless Pump

The blood reaches every corner of the body by means of the heart, with its dual pumping mechanism. The two left chambers of the heart pumps fresh oxygen-rich blood to the entire body, while the right chambers send returning blood to the lungs for carbon dioxide to be extract-



The heart is a combination consisting of two different pumps. The one on the left pumps oxygenated blood to the body's organs and tissues, , and the one on the right pumps CO2-laden blood directly to the lung, causing all the blood in the body to circulate 1,000 times a day. An adult heart pumps 250 million liters (66,040,000 gallons) of blood over a 70-year life span. ("The Incredible Machi*ne," National Geographic Magazin*e, Washington D.C., 1986, p. 123)

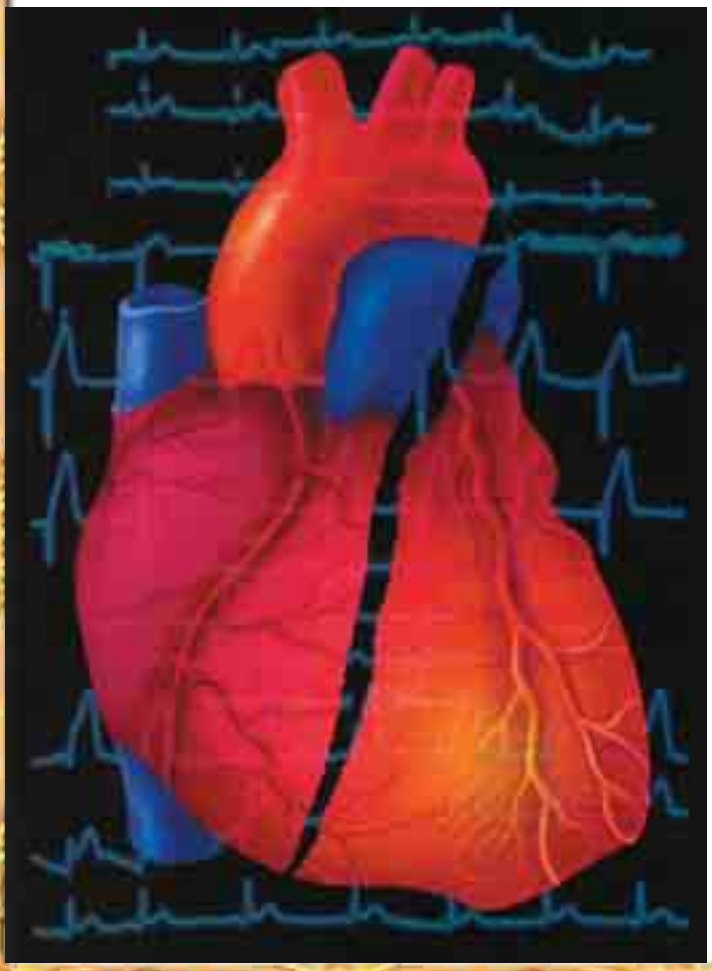


ed and replaced with oxygen. The left-hand chambers possess thicker muscles, since they pump at a higher pressure in order to send blood to reach the whole body. The heart's most important feature is how it works non-stop, beating approximately 70 times a minute, 100,000 times a day, and 40 million times a year.[36] During the course of an average lifetime, it beats more than 2 billion times and pumps enough blood to fill an average of 100 swimming pools.

Also exceedingly important is that the heart's indefatigable muscles pump a level of blood that depends on the prevailing circumstances. During sleep, the heart pumps approximately 340 liters (90 gallons) of blood an hour, while

during physical activity,—for instance, when running—it increases its tempo to pump around 2,270 liters (560 gallons) of blood an hour.[37] That is because our muscles need more oxygen when performing tiring activities. Under such circumstances, the heart increases its working tempo from 70 to 180 times a minute, and the level of blood reaching the tissues can increase five-fold.

No man-made pump can match the heart's ability to work tirelessly for an entire lifetime and to regulate the quantity pumped according to prevailing circumstances. The extraordinary nature of the heart reveals an important fact. Allah created many matchless structures, such as the heart, in the billions of human beings. And as revealed in the Qur'an, this is an easy matter for Him:



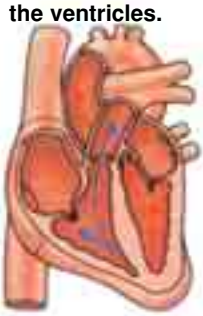
The heart carries blood and all essential substances to the cells throughout the body, and when it can no longer function, death ensues. Like all other organs in the body, it runs on electricity; but this energy that allows the heart to beat does not come from outside, but is produced with the contraction of the heart muscles. Since the heart consists almost entirely of muscle and beats around 70 times a minute, then an electrical impulse needs to be produced that many times. Its tirelessly contracting muscle cells possess a special creation to work the moment an electrical current reaches them. The heart, which is made up of these special cells, is an engine that creates its own energy. This astonishing system in the heart belongs to our Lord, the Creator of all things.

Heart valve open

Diastole:During the first phase of the cycle, oxygenated blood enters the left atrium and deoxygenated blood simultaneouly enters the right atrium. This blood then flows into the ventricles. By the end of this phase, the ventricles are filled to about 80 percent of capacity.

Atrial systole:Impulses from the sinoatrial node initiate the second phase of the cycle, during which both atria contract, squeezing any blood that remains in the atria into the ventricles.

Heart valve closed

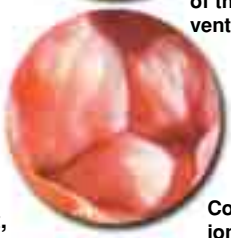


Relaxing of the coronary ventricles

Ventricular systole: The ventricles contract during the third phase of the heartbeat sequence. The valves at the exits of both ventricles open and the blood is forced into the aorta and pulmonary artery. As this phase ends, diastole starts again.

At left, the stages in one heartbeat cycle. The three successive phases of the heart's rhythmic beating are made possible by very sensitive timing and adjustment. The contraction and compression stages follow the heart filling with blood by expanding. The heart performs its pumping cycle in as little as a quarter of a second, though this speed doubles during exercise.

Contraction of the heart ventricles



Contraction of the heart ventricles

To the right, the heart valves in open and closed positions.

Your creation and rising is only like that of a single self. Allah is All-Hearing, All-Seeing. (Surah Luqman: 28)

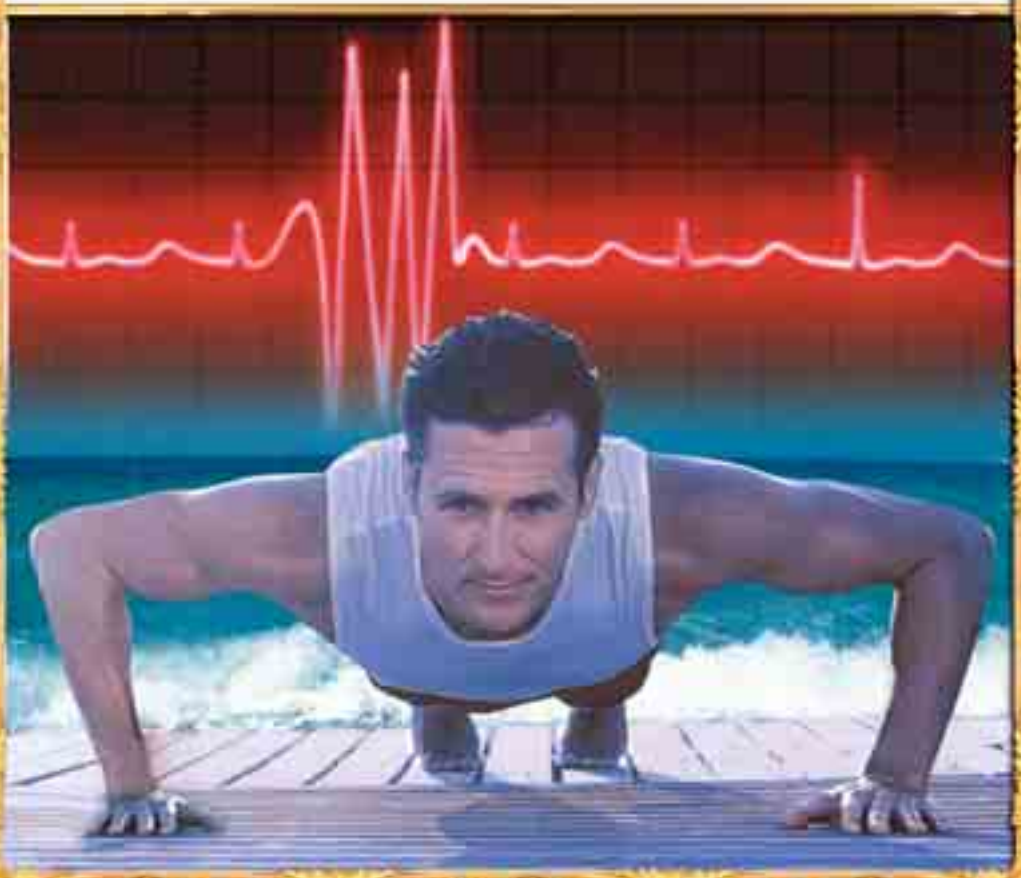
A Matchless Creation of Pumps and Valves

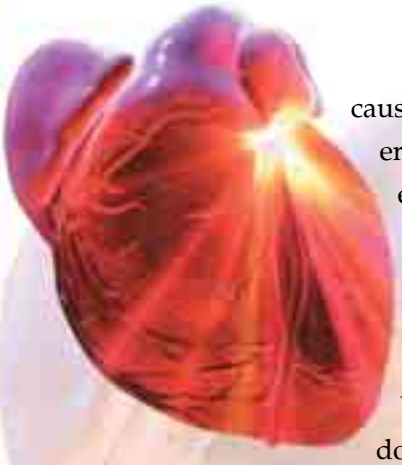
The pumps in the heart consist of two different sets of pumps, an upper and a lower. The smaller and uppermost are known as the atria and the larger, lower ones as the ventricles. For example, when clean blood reaches the left side of the heart it first fills the small, upper atrium. From here it is pumped to the larger ventricle beneath. The large ventricle sends blood to the organs of the body. The same process is carried out in the pumps on the right-hand side of the heart. Between atria

and ventricles are one-directional valves that open to let the blood flow pass. When the small atria contracts, these valves open and blood fills the large ventricles. When the ventricles contract, the valves close between them and the atria, and blood is prevented from flowing back in the direction from which it came.

There are similar valves in the large ventricle's exit. When the large ventricles contract, these valves open and blood is allowed to flow to the body. The moment the contraction stops, however, the valves close, preventing the blood from returning to the heart.

This mechanism is exceptionally reliable. Similar systems are employed in modern pumps today. A pump is a device which propels liquids or gasses in one direction. The valve is a gate-like device that opens or closes in order to control the flow of those liquids or gasses. When you pull the trigger on a water pistol, you compress the water inside it. This





causes a small valve inside to close and another outside to open, and the piston is pumped, expelling the water. In the same way, valves in the heart guarantee that blood can be pumped in only one direction.

The valves in the veins prevent a backward flow against the force of gravity. When you stand upside down, your blood does not rush to your head, as you might expect. That is prevented by the pumps and valves in the heart. We can compare this situation to the way that valves prevent air from escaping after it has been pumped into a bicycle tire.[38]

As you see, the heart has been specially designed for a specific purpose. And where there is design, there is inevitably a conscious, intelligent designer. Even if we cannot actually see the Designer Himself, we can see the evidence for His existence by viewing the design. Similarly, the systems in our bodies also reveal the proofs of the existence of our Lord, Who created them all.

The Heart's Electronic System and Generator

Have you ever wondered what enables your heart to keep beating? How does it work automatically for hours, days and even scores of years? The tireless pumping system works with the electrical energy, as mentioned earlier. The heart transports blood and all the vital materials to the organs and cells thanks to electrical energy. That is the reason why doctors employ electric defibrillators in the event of the heartbeat stopping completely.

The energy that allows the heart to beat does not reach it from the outside. Instead, the heart is an engine that produces its own energy used during its pumping process. Electricity is produced by the contraction of the heart muscles. Conductor cells transmit these electrical signals to the muscle cells that are responsible for pumping blood at approximately 70 times a minute.

The heart begins beating when the human being is still an embryo in the womb, before any nerves have connected the heart to the brain. The heart is able to continue beating even during heart-transplant operations when all the nerves have been severed and the organ is removed from the patient's chest cavity. Under a microscope, a heart cell even continues to beat by itself as long as fresh oxygenated blood can reach it.[39] That is because there is a generator in the heart cells that produce their own energy.

As you know, in the event of a cut in the energy supply, a generator is a device that can take over and continue producing energy that prevents machinery from halting or being damaged. The heart, one of the most vital organs in the human body, has also been granted a similar form of protection to prevent its coming to harm, since for the heartbeat to stop for even a moment could lead to serious bodily damage, and might even prove fatal. Therefore, the electrical system that keeps the heart working must itself work without interruption.

Scientists investigating its electrical system encouraged some astonishing facts. The heart functions thanks to an ensemble of programmed and systematic electronic circuits, with a great many interconnections. This electronic control-and-management system co-operates with a large number of other organs, from the kidneys to the brain, from the arteries to the hormonal glands. But who or what causes unconscious cells to perform such clearly conscious actions?

Who located the pumps inside the heart and in such an ordered manner?

Who equipped the body with its veins extending from these pumps?

Who ensures that these pumps work unceasingly?

Who tells each auricle and ventricle when and how much blood to pump?

Who created the valves in such a manner as to maintain the direction of blood flow?

Who distinguishes between oxygenated and deoxygenated blood?

Who made the heart cells able to produce their own energy?

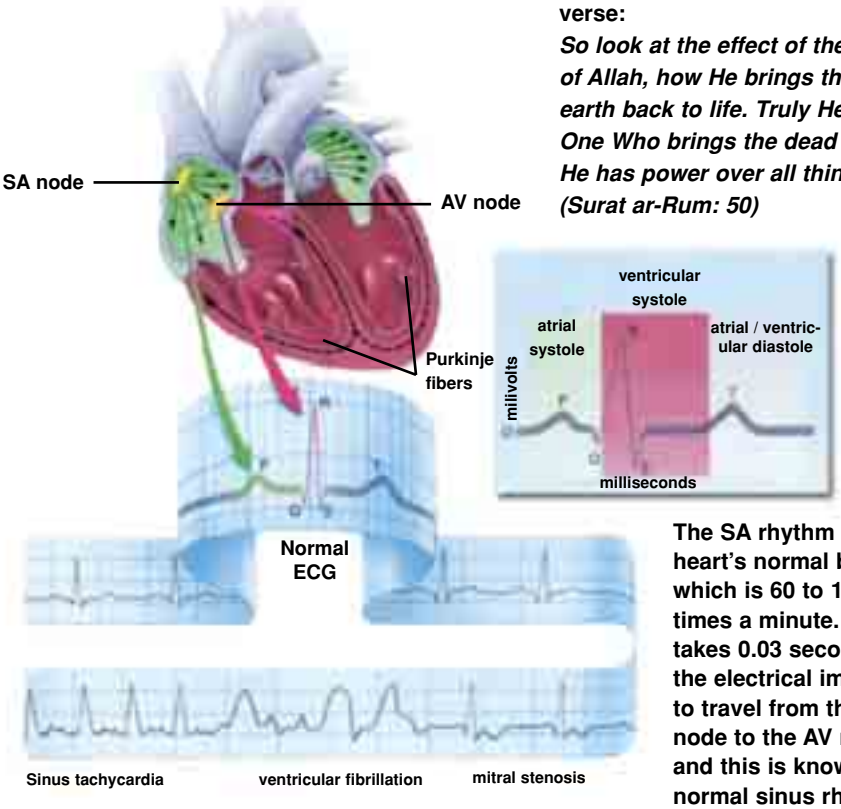
Who commands them to beat regularly and in harmony?

The only answer to all these questions, of course, is Almighty Allah, the Lord of the Worlds.

Allah is He Who created the heavens and the Earth and everything between them in six days and then established Himself firmly upon the Throne. You have no protector or intercessor apart from Him. So will you not pay heed? He directs the whole affair from heaven to Earth. . . (Surat as-Sajda: 4-5)

By its special creation, the heart regulates the speed at which it beats. A group of cells known as the SA node produce electrical impulses in the upper part of the right atrium. These impulses spread throughout the heart and allow the four chambers to contract at just the right time. This electrical impulse travels so quickly from one side of the heart to the other that it appears that all the heart's cells are beating at once. This harmony, which is one of the reasons for our survival, is another example of the mercy of our Lord. Allah reveals this in a verse:

So look at the effect of the mercy of Allah, how He brings the dead earth back to life. Truly He is the One Who brings the dead to life. He has power over all things. (Surat ar-Rum: 50)



The SA rhythm is the heart's normal beat, which is 60 to 100 times a minute. It takes 0.03 seconds for the electrical impulse to travel from the SA node to the AV node, and this is known as normal sinus rhythm.

Heart Cells and Electricity Production

The cells that contract so tirelessly must possess a design that can begin to work the moment electrical current reaches them. The cells must respond to every single signal that reaches them, on an average of 72 times per minute.

If you examine the heart under a microscope, you can count more than a million cells. Exceedingly complex biochemical processes take place in every one of them. Heart cells are nourished by sugar molecules and oxygen coming directly from the lungs. Every cell has its own pumps and channels and is joined to its neighbors by connective tissue.[40]

Every long, thin cell has a cell membrane that divides the cell from the environment outside and fiber-like proteins that are able to contract. Proteins embedded in the membrane carry important signals or substances from one side of the membrane to the other. In terms of electrical charge, this polarizes the cell, generating a voltage difference between the inside and the outside of the cell. This difference, known as membrane potential, enables certain proteins in the cell membrane, known as ion channels, to function like gates. When they are opened, ions flow in.

As a result of complex interactions of ion pumps and channels, a heart cell contracts thanks to the electrical and chemical differences occurring along the length of its cell membrane. Consider a cell in the heart ventricle as an example. At a state of rest, the membrane potential in any cell is more negatively charged than its external environment. However, the electrical stimulus arriving from the neighboring cell rapidly alters everything. This differential suddenly increases, and the sodium channels quickly open up. In this way, sodium ions (Na+) rapidly enter the cell, triggering the opening of the calcium channels.

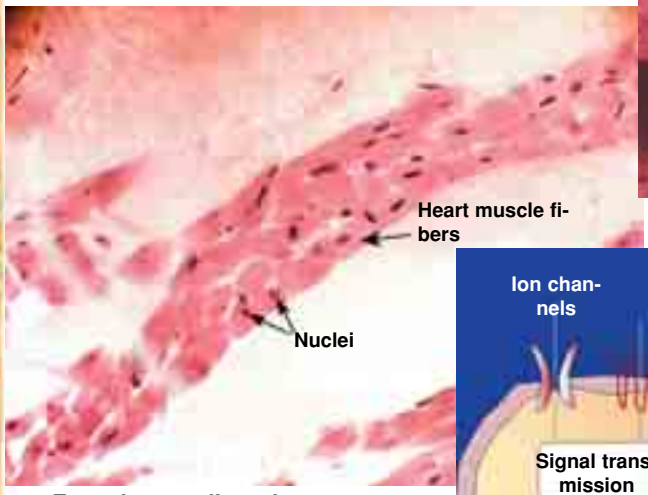
When calcium ions (Ca+2) collect around the cell proteins, these contract. At this point, the sodium and calcium channels close and the ion pumps move the ions outside the cell, causing it to return to its original state. In a healthy heart cell, this transition takes place in less than a second.

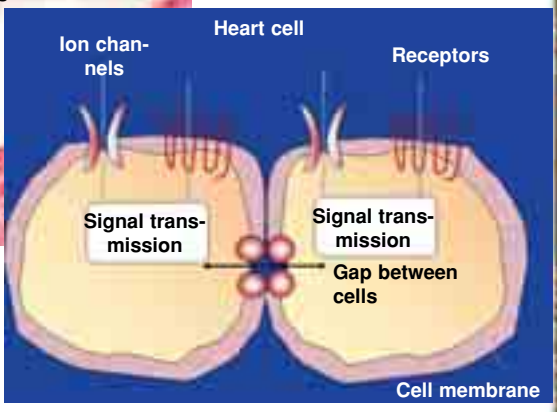
The events described here are in fact only a very general account of the true state of affairs, which is much more complex in its details. The heartbeat, which requires so many conditions to be met and work together flawlessly, is one of the countless examples introducing us to the knowledge of our Lord.

In one verse of the Qur'an the following is revealed:

My Lord encompasses all things in His knowledge, so will you not pay heed? (Surat al-Anam: 80)

Below, appearance of heart cells. Right, coronary tissue.





Every heart cell produces energy that starts the heartbeat in motion. Each coronary cell acts literally like a living battery, producing electricity by means of two elements found in the blood in large quantities: sodium and potassium. The atoms constituting these elements often lose a negatively charged electron, and thus gain a positive charge. These charged atoms are known as ions.

Heart cells contain a high level of potassium, and the fluid outside the cells is rich in sodium. The cell membrane constantly pumps sodium outside the heart muscles and potassium inside. Since the membrane pumps sodium out faster than potassium is taken in, a positive charge forms outside the cell. When the charge reaches a particular level, the flow is suddenly reversed and sodium ions re-enter the cell. This sudden change triggers an electrical charge, and the heart cell contracts and withdraws.

The Pacemaker That Regulates the Speed of the Heartbeat

Production of electricity by the heart cells is not enough by itself. These cells must first combine in the right sequence, but it is still not enough for them merely to join together. These cells must produce electricity together, in a particular rhythm. Each cell must time itself to act every 0.83 of a second, without fail.

Moreover, cells must carry on their activity for an entire lifetime, never tiring. Furthermore, they must know the level of electrical current that will cause the heart to work as a whole, and to produce that current at exactly the right level—neither more nor less.

When spread out thinly on a microscope slide, different heart cells will beat at different speeds. But when combined together, they form a single tissue that behaves as a single entity. Heart cells in the human chest do not beat at different rates; although each one initiates its own beat, they all beat in a rhythmic harmony. The pacemaker in your heart contains an internal clock that regulates the speed at which your heart beats. This pacemaker is actually a collection of cells, but it functions far more perfectly that any electronic device. Using conductive fibers, it distributes the electrical current it produces to every point in the heart muscle. But this electricity proceeds at different but controlled speeds. When both heartbeat and transmission system are working properly, they carry out an ordered and determined distribution of electricity.

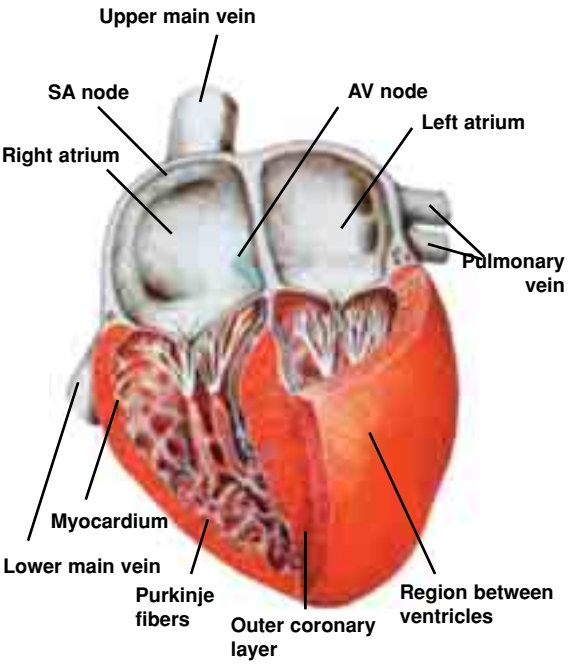
The heart possesses a natural battery that regulates the speed at which it beats—a specialized electrical cell node known as the SA node, (for sinus or sinoatrial node), located in the upper part of the right atrium. These cells initiate electrical impulses that stimulate the heart muscles to contract regularly. The SA node produces the electrical stimuli that spread throughout the heart, ensuring that its four chambers all contract at the proper times. This electrical impulse travels from one side of the heart to the other so rapidly that it gives the impression all the cells are beating at once. This rhythm is the heart's normal beat, which is between 60 and 100 times a minute.[41] It takes 0.3 of a second for the electri-

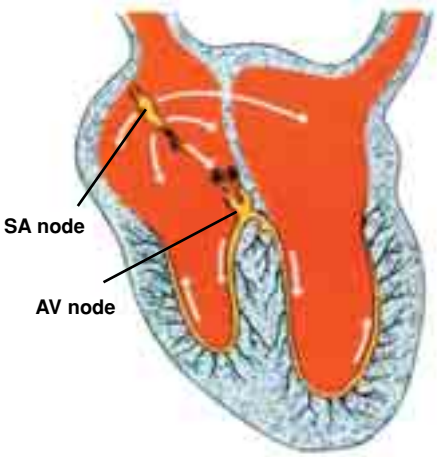
cal impulse to move from the SA node to the region known as the AV node located between the atria and ventricles, and this is known as the normal sinus rhythm.[42] The AV node is the location of the cells that produce the second electrical current that completes the heartbeat.

Just like a sparkplug in an engine, the heart cells fire many times a minute. Each firing passes through a specialized electrical path and stimulates the muscle walls of the heart's four chambers in a specific order. First the upper two chambers of the atria are stimulated, after which there follows a slight delay for the two atria to empty. When the moving electrical current reaches the region between the atria and the ventricles known as the atrioventricular node (or AV node), it slows down a little: The AV node delays the electrical signal by holding onto it for the short space of 1/14 second—an interval of time that is very sensitively adjusted. The AV node's delay gives the atrium time for to contract tightly and send the blood on to the ventricles. This way, the ventricles fill with blood to their maximum capacity before receiving the electrical current, that signals them to pump out their contents. Were it not for this momentary delay, the ventricles would contract before they were entirely filled with blood, and not enough blood would be transmitted to the body.

Following this delay, the electrical signal continues on to stimulate the other ventricular cells 1/16 of a second later. The large ventricle, now filled with large quantities of blood and whose turn has now come, contracts and pumps blood in to the body. All these processes take place in less than one second.[43]

To sum up, the electrical current first emerges in the upper part of the heart, in the SA node, ensuring that electricity is distributed throughout the heart and that the heart's muscle cells contract as it passes moves.[44] Yet the situation that comes about is very different from what one would expect under normal conditions. The energy given off by the generator should first stimulate the small atria and then the large ventricles. Yet since the electrical wave moves very quickly, both pumps should contract at almost the same time, and the heart's work would be seriously impaired. Yet this never happens, because all this has been tak-





THE ELECTRICAL ORDER IN THE HEART IS ONE OF THE SIGNS OF CONSCIOUS CREATION

A node of tissue known as the SA node in the right atrium of the heart serves like a generator to provide electricity, sending some 72 electrical impulses a minute to the heart of a resting adult. This region produces faster electrical impulses than other tissues. In the event that the SA node is damaged, other sections of the heart's electrical system are able to take over that function, despite beating at a lower speed.

For example, the group of cells known as the atrioventricular fascicle (His bundle) has a speed of 40 to 60 beats a minute. If the SA node is damaged, this tissue can take over the coronary rhythm. The way that such a vital system has been created together with a backup system is just another instance of Allah's protection of man.

The heart's natural battery is the SA node in the right atrium. The heart also contains nerve fibers transmitting electrical signals from the SA node to other parts of the heart. An electrical impulse leaves the SA node and travels directly to the right and left atria, causing them to contract together, all in 0.04 of a second. There is then a delay that allows the atrium to contract and the ventricles to fill with blood. The electrical impulse heads directly for the AV node, and then to the atrioventricular fascicle after which it divides to the right and left and spreads rapidly towards the right and left ventricles, using the Purkinje fibers, and enables them to contract at the same moment.

en into account beforehand. So perfect is the design of the electrical circuit in our hearts that the electrical energy first stimulates the small atria, is kept waiting for a time, and only then stimulates the large ventricles. After the electrical signal has set out, the atria keep it waiting at a specific point until they have fulfilled their functions.

But the heart and blood vessels do more than speed up or slow the blood circulation in response to the body's needs. They carry blood to different tissues to spark off different activities. Extra blood rushes to the stomach when we eat, to our lungs and muscles when we run, and to the brain when we think and speak. The heart and circulatory system combine data just like a computer to meet the body's various needs, and thus respond in a way that no computer can.[45]

The deceleration or acceleration of the heartbeat generally leads to tightening of the chest and discomfort expressed in the form of palpitations. The abnormal acceleration or deceleration of the heartbeat may result from disruptions in the heart's electrical signals. In order to understand rapid or slow palpitations, we need to examine how the normal heartbeat comes about and acts throughout the heart.

In cases where the heart cannot make this adjustment, an electronic pacemaker is used to adjust the speed of the heartbeat. However, these artificial devices bring with them a number of drawbacks that require careful attention. They must not enter magnetic fields, and have to be kept away from devices that generate magnetic fields. Yet no such problems are experienced in the heart's natural pacemaker. How, then, did a group of cells in our bodies determine—and then meet—needs of which we are consciously unaware? This is a precautionary measure in our bodies, a comfort prepared for us beforehand. All this is just one of the signs of the infinite mercy of our Lord.

There is no one in the heavens and Earth who will not come to the All-Merciful as a slave. He has counted them and numbered them precisely. (Surah Maryam: 93-94)

The Flawless Creation Needed for the Heart to Work Shows That There Is No Room for Chance in the Creation of Mankind

QT syndrome is an inherited condition involving defects in the potassium channels in the heart, which impairs the heart's ability to transmit electricity. Those suffering from QT risk sudden death from excessive exercise or even a nightmare.

The heart's electrical activities need to be simultaneous if the organ is to properly perform all its functions. The body's natural *pacemaker*, which regulates the rhythm of the heartbeat, sends an electrical signal to every cardiac cell for their contractions to begin. In order for the heartbeat to occur, the potassium channels must open and the potassium ions have to be permitted to leave the cell. In QT syndrome, however, as a result of functional defects in these channels, the cells' acquisition of electrical properties for the next beat is delayed. When the heart is stimulated excessively by emotion or exercise, the defective channels don't allow enough potassium to depart, and this electrical irregularity can lead to the sudden death.

The Atrioventricular Node: The Heart's Spare Generator

It is exceedingly important that the heartbeat be rhythmical. Defects of the electrical current in the cells alter the starting time and speed of the signal. A signal that begins too early will cause the heart to beat prematurely or else cause an insufficient contraction. In the same way, electrical signals that are slowed down or accelerated will result in a delayed heartbeat, or one that does not take place at all, leading to various heart disorders.

From that point of view, both the functioning of the heart and its design must be flawless. Reserve systems in the heart permit this important rhythm to be discharged without interruption.

As well as slowing down the electric current and regulating the heartbeat and pumping blood to the body, the AV node has the vital function of acting like a reserve generator to replace the main one if anything goes wrong with it. If the SA node is damaged, the AV node takes over the task of regulating the heartbeat's rhythm. But this spare generator cannot produce signals as strong as those from the original power source—only 40 to 50 signals a minute. But the signals it does produce are still enough to keep the heart working. Indeed, people have been known to live for 20 years even though their heart's SA node has failed to work for some reason.[xlvi]

No doubt the presence of such a system in the body shows that it is the work of a Creator possessed of intellect and consciousness. That consciousness and intellect are those of our Almighty Lord Who created the heavens and Earth.

> **. . . Do you not know that Allah has power over all things? Do you not know that Allah is He to Whom the kingdom of the heavens and the Earth belongs and that, besides Allah, you have no protector and no helper? (Surat al-Baqara: 106-107)**

The Accelerator-Brake System in the Heart's Operations

Most people know that their hearts speed up under certain circumstances—as when they quickly climb a staircase, run or become excited. The heartbeat speeds up, returning to its normal rhythm later. However, most people fail to realize what a great miracle this actually is. The speed of the heartbeat is regulated by a natural computer system installed inside the body.

When heartbeat accelerates, unless the body is provided with sufficient oxygen, the cells lose their electrical equilibrium and begin beating fast and irregularly.[xlvii] For that reason, it is of the highest importance that the heart should beat constantly at a regular rhythm. Like a car traveling at a fixed speed, the heart's tempo also needs to be speeded or slowed in certain situations. The "brake pedal" that slows the heart's rhythm is the *vagus nerves*, and the throttle that speeds it up is the *sympathetic nerves*. * [48] A messenger molecule called acetylcholine permits the braking action.

The heart normally beats 72 times a minute. In situations that place a strain on the heart, when a person is under stress or running a fever, the SA node speeds up since the tissues need the heart to pump more blood. In this way, the sympathetic nerves raise the blood pressure by narrowing the blood vessels, and the adrenaline glands over the kidneys release the hormones adrenaline and noradrenalin, which increase the speed of the heartbeat. The hormone thyroxin released by the thyroid gland affects the workings of the heart by speeding the metabolism.[49] The heartbeat can rise to five times its resting level.

The sympathetic nerves speed up the heart like the throttle in an automobile. When the parasympathetic system is needed, it can slow the heartbeat to 40 beats a minute by easing the force with which the heart muscles contract.[50] When they detect that the blood pressure has risen,

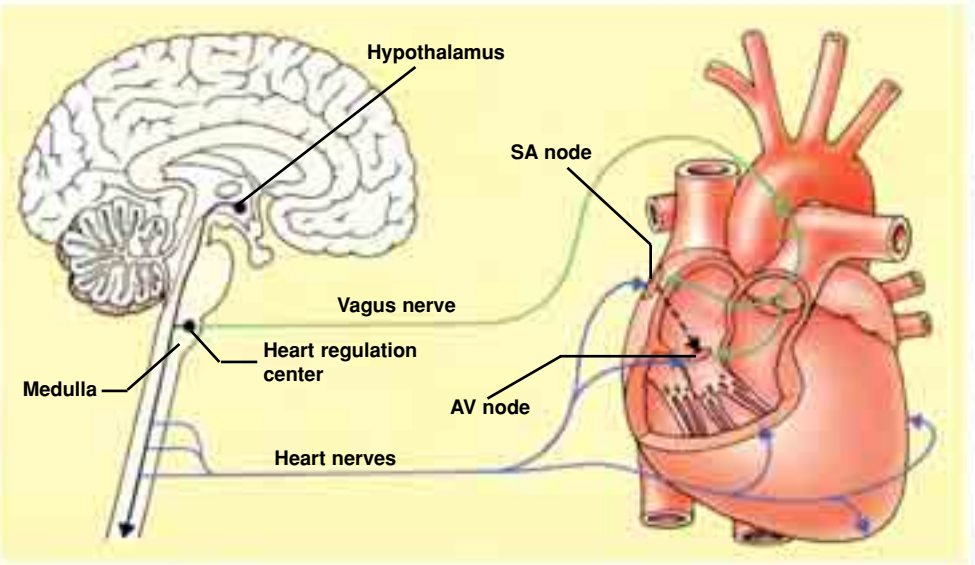
Sympathetic nerves: components of the autonomous nervous system that work outside our conscious control and regulate the workings of the internal organs.

receptors in the arteries stimulate the brain by means of the parasympathetic nerves to release the chemical known as acetylcholine. Blood vessels in the heart expand, and thus pressure falls. If the blood vessels carrying clean arterial blood were not wide enough, they might tear and rupture. The skull might then fill with blood as in a stroke, and the individual be crippled by lack of blood reaching the brain.

But how does this assortment of cells know when to beat, and how fast? Who tells them to adjust their speed? And how did they acquire the consciousness with which to carry out such a vital function? How and by whom is the decision to accelerate or decelerate taken? In the human body, there is such perfect regulation and such a network of data-exchange that no artificial processing network can begin to compare with it. This system functions without your knowledge, even at this very moment, showing that it is the product of a superior Intellect and Knowledge. These belong to our Lord; Who is capable of creating whatever He wishes.

Whenever you do something that requires effort, the muscles around the veins accelerate the flow of blood returning to the lungs. This means that more blood flows to the right atrium in the heart. At this instant, the muscles contract. The central nervous system transmits the nerve signals that form as a result of this tension to the medulla oblongata. The medulla analyzes these data and immediately sends a command to the heart, whose accelerator is activated and its rhythm speeded up. More clean, oxygenated blood thus reaches the muscles.

To keep the heart from beating so fast as to damage itself, a special security mechanism is needed. The aortic veins emerging from the left side of the heart contain receptors that measure blood pressure. As the heartbeat speeds up, the pressure of the blood against the aortic wall rises. When this exceeds a particular level, the receptors become aware of the rising pressure and send messages to the spinal cord bulb, which again evaluates the situation and sends a new command to the heart. At this, the rhythm of the heart is slowed, and the blood pressure is lowered.



The waves of energy that cause the heart to work is initiated by the cell group known as the SA node, and pass, with the help of the artery muscle, to the AV node, and from there to the right and left fibers. A special electrical system ensures these processes. By the will of our Lord, this electrical wave fulfils a vital function in our bodies.

It is completely incompatible with logic to maintain that unconscious cells know that a too-rapid heartbeat will harm the body and take precautionary measures to prevent it—or that these cells came into being by chance. Namely:

Receptors measure excessive blood pressure and are located in just the right place in the aortic wall.

A line of communication exists between the receptors and the spinal bulb.

The receptors detect the rise in blood pressure and report this to the medulla oblongata.

The spinal bulb analyzes the information that reaches it and grasps the importance of the situation.

Some of the medulla's cells assume the responsibility of regulating the heartbeat.

These cells decide to send a message to the heart.

They dispatch their message in a way that the muscle cells will understand.

These and many other actions requiring intelligence and consciousness cannot possibly result from the chance cooperation among unconscious atoms. This flawlessly functioning system was created with the knowledge and artistry of our Lord, Who enfolds and surrounds all places.

The Emergency Signal

The human body sometimes needs to be stronger, more resistant and to exhibit a higher performance than normally. For example, when a person has to defend himself or escape, the heart needs to beat faster and to pump more blood.

For situations like these, the necessary precautions have been taken, and another system has been installed in the human body. In case of any extraordinary situation, the adrenal glands secrete the hormone adrenaline. In comparison with its size, this hormone molecule makes a very long journey to the heart. Reaching there, the hormone commands the heart cells to contract more speedily. The adrenal cells producing this hormone know which language those heart cells will understand. At the same time, they are aware that the body must be more resilient and therefore, the heart needs to beat faster. The heart cells obey this command and begin beating faster, and in this way, the body is provided with more of the oxygen it needs in emergency situations.

The famous Israeli physicist and molecular biologist Gerald L. Schroeder refers to this special system:

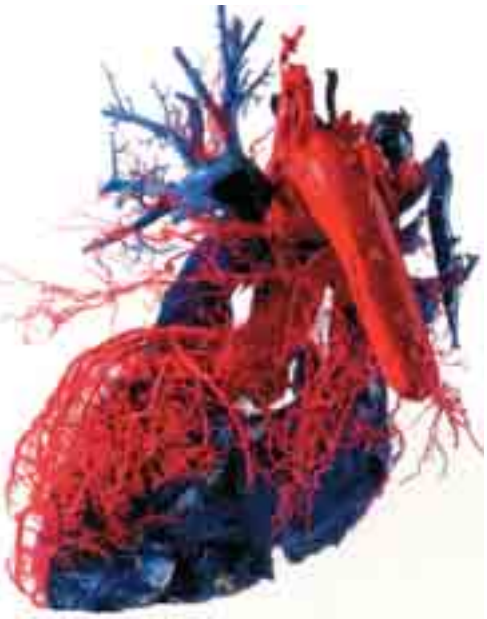
> Muscle cells and especially muscle cells of the heart have large numbers of receptors designed to pass adrenaline, a stimulant hormone. At the sensation of danger (sensation did I say? I wonder just which carbon atom is experiencing this emotional trauma?), our reptilian response of fight stimulates the release of large doses of adrenaline in to the blood. Taken up by the heart muscles, the beat increases dramatically, pumping oxygen-rich

blood to power hungry muscles in arms and legs. Cells along the small intestine are constructed to absorb glucose, amino acids and fatty acids, the products of food digestion and transport these products to the adjacent bloodstream, where they'll be carried to the membranes of cells. [51]

As you have seen, it is astonishing how cells made up of unconscious atoms immediately identify this danger, declare a state of emergency, and take the relevant measures. This series of events requires consciousness and cannot, of course, be the work of chance. Our Almighty Lord created all of these cells and inspires in them the knowledge of what to do, and when.

In individuals with advanced heart disease, the electrical signals that regulate the pumping between the chambers of the heart become irregular. This makes it hard for the heart to pump blood in a regular manner.

Most heart attacks occur when one of the arteries that nourish the heart with blood becomes blocked. When the muscle cells are deprived of oxygen or nutrients, they become acidic and begin beating spontaneously in an uncontrolled manner. These pulses disturb the rhythmic contractions of the heart. All of this reveals how the heart's design is an example of a superior creation.

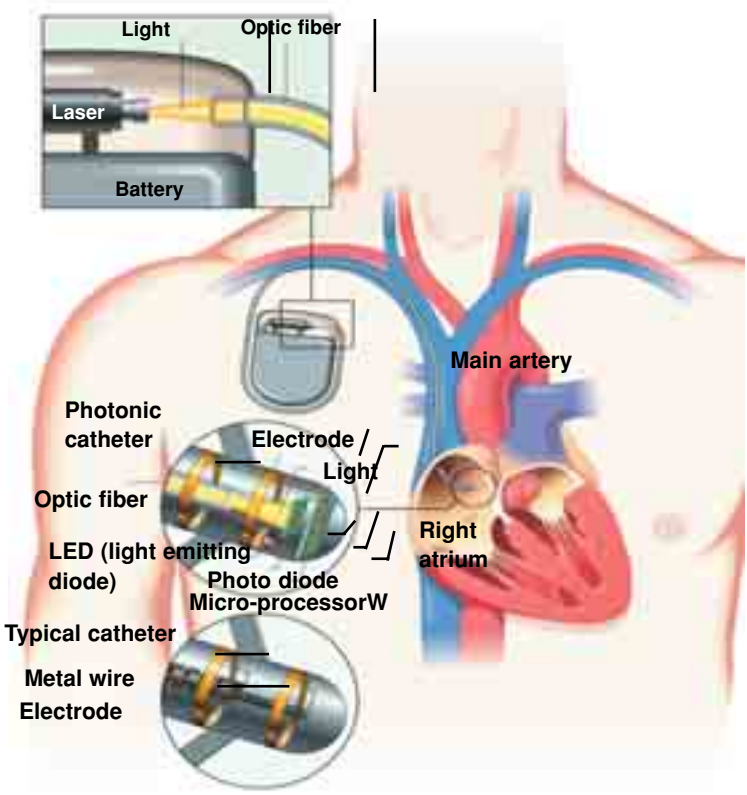


All Factors Must Be Present at Once

In order for your heart to work with perfection, it needs electrical signals. In order for those signals to be produced, the sodium, potassium and calcium ions need to be present at particular levels in the blood. Bearing in mind that these levels are regulated by organs such as the kidneys, intestines, stomach and lungs, it's even more evident that such a system cannot be the result of a fictitious mechanism such as evolution.

First of all, there is a technology in the heart far superior to that of any man-made device. But most important of all, is that there would be no purpose for the heart to come into being by chance on its own. Together with the heart, there must be blood vessels thousands of kilometers (miles) in total length, as well as liquid blood to fill those vessels, kidneys to filter the blood, lungs to give oxygen to the blood and absorb carbon dioxide, a digestive system to provide nutrients for the blood, a liver to refine these nutrients, a nervous system to regulate the working of the heart, a brain to manage the body as a whole, a skeletal system to

A pacemaker (a device that regulates the heartbeat) installed in the body



The heart generates special electricity that allows it to beat regularly. Sometimes when people have heart problems, they need a miniature battery to regulate their heartbeat. These devices, known as pacemakers, permit the heart to beat at a regular speed, by sending it small electric shocks. The way that the unconscious cells in the heart combine to discharge such a vital responsibility happens through the mercy of our Lord.

keep the body upright, and a hormonal system to assist the heart's operations—are all present at the same time. The way that all these and thousands of other elements come together in the most harmonious manner possible is one of the many proofs of a flawless Creation.

THE MUSCULAR SYSTEM THAT OPERATES ON ELECTRICAL ENERGY

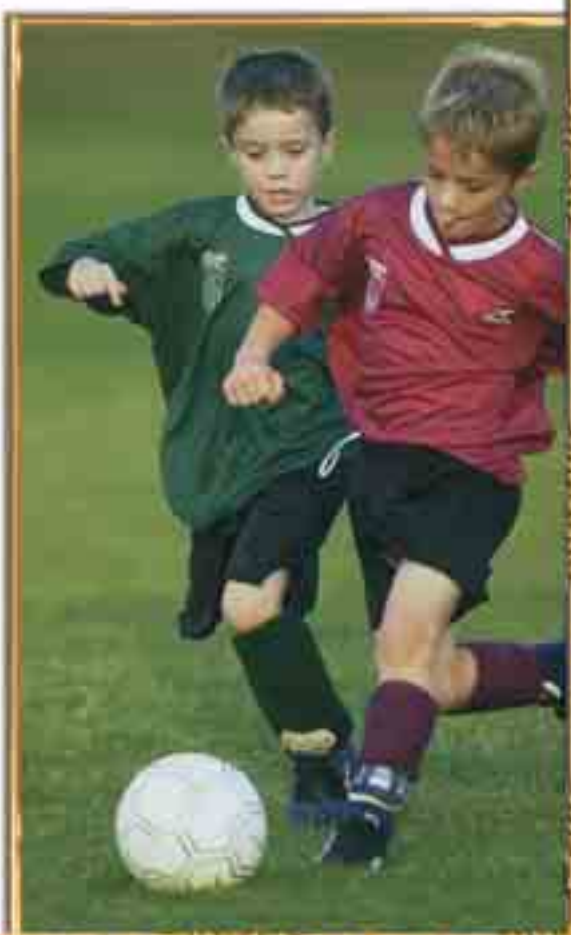
You expend energy in reading these lines, in turning the pages of this book and even just sitting back in your chair. Your skeletal muscles provide this strength and use it wherever necessary. Various muscles extend to every point in your body and represent some 45% of the human body's weight.

Every muscle consists of large numbers of fibers between 0.5 and 14 centimeters (0.2 and 5.5 of an inch) in length and an average 0.1 millimeter (0.0039 of an inch) in diameter. Muscle tissue's most important feature is its ability to contract, and its ability to do work increases in direct relation to its ability to contract. Thanks to this ability, you are able to drink water, walk, speak, close your eyes and turn your head.

Muscles in the human body are divided into two groups, those under conscious control (voluntary muscles) and involuntary ones. In order to activate vol-

untary muscles, one needs to think and decide. When you want to climb stairs, for instance, your muscles contract at the command from your brain and perform the action of lifting your legs. On the other hand, the working of involuntary muscles does not depend upon volition. Since the functions of these involuntary muscles are extremely vital ones, their contraction and expansion is controlled, by the mercy of Allah, by the so-called autonomous nervous system. Therefore, your heart, stomach and intestines perform their duties regardless of your conscious will. This is a most vital precaution, for if functions like heartbeat and digestion had been entrusted to conscious control, it would of course be impossible for humans to fulfill them constantly. That would spell the end of human life.

The flat muscles that work involuntarily move slowly, but their contractions are long-lasting. They do not tire, and thus they can maintain systems of vital importance to the body for lengthy periods of time. Blood vessels, the digestive tract and the walls of the excretory canals, for instance, are all furnished with muscles of this kind. Since these flat muscles work independently of the skeletal muscles, they are responsible for only the movements of internal organs.



Imagine that the involuntary muscles were

temporarily placed under your control. You would need to contract the walls of your stomach in order for digestion to take place, and contract your heart to pump blood. Even if you concentrated on only those tasks, you still couldn't possibly manage them. That's because these muscles continue working on your behalf when you are asleep, and perform their functions for a whole lifetime, never resting. If conscious, therefore, muscular contractions would stop when you wanted to sleep or rest, and that would spell the end of your life. As we have seen, the flawless order in our heartbeat is sufficient to show us the mercy that Allah has bestowed upon us.

Actions That Take Place with Electrical Current

When you want to move a finger, countless nerve cells in your brain start sending minute electrical signals to one another. These currents are later transmitted from the brain to the arm, by means of the medulla oblongata and spinal cord, through one of the many branches of the nervous system. When this minute electrical current issuing from the brain reaches the forearm, there, it causes muscle cells to contract, which in turn pulls a tendon that causes your finger to move.

All these phenomena take place at practically the same time. There is a flow of data from both the eyes and the finger back to the brain, thanks to which the brain checks whether the movement is in line with the command it gave. If the movement of the finger meets an obstacle and is unable to do what is required of it, the brain can modify the situation by issuing new commands.

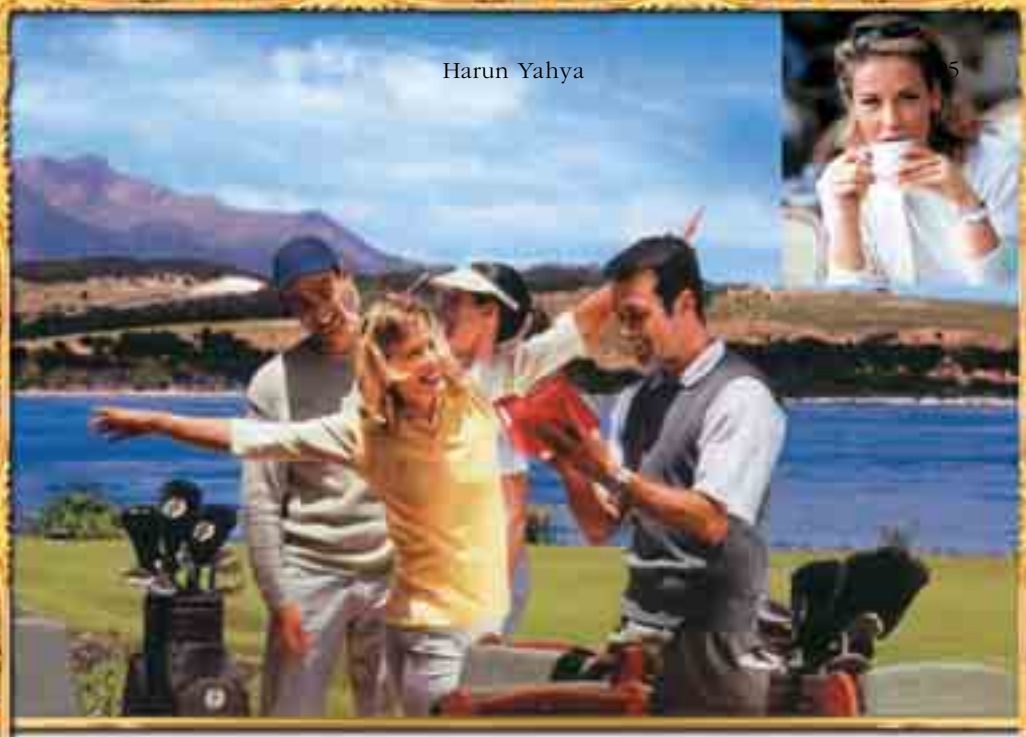
Gerald L. Schroeder cites one example of the supervision between the muscles and the brain:

> Muscle distribution within our bodies is filled with cleverness. Hold your hand up and bend your fingers. Notice that the muscles that allow you to cup your hand by bending your fingers down are not located in your fingers. Make a fist and feel the inner, smooth side of your arm just below the

elbow. Feel those muscles flex. They are connected via tendons to your fingers and give the pull that shapes your fist. By having the muscles located on the arm rather than at the fingers, the fingers remain slim enough to do fine work such as holding a stick or typing a page. But when you pull your fingers down, there is another joint in the line of action, the wrist. Why isn't that pulled down along with the fingers? Now feel the outer, hairy side of your arm just below the elbow. Feel the other muscles at work there. They get the command to apply just the correct force to hold the wrist steady when your brain says bend fingers only, and they allow the wrist to bend when the cranial message is: wrist also in action. But we never think of it because it's all controlled at the less-than-conscious level.[52]

Thanks to tension receptors on the muscles, such actions as running, walking, opening a door or climbing stairs can be carried out in a smooth, coordinated manner. These receptors keep the nervous system constantly informed, giving the brain feedback about the status of the muscles, and the degree and speed of their contraction. Close monitoring and co-ordination of muscular activities is ensured, and as a result, you can walk along without stumbling, climb up and down stairs without falling, and lift your spoon to your mouth without your hand shak-

A great many bones have been created to support the body and between the bones, joints have been created to let them move. However, none of these joints possesses the ability to move on its own. In the same way that a door or window, no matter how perfect it may be, can open or close without a force to push or pull it, so no joint can move without a force behind it. The force that causes the joints to move is produced by the muscles created by Allah.



ing. All these actions are made possible by the will of Allah, thanks to the flawless order of the functioning inside the body.

The Originator of the heavens and Earth. When He decides on something, He just says to it, "Be!" And it is. (Surat al-Baqara: 117)

How Do Muscles Contract?

For any contraction to begin, muscle fibers must be stimulated. The mechanical energy that emerges as a result contraction is provided from the muscle's resources chemical energy. Therefore, the work that the muscle must do depends on its chemical energy being translated into mechanical energy.

Muscles are like biological machines that turn chemical energy into mechanical power. However, the functioning of these machines— in other words, our ability to move—requires energy. Glucose in the blood provides the necessary energy, just like the fuel that makes an engine work.

The body obtains this energy needed for muscle movement from

the food we eat. Digested carbohydrates, fats and proteins reach the muscles by way of the liver. Proteins that serve in the development and repair of tissues are reduced to the level of amino acids, while carbohydrates and fats provide necessary energy in the process of being broken down chemically. Energy released during this process is used by the proteins of muscles for the purpose of contraction. These chemical reactions require a high level of oxygen, which is not easy to obtain. In order to overcome this problem the muscles use their ability to turn glucose into lactic acid without the presence of oxygen; and the requisite energy emerges during this process.

Only limited quantities of the glucose and oxygen essential to contraction are present in the muscles. For that reason, additional quantities of both substances are carried to the muscular system by means of the bloodstream. The amount of blood reaching the working muscle is therefore important. The amount of blood a muscle requires during the performance of work may rise 10 to 20 times. This increased requirement raises the heartbeat and causes the blood vessels leading to the heart to expand.

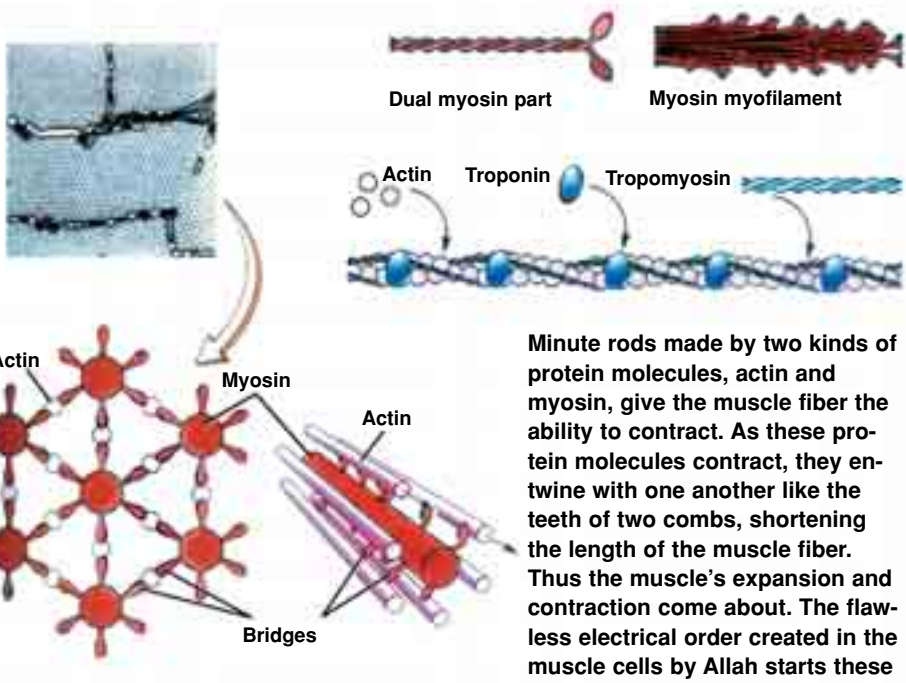
The design of muscle cells is very special. These cells' structure can release the energy inside the sugar molecule and use it during contraction. Both release of energy from the sugar molecule and the transformation of that energy into physical strength are carried out inside the muscle cell. Energy produced in the muscle cell affects the proteins constituting the muscle. As a result of this, the proteins attract one another and the cell contracts by shortening. When thousands of cells shorten simultaneously, the entire muscle tissue contracts. The muscles, attached to the bones by tendons, move the bones by means of this contraction.

The functioning of all the skeletal muscles we use in order to move takes place via this same mechanism. When to stretch out, you bend your elbow at the desired angle, when to eat you cause your jawbone to chew, and when you set your leg muscles in motion to run, behind these movements lie the electrical activity of the microscopic cells.

In order for a muscle to contract, the electrical signal from the mo-

tor neurons must pass between the membranes of the muscle cells and the nerve cell. As a result of the chemical reaction that takes place with this electrical impulse, the proteins actin and myosin in the muscle fiber slide over one another, thus shortening the length of that fiber. During this reaction, a degree of heat is emitted, and the total heat emitted by all the muscles determines our normal body temperature. For that reason, the muscles that shiver and tremble in very cold environments are trying to keep the body temperature stable by producing extra heat through involuntary motion.

The contractions carried out by a muscle fiber as a result of the electrical impulses from the nerve fiber reaching it one by one eventually fatigue this muscle fiber. It needs to rest. Other fibers that have not previ-



Minute rods made by two kinds of protein molecules, actin and myosin, give the muscle fiber the ability to contract. As these protein molecules contract, they entwine with one another like the teeth of two combs, shortening the length of the muscle fiber. Thus the muscle's expansion and contraction come about. The flawless electrical order created in the muscle cells by Allah starts these reactions.

ously contracted then go into action and permit the contractions to continue. However, if the electrical impulses from the nerve continue at very frequent intervals, giving the muscle fibers no opportunity to rest, then a state of contraction takes place that prevents further movement.

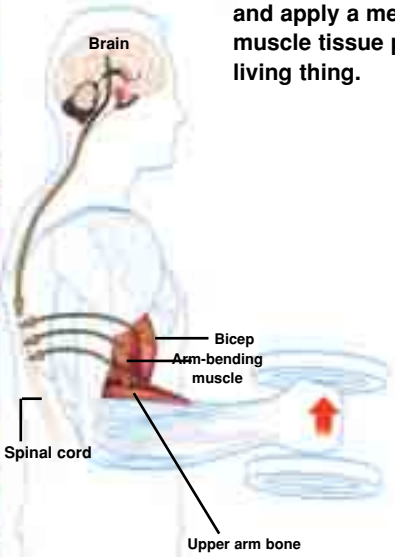
When you want to open a door, an electrical signal leaves your brain and via the spinal column, heads directly towards your fingers. The electrical current passes over the muscle surface and triggers the millions of muscle fibers which, upon receiving the stimulus, immediately contract. Finally, the bicep or tricep muscle as a whole contract, and your arm bends at the elbow.

All these processes take place in the blink of an eye. Thus, the electrical current passing through the nerves proceeds in a millisecond, or 1/1000 seconds, and sets the muscle fibers in motion.

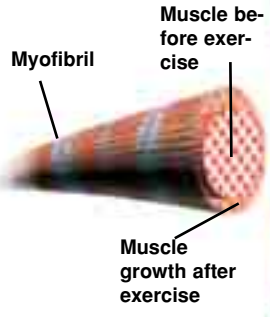
The commands reaching the muscles are both produced in and transported by the nervous system. In that way, the muscular system functions under the command of the nervous system, and the muscles work harmoniously thanks to this co-ordination in the body.

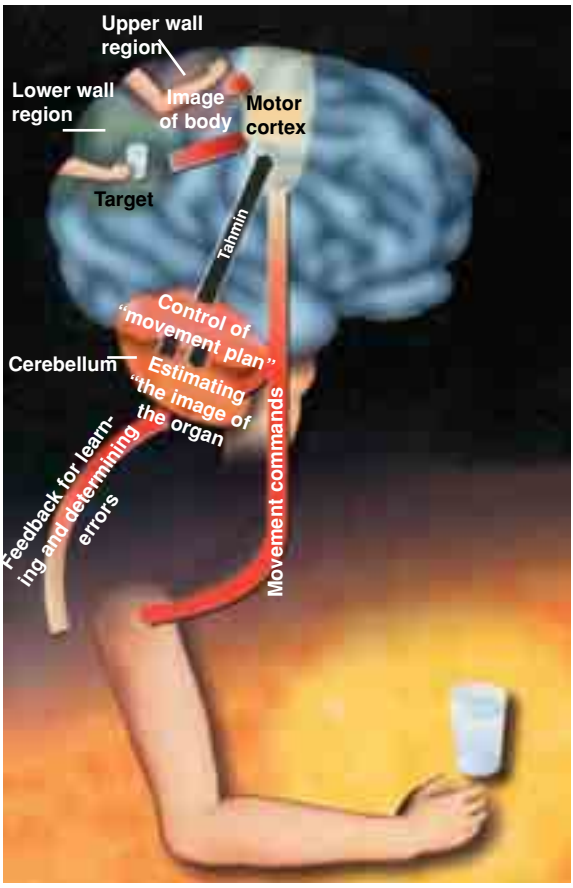
Muscle cells perform these deliberate actions in a matter of milliseconds, without your having to think about them. Since that obedience

Muscle cells can alter their dimensions to a considerable extent and apply a mechanical force by so doing. With this capacity, muscle tissue plays a role in movement, a vital feature of every living thing.



A muscle cells thickens proportionate to exercise. This increase in mass comes about through the thickening of the muscle fiber, which results from an increase in the number of myofibrils. As a muscle cell thickens, so does the force it will produce.





When you decide to lift your glass to your lips, the brain immediately sends a contraction signal to your bicep, contracting the arm. At the same time, the tricep muscles at the back of the arm must expand to let the arm bend. The bicep is sent a command to contract! and the cells that straighten the arm are commanded to halt! Thus the arm approaches the mouth. These systems, over which we have no control at all, are a reminder that we live in need of our Lord. "Allah is rich beyond need" (Surah Luqman:12) and the One Who "has power over all things" (Surat al-Baqara:20).

There are more than 650 skeletal muscles in the body, which contract in order to close the joints and cause the bones to move. However, all these movements take place as the result of an extraordinary co-ordination in the body.

cannot belong to the cells themselves, who tells them what to produce, and when? Whose intelligence and consciousness guide the hormones and molecules to the correct location? Who tells them they are at the right place when they arrive, and who directs all these actions? The superior Intelligence manifested in the movement of the muscles belongs to Allah, the Creator of the cell and the molecules, Who inspires their behavior.

***Hormone: a special substance formed in a gland and carried to cells elsewhere in the body to regulate their growth and functioning.**

Implacations of the Disease Known as ALS

ALS (amyotrophic lateral sclerosis) is one of those diseases that dramatize the effect of the nervous system on the muscles. ALS, whose cause is unknown, is the disease that has paralyzed the famous British scientist Stephen Hawking. The motor neurons traveling from the brain to the spinal column and thence to the muscles become atrophied by this disease. When nerves that activate the muscles are damaged, the muscles become incapable of stimulation. As a consequence, the sufferers quickly lose their ability to move, then to speak.

This disease begins with a feeling of weakness in the arm and leg muscles, and increasingly affects speech, chewing and breathing, and can eventually prove fatal due to its effect on the chest muscles involved in respiration.

The etiology of ALS is as yet unknown. In their studies scientists have observed an excessive level of a neurotransmitter known as glutamate in the nerve connections, which prevents normal transmission of impulses.

Stephen Hawking currently uses an electric wheelchair to move and a speech device controlled by his jaw muscles to communicate. Despite having lost all control over his muscles, another one of those suffering from this disease has established communication with others by means of an alphabet signaled by his eye movements.

No doubt ALS by itself reveals the vital importance of our motor

Stephen Hawking, an ALS sufferer, uses an electrically-operated wheelchair to move about and a speech device controlled by his jaw muscles to communicate. At the cellular level, even the slightest damage can lead to serious disorders affecting the entire body. There is no doubt that this disease is an example of our Lord's mercy on us.

nervous system—which we never reflect upon until we encounter a disease of this kind. Normally working perfectly without our even thinking about it, the nervous system is one of the countless examples of Allah's mercy on us. Our duty is to appreciate Him and give thanks for the blessings He has created:

Allah shows favor to humanity, but most of them are not thankful. (Surat an-Naml: 73)

The Electrical Order in the Muscle Cells

Transmission of electrical current to the muscle cells causes a voltage change. This change affects sacs in the sensitive calcium channels, and calcium ions are deposited inside the cell. Release of calcium from the sacs causes tropomyosins to move and the region where actin interact with myosin to open. Via this very important process, contraction in the muscle cells can occur as the proteins slide over one another. In their normal state, however, actin fibers are covered with proteins known as tropomyosins.[53] Therefore, the release of calcium ions, via the electrical interaction inside the muscle cells, provides our ability to move.

When a nervous stimulus arrives at the muscle fibers, a chain reaction of complex biological phenomena begins within the cell, releasing the energy the muscle fibers need to contract. When the electrical current reaches a muscle cell and calcium atoms are released, this is transmitted to the DNA. In the relevant sections of the DNA, RNA synthesis takes place where the requisite enzymes* are to be manufactured. In order for this to occur, all the stages of enzyme synthesis, DNA activation, the initiation of RNA production and its transport outside the nucleus must be controlled by enzymes.[54] Finally, ATPaz*, just one of the enzymes produced, carries out the use of ATPs*, and another enzyme ensures that the ATPaz goes to the correct location. Following that, millions of the ener-

***Enzyme: a catalyst protein that initiates and accelerates all vital functions. Enzymes speed up biochemical reactions.**
***ATPaz: the enzyme that accelerates the formation of ADP from ATP.**
***ATP (adenosine triphosphate): the cellular energy molecule used directly by living things to produce biological energy. The ATP molecule is present in large quantities in the muscles. It serves as an emergency energy source to provide power for biochemical reactions.**

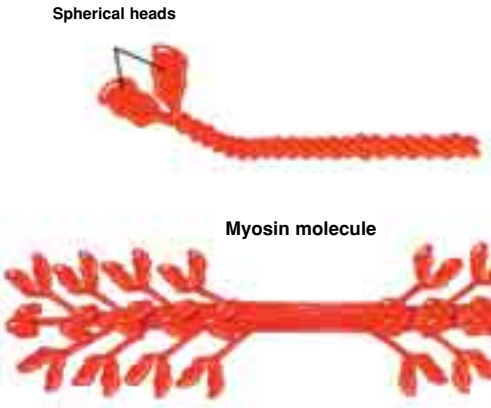
gy packets called ATP are combined with millions of proteins, and contraction occurs as the ATP is used up. In the wake of contraction, ATP is again expended. The calcium ions distributed through the cell are again brought back to fill the sacs. Tropomyosins cover the actins once again, thus preparing millions of muscle fibers for another contraction.

The substance ATP inside the cell turns into ADP* by giving off phosphorus and releasing a significant quantity of energy. However, since this source of energy rapidly becomes used up, the ADP that forms needs to be turned into ATP. When the ATP is formed, there is an attendant release of energy when carbohydrate and fats are oxidized and broken down. In the event that there is insufficient oxygen, then lactic acid form, as the leftover byproduct of oxidation. The accumulated lactic acid and ADP are referred to as "fatigue substances" that impair the ability of the muscle cell to keep on contracting. Performing rapid and heavy actions therefore leads to increased accumulation of fatigue substances in the muscle tissue, depending on the intensity of the work done.

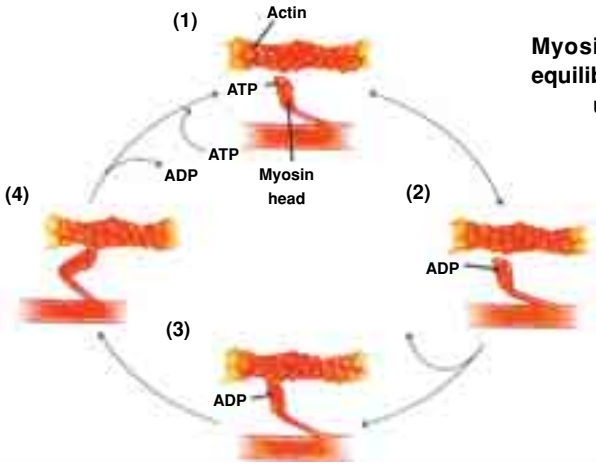
The chemical reactions briefly outlined here actually consist of many complex processes that it would take pages to describe in full. All of these processes, to which only brief space can be devoted here, take place in our bodies without interfering with one another, at high speed and without interruption. Millions of cells play a part in forming the command that will travel from your brain to your finger muscle to make that finger contract. Bearing in mind that thousands of reactions take place in every cell, you can better grasp what a complex, wide-ranging infrastructure is needed for a seemingly elementary task like moving a finger. And during this action, other activities in the body continue without interruption: The heart beats, new blood cells are produced, the eyes transmit images of your surroundings to the brain, the kidneys filter your blood, the lungs exchange CO2-laden air for fresh, the digestive system transmits nutrients into the bloodstream that will provide energy; and countless more vital functions continue to be performed.

ADP (adenosine diphosphate): a compound that forms when a phosphate group leaves ATP.

THE DESIGN IN THE MUSCLES IS JUST ONE OF THE PROOFS OF OUR LORD



The body's ability to move depends upon sufficient electrical force being established in the muscles, and equilibrium in the ligaments and tendons. If the body's nervous system cannot obtain sufficient electrical energy, it becomes impossible to produce signals, and the flow of information to set the muscles into motion does not take place.



Myosin varies from a low-energy equilibrium to high-energy equilibrium by using ATP. When myosin is charged with high-energy equilibrium, it combines with the actin thread and changes towards high-energy equilibrium. This allows actin and myosin fibers to combine with one another; and the myosin later attaches to the actin thread.

Only recently has it become possible to fully understand the perfect design installed by Allah in our bodies. In addition, scientists continue to make new discoveries about the body's marvelous order.

Allah, there is no god but Him, the Living, the Self-Sustaining. He is not subject to drowsiness or sleep. Everything in the heavens and the Earth belongs to Him. Who can intercede with Him except by His permission? He knows what is before them and what is behind them but they cannot grasp any of His knowledge save what He wills. His Footstool encompasses the heavens and the Earth, and their preservation does not tire Him. He is the Most High, the Magnificent. (Surat al-Baqara: 255)

MOLECULES WHOSE IMPORTANCE IS EMPHASIZED WITH PARKINSON'S DISEASE

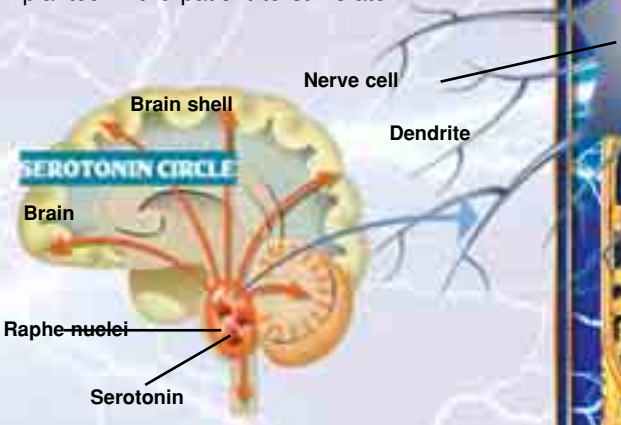
The intensity and length of time the chemical messenger remains at the synapse gap directly influences the communication between two neurons. There is a different mechanism for each chemical messenger. Some messengers are dispersed into their surroundings after handing on the message they bear. Others are broken down by special enzymes. For instance, a special enzyme turns the messenger molecule acetylcholine into choline and acetate.

There is yet another marvelous mechanism in nerve cells. Some of the messengers that transmit the message to the receptor cells are collected again by the providing cell and stored at the synapse for use in subsequent communications. This process is performed by a number of special molecules. For example, the activities of the molecules dopamine and serotonin are regulated in this way. If we consider the great efforts presently being made to recycle waste products, the efficiency of the nerve cells' recycling mechanism can be better understood.

Each stage of this chemical communication depends on the most delicate balances. The messenger molecules employed for every communication, and the proteins and enzymes that serve in the various phases of that communication, are all specifically determined. However, many details of these communications are still unknown.

Parkinson's disease impairs coordination between the muscles, makes movements difficult and causes trembling. The cause of this disease is an imbalance between the messenger molecules dopamine and acetylcholine. Some nerve cells in the brain produce less dopamine than is required, leading to a loss of muscle control. This is a fairly new discovery, and earned Professor Arvid Carlsson the 2000 Nobel Prize for Medicine.

One method employed to treat this disease is the transmission of electrical signals to the brain: Batteries implanted in the patient to stimulate nerves increasingly reduce these cells' insensitivity. In this method, known as Deep Brain Stimulation, DBS, a battery-like device sends electrical signals via one of the 100 billion neurons in the brain and triggers the release of chemicals like serotonin or dopam-

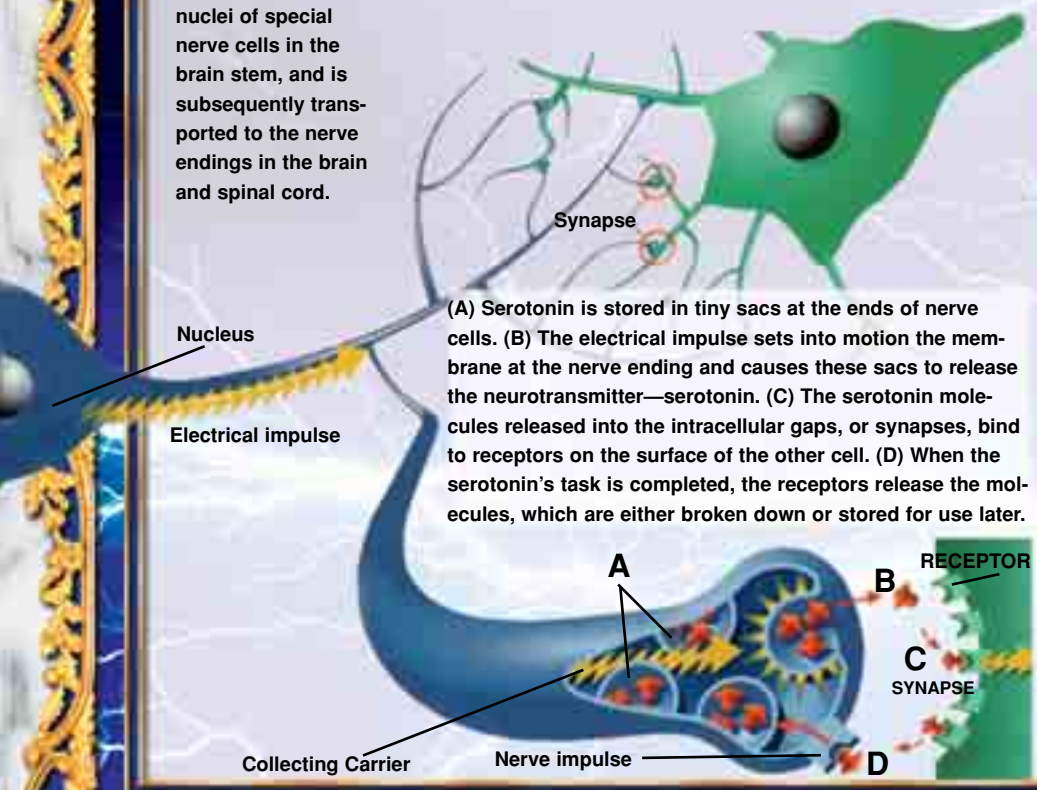


ine. This action encourages neighboring cells to send new electrical impulses to other neurons.

But doctors have to be exceptionally careful when implanting the DBS device. A misalignment of just a few millimeters (a few inches) can result in very different results, such as depression.

But in almost all healthy individuals, this system works to perfection without requiring any intervention as to which molecules are to be released, when and in what quantities. The nerve cells' communication system once again confirms a manifest truth. These delicate balances and complex mechanisms in question cannot have come into being through consecutive chance events. It is Allah, the Almighty and Omniscient, Who creates them, gives them to our service and takes them back when He so chooses.

Serotonin is produced in the Raphe nuclei of special nerve cells in the brain stem, and is subsequently transported to the nerve endings in the brain and spinal cord.



(A) Serotonin is stored in tiny sacs at the ends of nerve cells. (B) The electrical impulse sets into motion the membrane at the nerve ending and causes these sacs to release the neurotransmitter—serotonin. (C) The serotonin molecules released into the intracellular gaps, or synapses, bind to receptors on the surface of the other cell. (D) When the serotonin's task is completed, the receptors release the molecules, which are either broken down or stored for use later.

The Body's Data-Perception Network

A magnificent data-perception network permits the muscles to function properly. In order to perform any coordinated action, it is first essential that the positions and interrelations be known of all the organs concerned. This information comes from the eyes, from the inner ear, and from perceptions in the muscles, joints and skin. Billions of units of information are processed and analyzed every second, and new decisions taken accordingly.

The muscles and joints contain billions of tiny micro-receptors, whose messages reach the central nervous system and in the light of the analyses carried out in the nervous system, new commands are given to the muscles. Even when you want to wave to a friend, wide-ranging calculations, comparisons and intense communications all enter your decision to raise your hand. The sequential contraction and expansion of your tricep and bicep muscles, those muscles forward of your elbow that turn your wrist, and the muscles that control your hand and fingers—all are essential. At every stage of this movement, millions of receptors inside the muscles inform the brain of their position. The following instant, the brain tells your muscles exactly what to do next.

The brain stem, working together with the cerebellum, provides the vital support systems in our bodies and also regulates the contraction of some smooth muscles. Thanks to

these two organs, we can control our muscles while still remaining totally unaware of doing so. We regulate the pressure with which we clench our jaws, how forcefully we tread while walking, or the speed at which we will beat an egg—easily and the flawless coordination. If you consider the countless movements we perform every day without ever calculating them, you can better appreciate the special system we have been provided with. Thanks to the electrical design in your body, you can carry out all the infinite number of movements you perform throughout the day, such as getting up and washing your face in the morning, combing your hair, putting on your slippers, using a knife and fork, turning the key in the lock when you leave for work, holding a pen, when speaking on the telephone, even smiling and closing your eyes before going to sleep.

In order to lift a spoon to your mouth, you need to bend your arm in the direction of your mouth. After the brain has made that decision, it sends a signal to contract to the muscles that will bend the arm. But before that signal reaches your arm, it's transferred to nerve cells in the spinal column, where electrical circuits perform a number of tasks.

First, they send a signal to the arm muscles. At this point, however, in order for the biceps to bend, the triceps muscles at the back of the arm also have to relax. Thus while sending a message for the biceps to contract, the circuits in the spinal column also send a message to the muscles that open your arm. Therefore, your arm approaches your mouth.

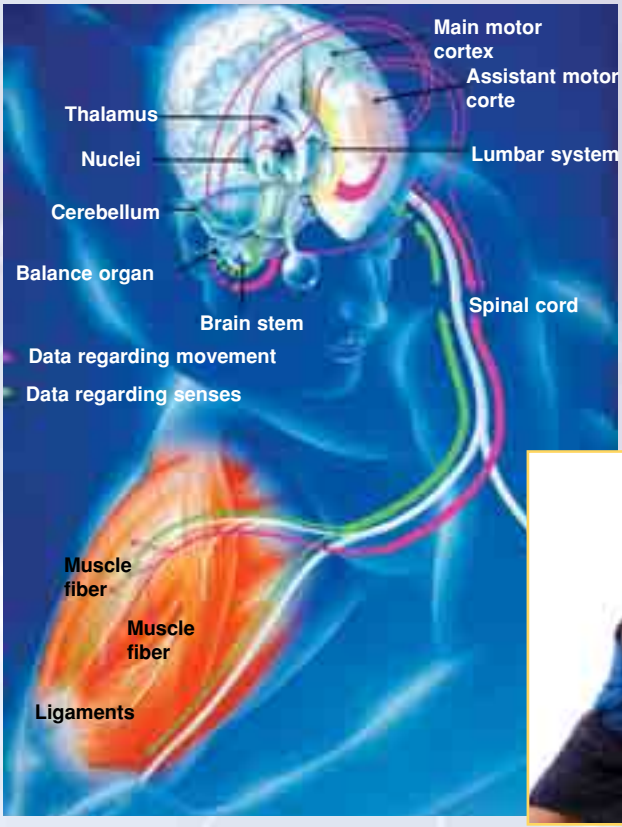
These systems, over which we have no control whatsoever, are a reminder that we live in constant need of our Lord, **"Allah is Rich Beyond Need"** (Surah Luqman: 12) and one **"has power over all things."** (Surat al-Baqara: 20)

As revealed by our Lord in the verse **"We will show them Our Signs on the horizon and within themselves until it is clear to them that it is the truth"** (Surah Fussilat: 53), rational individuals will see the might and knowledge of Allah in every detail they see.

Your god is Allah alone, there is no god but Him. He encompasses all things in His knowledge. (Surah Ta Ha: 98)

THE COORDINATION IN OUR BODIES IS AN EXAMPLE OF CREATION

The brain receives messages from receptors all over the body, informing the brain about the position of the arms, legs and all other parts of the body. The brain analyzes this data in order to regulate movement. As a result, you are able to bend over and brush your hair without losing balance and falling over. There are also receptors inside the muscles and tendons, sending the brain messages about the extension of the muscles and the tension in the tendons. The brain uses this information to tell whether a limb is bent or straight. Sometimes the brain determines the body's position by analyzing commands sent to the muscles. This monitoring system is employed during the process of vision, for instance. Since the eye muscles are in constant motion, the images formed on the retinas are constantly changing place. Yet that is not the case with the image we actually perceive, because as the brain analyzes the image on the retina, it also takes into account the instructions it has issued to the eye muscles. This system is just one of the examples that demonstrate the design perfection created in our bodies by Allah.

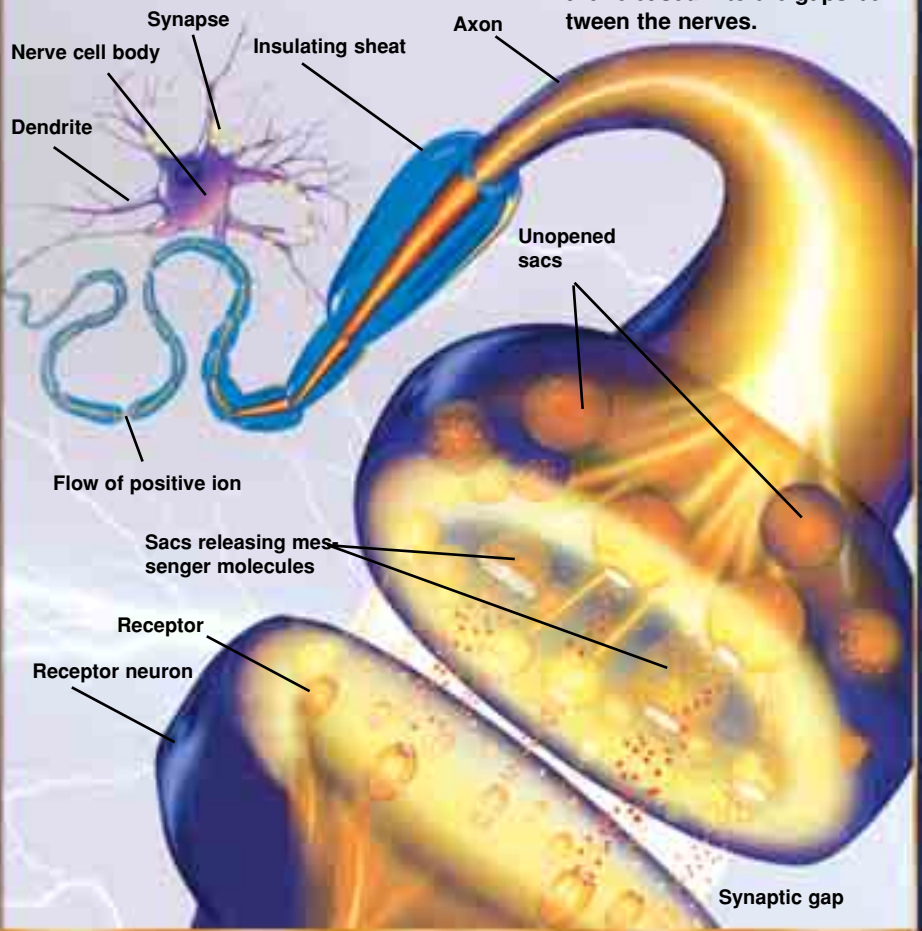


In order for any movement to take place, complex communications take place between the brain and muscles. The fact that cells can recognize and communicate with one another is a sign of intelligent creation.

MUSCLE MOVEMENT, AND THE ORDER IN THE ACETYLCHOLINE CHANNELS

A muscle contracts when the nerve leading to it is stimulated. The stimulus traveling along the nerve triggers the secretion of the messenger molecule acetylcholine, which diffuses in the space between the nerve and the muscle cells and attaches to the acetylcholine receptors in the cells' membrane. This causes the ion channels in all the receptors to open, allowing the electrical current to continue along the muscle cell membrane, resulting in muscle contraction. One way of halting these events is to use a substance that blocks the acetylcholine receptors, a method used by certain venomous animals to induce paralysis.

The electrical signal sets in motion the small sacs at the nerve endings. The messenger molecules in these sacs are released into the gaps between the nerves.



Calcium: One of the Minerals Necessary for the Body's Electrical System

Calcium performs a great many vital functions. For example, every cell in your body, especially those in the heart, nerve and muscle cells, requires calcium in order to function normally. The presence of calcium is essential for nerve communications and the regulation of the heartbeat. Calcium also plays a role in the contraction of smooth muscles and in blood clotting. In the absence of calcium, messages will not reach the nerves. Since no external stimulus is transmitted to the nerves, the brain cannot perceive it, and feeling is lost as a result. This results in a person becoming completely paralyzed or the internal organs failing to function, which in turn can spell death. Were it not for calcium, then blood would fail to clot; respiratory functions would cease due to serious muscular contractions, and the rhythm of the heartbeat would be impaired. Generally, we seldom consider whether the body needs such an important mineral. Indeed, you have no idea of the level of calcium in your body during the course of daily life, and cannot calculate your own calcium requirements. That is because our cells have been created with the ability to perform these complex monitoring processes automatically, instead of us having to do them.

There are up to 2 kilograms (4.41 lbs) of calcium in the human body. But only 1% of this is used in essential processes, the rest being stored in our bones. This storage system, which responds to our needs, safeguards the excess for use where necessary without our being aware of it, is just one of the signs of the mercy of our Lord, Who created the human body with very special designs, right down to the most minute detail.

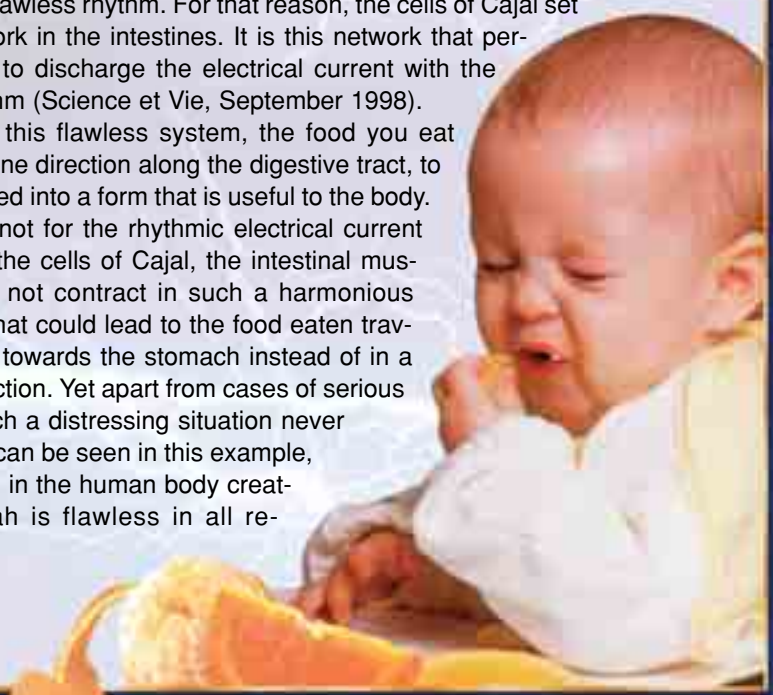
ELECTRICAL ORDER IN MUSCLES OF THE DIGESTIVE SYSTEM

Every detail in the human body, from a single cell to the hormones it secretes, reveals proofs of Allah's magnificent creation. Examining the features of the digestive system, for instance, we see that the components necessary for the digestion of foodstuffs all possess the most complex structures. And all these components are in constant communication with one another, know when they need to go into action, and can perform all the processes necessary to make nutrients beneficial to the body and for harmful substances to be weeded out.

Different mechanisms allow foodstuffs to travel along the digestive tract. The smooth muscles in the intestines contract involuntarily, and thanks to these muscles' rhythmic contraction, nutrients always progress in a single direction. A team led by Jan D. Huizinga, Ph. D., a researcher for Intestinal Disease Research Program, from McMaster University in Canada, studied the cells that permit this single-direction movement. In their research they located micro-electrodes along the digestive tract. These micro-electrodes determined that the interstitial cells of Cajal set up a constant and regular electrical current, which permits muscles in the intestinal wall, laid out like the links of a chain, to contract one after the other.

On its own, however, the flawless formation of an electrical current is not enough for this mechanism to function. At the same time, the current needs to have a flawless rhythm. For that reason, the cells of Cajal set up a network in the intestines. It is this network that permits them to discharge the electrical current with the same rhythm (Science et Vie, September 1998).

Thanks to this flawless system, the food you eat travels in one direction along the digestive tract, to be converted into a form that is useful to the body. Were it is not for the rhythmic electrical current set up by the cells of Cajal, the intestinal muscles could not contract in such a harmonious manner. That could lead to the food eaten traveling back towards the stomach instead of in a single direction. Yet apart from cases of serious illness, such a distressing situation never arises. As can be seen in this example, the system in the human body created by Allah is flawless in all respects.



THE BRAIN: OUR MATCHLESS COMPUTER THAT INTERPRETS ELECTRICAL SIGNALS

You see everything going on around you, can easily distinguish sounds from one another, and can recognize flowers that you first smelled in early childhood. You immediately feel pain when you prick your finger with a needle, feel chilly in low temperatures, and sweat when it is hot. You depress the clutch pedal with one foot when driving and at the same time, turn the steering wheel with one hand while changing gears with the other. You tap your fingers to the beat of the music you're listening to, while chatting to the person in the passenger seat. As you speak, you also listen to the other person and try to frame logical replies. At this point, a number of details from the past may enter your mind, and remembered images are conjured up before you. All the while, you still clearly perceive many surrounding details around you. Indeed, even while you are performing all these actions, if another vehicle suddenly pulls out in front of your car, you immediately stamp on

the brakes while not losing control of the steering wheel.

The processes needed for all this to take place are under the control of the brain, the main management center. From the moment we are born, it identifies all that we need in order to survive. It plans, organizes and makes the necessary adjustments so that these goals can be fulfilled, then issues commands to have them carried out, without the slightest error.

While performing all these functions, the brain works as the body's control center at two levels, the first of which covers the activities we perform consciously, such as walking, reading and learning things by heart. The other includes the unconscious activities that we cannot con-

The sprinkler system used as a precaution against fire sends an electronic signal to the fire department.

The rising temperature in a fire initiates a signal in the smoke alarm.

Just like the brain in the body, the department analyzes the incoming alarm signals and reacts accordingly.

Instructions are issued to fire engines, and these are dispatched to wherever they are needed.

The nervous system may be compared to a fire department's emergency center. When a signal reaches the center, it analyzes the information, and ensures that systems go into action by issuing instructions.

The fire-fighting teams head for the site and reacts in a coordinated manner to the original alarm.

trol, such as heartbeat, respiration and the digestion. The brain automatically directs all these latter activities at every moment, rather like an automatic pilot.

In addition, events constantly take place in our bodies of which we are sometimes unaware. Thanks to signals coming from nerves at every point in the body at once, you can perceive the shape of the chair you are sitting in and the temperature of the air around you and see and interpret hundreds of other such details. Even a breeze touching the back of your neck is transmitted to the brain as a sensation with the same flawlessness and timing. Consider the tasks of the brain by assuming that millions of people want to give you information and ask you questions, all at the same time. Each of these questions requires a separate field of expertise, and incorrect answers could result in serious illness or even death. Also, you have to respond in less than a second. Furthermore, what is doing the responding is a piece of tissue consisting of unconscious fats and proteins. Therefore, it is not enough to say that your brain does everything, no matter how perfect a structure it may possess. A Creator, possessed of superior intellect and knowledge, inspires these duties in our brain and creates it with the features necessary to carry them out. That Creator is Almighty Allah, Lord of us all.

The brain's cells undertake tasks requiring consciousness and intelligence through the inspiration of Allah, and carry them out to the letter. Allah's dominion over His creations is revealed in these terms in one verse:

He directs the whole affair from heaven to Earth. (Surat as-Sajda: 5)

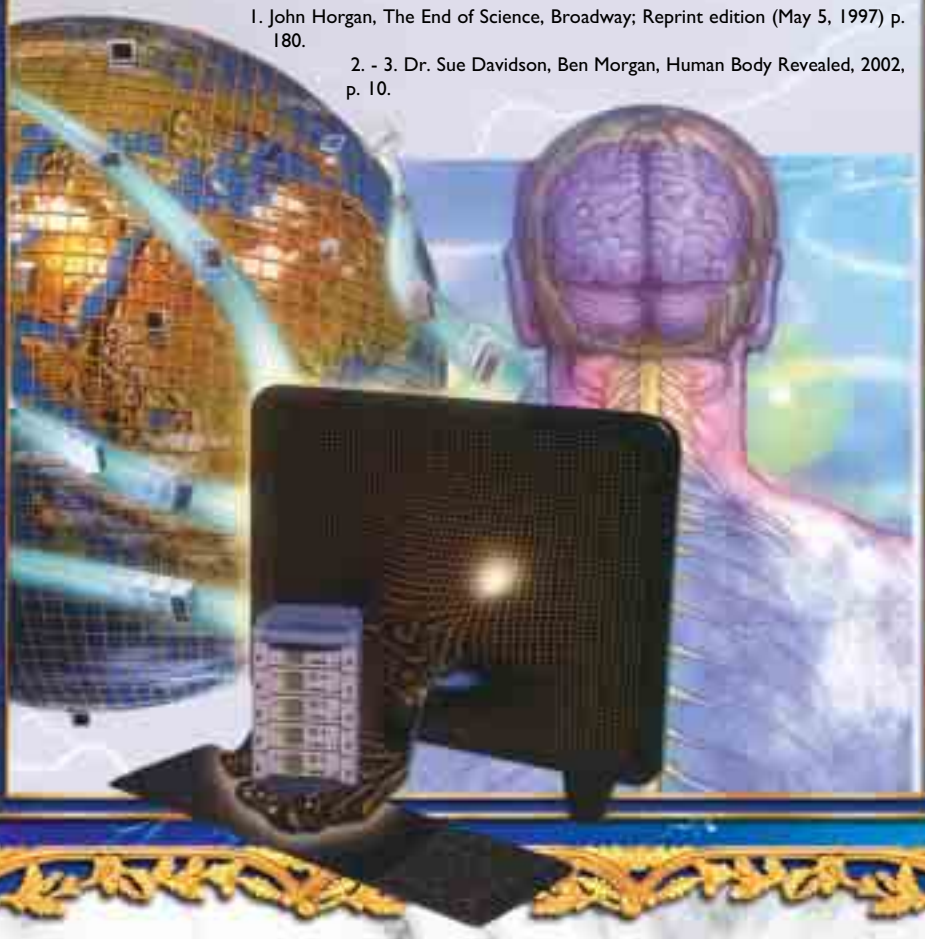
THE WORLD'S MOST COMPLEX NETWORK IS IN OUR BRAINS

The Internet, which may be regarded as the communications miracle of the 20th century, permits countless users to connect to one another by computers and communicate instantaneously. After the message you send from your computer has been encoded in a separate language, it is transmitted electrically along the cables to the receiver's computer. You can examine information reaching you from all over the world without leaving your chair, and can forward every single piece of it.

Your brain uses your body's more than 100 billion nerve cells, which cover an area of 250,000 square millimeters (2.691 square feet), just like computers in constant communication over the Internet. However, as John Horgan stated in his book The End of Science, "Even a system like the Internet is absolutely trivia compared to a brain."[1] That is because every one of these more than 100 billion nerve cells possesses around 100,000 connections.[2] Every second, trillions of electrical signals are transmitted between neurons at a speed of 400 kilometers/hour (248 miles/hour), traveling along pathways reminiscent of a labyrinth.[3]

1. John Horgan, The End of Science, Broadway; Reprint edition (May 5, 1997) p. 180.

2. - 3. Dr. Sue Davidson, Ben Morgan, Human Body Revealed, 2002, p. 10.



The Flawless Communications Infrastructure of Our Brains

The 100 billion cells in the brain and their extensions can be compared to a network that pervades every point in the human body. This network collects messages arriving from all over the body and forwards them to the brain, establishing flawless communication between brain and body. Thanks to this link, there is never any interruption inside the nervous system. And again thanks to this flawless structure, you can easily adjust the dials on the car radio while driving, as well as maintaining control over the steering wheel. You do not hit any oncoming vehicles, despite performing several tasks at once. You can also understand every word being spoken on the radio, and carry on a conversation from where you left off. In short, thanks to the brain's extraordinary capacity, human beings are able to perform several tasks at the same moment.

Every neuron inside an adult's brain is connected to around 100,000 nerve extensions. There are some 100 trillion of these, which permit the great harmony in the brain's functioning.[55] While city planners still find it difficult to find a solution to traffic congestion, there is never any confusion in the communications among the 100 billion neurons. Professor of Biochemistry Michael Denton describes the magnitude of the brain's

The human brain is a very complex creation, with a great many nerve cells connected to one another via a great many links.

communications network with this analogy:

> Numbers in the order of 1015 are of course completely beyond comprehension. Imagine an area about half size of the USA (one million square miles) covered in a forest of trees containing ten thousand trees per square mile. If each tree contained one hundred thousand leaves, the total number of leaves in the forest would be 1015, equivalent to the number of connections in the human brain![56]

In her book *The Human Brain*, Oxford University Professor of Pharmacology Susan Greenfield, an expert in the field of neurochemistry, touches on the number of neural connections:

> If we took a piece of brain the size of a match head alone, there could be up to a billion connections on that surface. Consider just the outer layer of the brain, the cortex. If you counted the connections between neurons in this outer layer at a rate of one connection a second, it would take thirty-two million years. As for the number of different combinations of connections in the cortex alone, it would exceed the number of positively charged particles in the whole universe! [57]

In order to grasp the magnitude of these numbers, which stretch far beyond the bounds of the imagination, we can cite a few examples from astronomy: There are around 100 billion stars in the Milky Way, and the number of galaxies in that part of the universe we can observe is around 100 billion. But even these numbers fail to equate to the number of connections among the cells in the brain.

Isaac Asimov, biochemist and author, states how there can be no evolutionary explanation for this structure:

> . . . in man is a three-pound [slightly more than a kilogram] brain which, as far as we know, is the most complex and orderly arrangement of matter in the universe. How could the human brain develop out of the primeval slime?[58]

In order to conceive of the magnitude of the number of nerve cell interconnections in the brain, the Amazon rain forest can provide an appropriate analogy. These forests extend over an area of 7,800,000 square kilometers (3,011,596 square miles) and contain around 100 billion trees.

The number of connections between the neurons is much greater than all the leaves on the trees in the Amazon rain forest. If those 100 billion neurons send a signal in just 1/10 of a second, the density of the chemical and electrical activity that arises still shows the extraordinary nature of the brain. If only 10% of the 100 billion neurons transmit a signal at any given moment, the intensity of the chemical and electrical activity that results shows its extraordinary nature.[59]

On the other hand, the area covered by the brain is remarkably small to contain such a detailed network. Richard Dawkins, one of the most prominent adherents of the theory of evolution, compares the neurons in the brain to transistors and offers the following analogy about the area taken up by neurons in the skull:

> But the individual neuron is a much more sophisticated data-processing unit than the transistor. Instead of three connections with other components, a single neuron may have tens of thousands . . . there are some ten thousand million neurons in the human brain: you could pack only a few hundred transistors into a skull.[60]

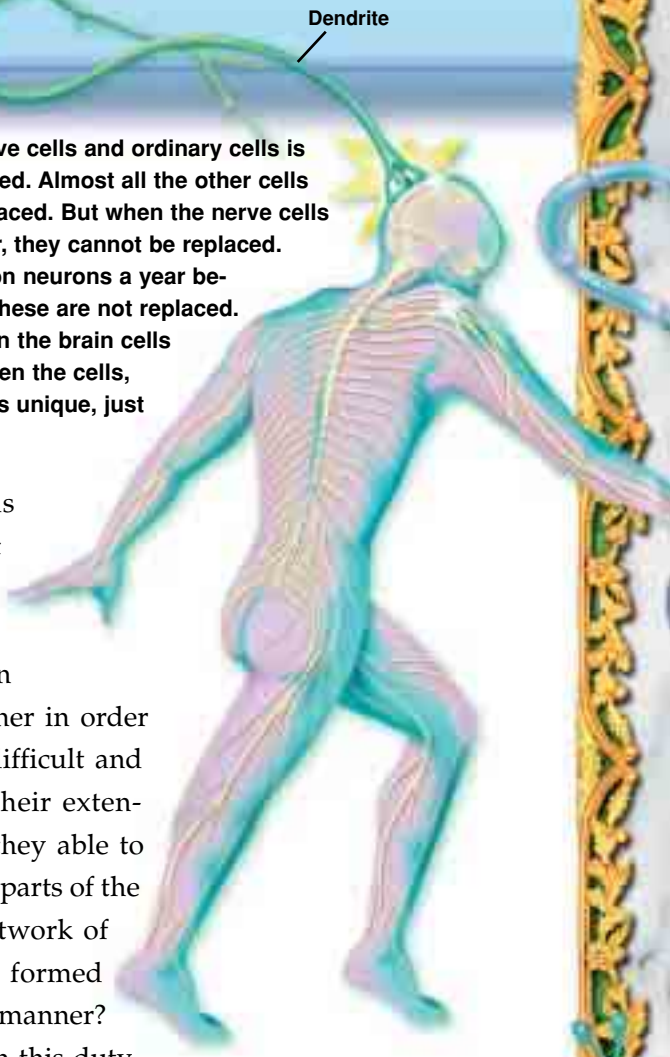
In every brain cell, there is a system consisting of tiny connections in a small surface area that can transmit hundreds of

messages at a speed of 100 meters (328 feet) a second and that never forgets, becomes confused or causes delays. In addition, in order to be able to transmit messages, these nerve cells possess large numbers of extensions known as axons and dendrites, which undertake responsibilities depending on their lengths. For instance, while one axon transmitting a message from the spinal column to the big toe is 1 meter (3.2 feet) long, an axon extending from the eye to the brain is only 5 centimeters (1.97 inches) in length. Each one of the billions of axons and dendrites extend to the length needed to reach the region where a message must be conveyed, and then stops when it reaches a sufficient length. Had these extensions been random and haphazard instead of controlled and conscious, then you could never perceive your surroundings or react to them in an appropriate manner.

For example, if the neural extension leading to your fingertip were too short, then you would have no feeling in that fingertip, and might not withdraw your finger from a hot stove in time to avoid a serious burn.

Furthermore, each one of these 100 trillion connections is in exactly the right location. If any one was in the wrong place, the consequences might be very serious indeed; and it might not be possible for vital functions to continue. Yet nothing of the sort actually happens. Except for the case of rare diseases, trillions of miraculous processes take place in your body, one after the other, and seem perfectly natural to you.

Darwinists, on the other hand, maintain that nerve cells and the connections between them came into being by chance. According to their claim, 100 billion of the 100 trillion cells in the body in some way adopted the form and properties of nerve cells, and used 100 trillion connections to bind themselves to one another in a flawless manner. Moreover, not one of these 100 trillion connections headed in the wrong direction. These Darwinists' claims are even more illogical than suggesting that the electricity network of a large city like New York came into being one night as the result of a powerful thunderstorm, and became connected up to every single apartment. The existence of a Superior Power that

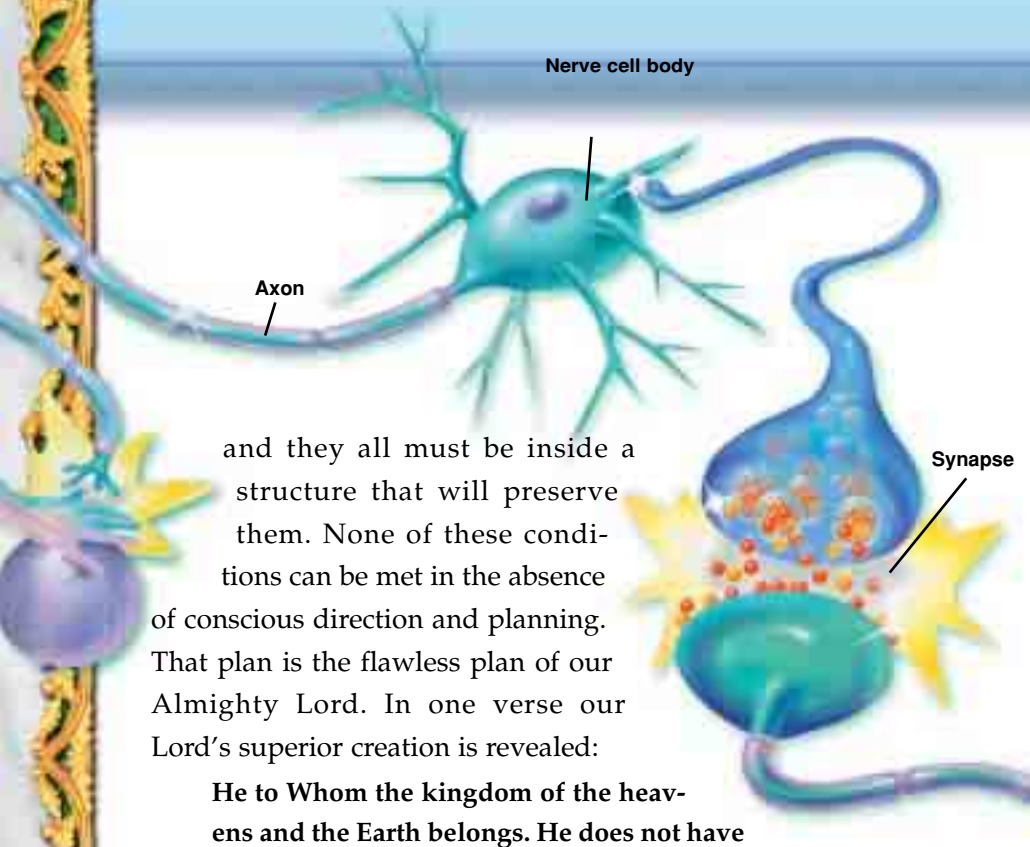


One difference between nerve cells and ordinary cells is that the former are not renewed. Almost all the other cells in the body can divide and be replaced. But when the nerve cells in the brain are damaged, however, they cannot be replaced. Therefore, a person loses 18 million neurons a year between the ages of 20 and 70, and these are not replaced. Since every action leaves a trace in the brain cells and affects the connections between the cells, every individual's brain structure is unique, just like a fingerprint.

constructed and controls this system is self-evident. That power is Allah, the Creator of us all.

How did 100 billion nerve cells combined together in order to carry out thousands of difficult and vital processes? How did their extensions form, and how were they able to receive reports from different parts of the body? How could a giant network of 100 trillion connections have formed in such a perfect and flawless manner? And how can cells accomplish this duty of such incomparable sensitivity every second? These questions pose major dilemmas for Darwinists, who refuse to accept the fact of creation.

For us to lead healthy lives, these countless connections in the brain must have been established without the slightest imperfection. The least breakage or error among them could lead to innumerable diseases. For a human embryo, which grows by the division from a single cell, to implement such a complex design, each cell needs to be in the correct place. The right connections have to be built between cells,



and they all must be inside a structure that will preserve them. None of these conditions can be met in the absence of conscious direction and planning. That plan is the flawless plan of our Almighty Lord. In one verse our Lord's superior creation is revealed:

He to Whom the kingdom of the heavens and the Earth belongs. He does not have a son and He has no partner in the Kingdom. He created everything and determined it most exactly. (Surat al-Furqan: 2)

The Essential Nature of Our Bodies' Communication Network

Due to the magnificent communication carried out by the brain and nervous system, your fingers can feel the page you are holding. You see everything around you in the form of bright and flawless three-dimensional images, and hear even sounds coming from a distance. The mechanism that gives rise to the sensation of burning when you scorch your hand is just one of the

trillions of connections leading from your hand to the relevant region in the brain. Were you not to feel that discomfort, no doubt your hand would suffer severe injury. These connections from your nerve cells turn even the touch of a feather into an electrical signal and transmit it to the brain. That is why you are able to see every detail around you, feel everything that touches you, and why you feel hunger, thirst and pain. It is quite impossible for any human to build such an error-free and rapid mechanism artificially. Yet the nervous system carries out all its functions in the same perfect manner in billions of human beings.

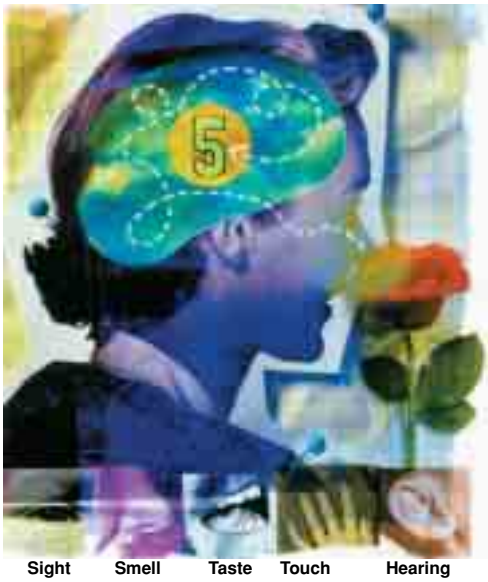
The axon—the extension of the nerve cell discussed in the previous chapter— may be compared to a long tube surrounded by a membrane. Everything to do with message transmission takes place in this axon membrane, just 1/100,000th of millimeter (0.0000039 of an inch) thick. There are very different molecules in the fluid inside the axon membrane and in the fluid outside. This tiny extension that transmits data is a tube filled with liquid protein and potassium. How does chemical substance receive and transmit data from the outside, in a flawless perfect manner, to exactly the right region, at the right time? No doubt this system is an indication of creation.

In this chemical liquid is carried every detail that permits you to determine that the chunk of ice you are holding is actually ice—such as its coldness, wetness, slipperiness and the way it melts. The single neural connection perceives this information and transmits it within this chemical mixture. But how does this liquid know that it needs to transmit this information to the brain? If there were no conscious control system here, then the information might perfectly well head not for the brain, but for the liver or stomach. The dendrite extending to the eye might be too short or too long, the neural networks could become mixed up with one another, or the messages to be transmitted could be overlooked. But except in cases of illness, none of these errors ever arises. Thanks to this complex mechanism—which has not yet been fully understood even with today's technology—information is transmitted, completely and at exactly the right time, at a speed of 380 kilometers (236 miles) an hour.

The Brain: The Headquarters That Runs on Electricity

No matter in what form the information may be—data regarding taste, touch, smell, sound or sight—to transmit it, the body always encodes it as electrical signals. When these signals reach their target, any nerve or muscle fiber, they give rise to a chemical change, which in turn causes the formation of a sensation, or a movement or facial expression through muscle contraction. The way that such a system establishes such rich, wide-ranging communications reveals the perfection in our nervous system.

The brain regulates and monitors the body by using electrical energy. Indeed, everything that you see, feel, imagine or remember constitutes a world made up of electrical signals. The brain is where everything you know about yourself and your surroundings comes into existence. The entire universe and everything in it, everyone you know and every detail about them are all determined in your brain. The brain is sovereign over every outward detail and over every point in your body, thanks to the design created by Allah.



Complex activities take place inside the brain, silently and without causing us any disturbance. If the brain made noise when it worked, like a car engine, or if its every function caused us discomfort like an overworked muscle pain and distress . . . Yet by the mercy of Allah, this never happens.

As the brain fulfils all these functions, the fundamental resource it uses is electricity, thanks to which, information and commands jump from one brain cell to another. In your brain, there is sufficient electricity to power a 15 to 20 watt bulb. Thanks to that

The human brain, the body's control center, consists of billions of nerve cells. When working at high capacity, these cells use one-fifth of the blood pumped by the heart, despite representing only 2% of the body's weight. Blood carries the oxygen and sugar the nerve cells require in order to produce electrical impulses. The brain consumes the oxygen and sugar in the blood ten times faster than other tissues when the body is at rest. If the brain is deprived of blood for more than five minutes, its cells start to die.

energy, the brain communicates with all other parts of the body, sends them commands and interprets the electrical messages arriving from them.[61] Not only the cells in the brain, but all the cells in the body produce and run on electricity.[62] The daylight reaching your eyes, the images on the television, the music played on the radio, the way you tap a rhythm out with your fingers and the expressions that appear on your face—all set a series of electrical vibrations in motion.

So how does this electricity production take place?

The voltage that carries signals from one neuron to another is generally very small (tens of millivolts), and these signals travel at a speed of 100 meters (3,937 inches) per second, or two hundred miles an hour.[63] Neurons can activate to produce a signal once every five milliseconds (1/1000th of a second).

The brain performs all its functions by use of the nerve cells known as neurons, as described earlier. Brain cells, no different in terms of their chemical constituents from cells in the hand, foot or skin, exchange in-

formation about the entire body by using electrical energy as a language among themselves to transmit all the necessary messages and information belonging to the body.

Despite all our scientific advances, this special design in the brain still remains largely a mystery. Evolutionist scientists despair when faced with the human mind and the functioning of the brain. Two evolutionists express their thoughts concerning the brain in the book *Signs of Life:*

> The human brain is the most astonishing and mysterious of all known complex systems. Inside this mass of billions of neurons, information flows in ways that we are only starting to understand. The memories of a summer day on the beach when we were kids; imagination; our dreams of impossible worlds. Consciousness. Our surprising capacity for mathematical generalization and understanding of deep, sometimes counter intuitive, questions about the universe. Our brains are capable of this and much more. How? We don't know: the mind is a daunting problem for science.[64]

Nerve cells possess many of the same properties as other cells, but exhibit one extremely important difference: They process data. Their ability to process information depends on characteristics peculiar to the nerve cell membrane, which controls those substances (sodium, calcium, potassium ions) to be taken into the cell. Since ions are electrically charged, these particles' movement in or out through the cell membrane gives rise to a number of electrical changes within the cell. A nerve signal is the transmission of this electrical change arising along the neuron membrane.

No doubt that the electrical transmission of data and the performance of any action by means of electricity are signs of a superior knowledge. The matchless technology in the body demonstrates the existence of a single Creator possessed of that knowledge. Our omniscient Lord is He Whose might is sufficient for all purposes, as is revealed in the Qur'an:

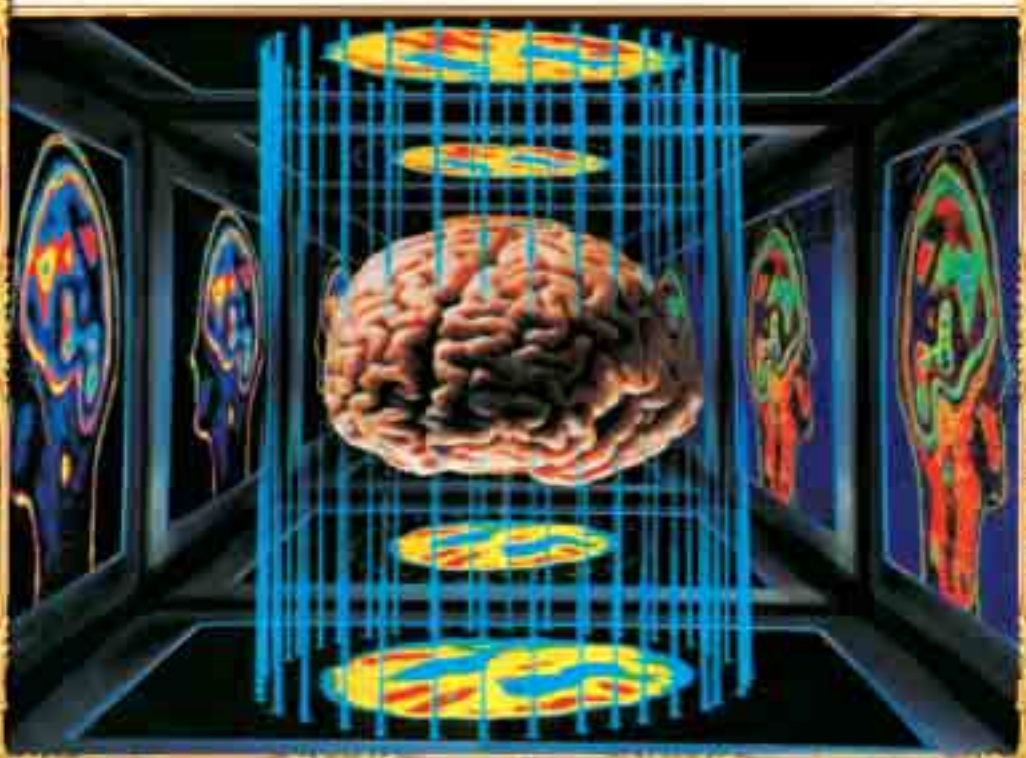
> **Does He Who created the heavens and Earth not have the power to create the same again? Yes indeed! He is the Creator, the All-Knowing. His command when He desires a thing is just to say to it, "Be!" And it is. Glory be to Him Who has the Dominion of all things in His Hand. To Him you will be returned. (Surah Ya Sin: 81-83)**

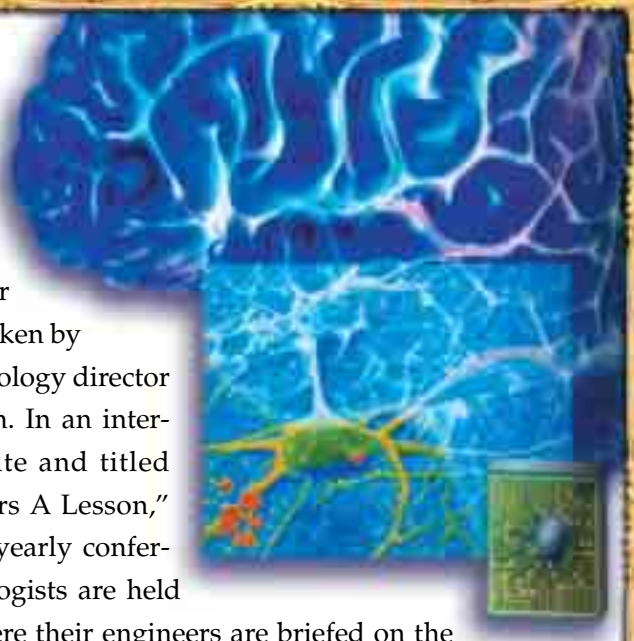
A Processing Capacity More Advanced Than the Most Highly Developed Technology

The processing capacity in our brains reveals a superior communication that no computer can match. The processing capacity of the human brain has been calculated to be equivalent to the total capacity of a thousand of the most advanced computers.

> … [T]he brain holds at least 1014 bits (binary digits) of information. Actually, it is a much greater number, since the neurons also show intermediate firing states, somewhat like a light-dimmer switch. Consequently, the brain shows both digital and analog characteristics. At any given moment, perhaps 10% of the brain cells are firing, at a frequency of about 100 hertz. This implies a rate of 1015 signals or computations every second. For comparison, the Cray-2 supercomputer's speed is 109 computations per second, with a storage capacity of 1011 bits. Thus, the storage capacity of this supercomputer is 1,000 times less than that of the human brain.[65]

This comparison clearly shows how much more advanced the hu-





man brain is over present-day technology. One striking dramatization of the brain's superior design is a project undertaken by Dr. Kerry Bernstein, technology director of the IBM computer firm. In an interview carried on a website and titled "Brain Teaches Computers A Lesson," Bernstein describes how yearly conferences attended by neurologists are held at IBM headquarters, where their engineers are briefed on the design in the brain. Bernstein also states that it is impossible to replicate the brain's functioning exactly:

> That makes it [the brain] exponentially more efficient than the fastest computer. The reason is because of something that we can't do in electronics. It's this notion of massive parallelism. Meaning one bit of data can spread to 100,000 other neurons. [66]

In short, Bernstein says, it is impossible to electrically imitate the brain. Michael Denton, the molecular biologist known for his works demonstrating the invalidity of the theory of evolution, says that even using the most complex technology, it would take the best engineers forever, to design an object even slightly resembling the brain.[67]

Martin S. Banks, a professor of optometry (the measurement of visual impairments) and psychology at California (Berkeley) University, says the following about its efficient functioning:

> The brain is efficient in that it doesn't waste energy maintaining information that it will not likely need in real life.[68]

A computer's electronic components are arranged in order to perform specific tasks. Even if we do not witness its being constructed, it is still clear that the computer was designed by an engineer with its functions in mind. No one can claim that these components combined together haphazardly. But the brain is a marvel of design, with a process-

ing capacity far greater than a computer. Therefore, considering this design, we can realize that the brain has a Designer with great breadth of knowledge. Every stage in the creation of Man is an example of the infinite knowledge of our Lord, a manifestation of His words in the Qur'an, "We may make things clear to you" (Surat al-Hajj, 5). This is revealed further in verses:

> **O Humanity! If you are in any doubt about the Rising, know that We created you from dust then from a drop of sperm then from a clot of blood then from a lump of flesh, formed yet unformed, so We may make things clear to you. We make whatever We want stay in the womb until a specified time and then We bring you out as children so that you can reach your full maturity. Some of you die and some of you revert to the lowest form of life so that, after having knowledge, they then know nothing at all. And you see the Earth dead and barren; then when We send down water onto it it quivers and swells and sprouts with luxuriant plants of every kind. That is because Allah is the Real and gives life to the dead and has power over all things. (Surat al-Hajj: 5-6)**

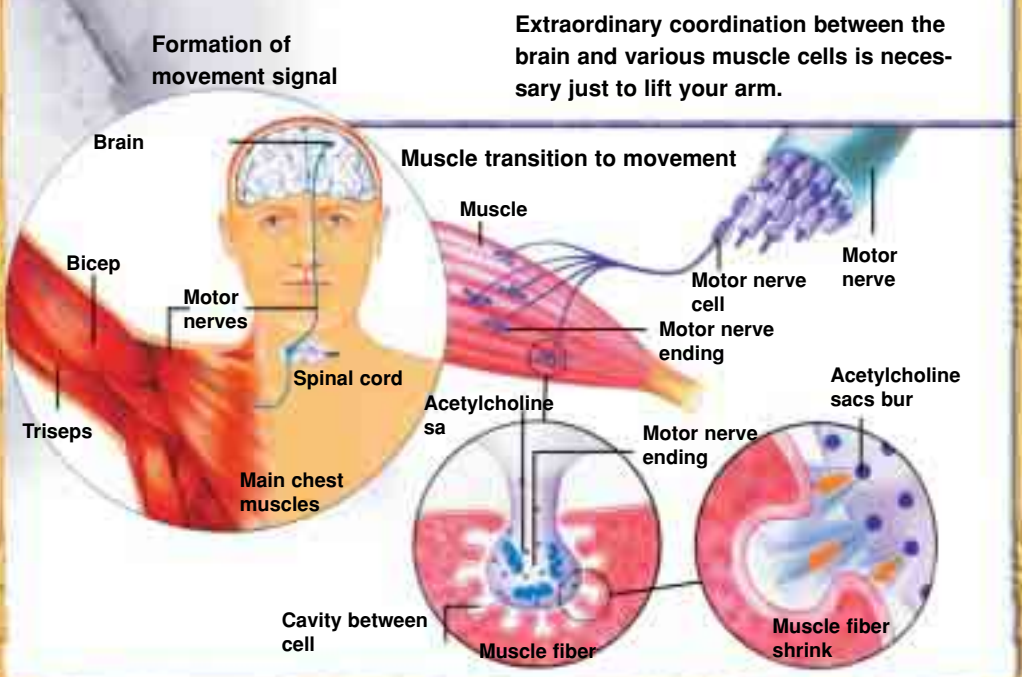
The Brain's Parallel Data-Processing Ability

The brain's activities are controlled by electrical currents and chemicals. In this system, millions of different processes operate in parallel to one another. You can wiggle your fingers and toes at the same time, extend both your arms and then rotate them in different directions, and move your head first to the right and then to the left, while humming a tune at the same time. Even while you manage all of this easily, the complexity of the processes being carried out in each of your muscles would fill many volumes. For example, the way that you can read the words on this page is made possible by signals from the optic nerve being processed simultaneously in the nervous system.

For every action and thought, signals travel along the nerve axons extending from the brain to the muscles. Sodium channels in the axon membranes open and close; sodium and potassium pumps regulate the

electrical energy balance in every cell membrane. Signals are deposited at the synapses at the ends of the axons, and the neurotransmitters permit communication between the axons. Muscle fibers, on the other hand, perform the joint action of a million connections making five circuits a second. In this way the necessary power is produced for you to tense your arms, move your head from right to left, hum a tune and wiggle your fingers and toes. The relevant muscles are permitted to contract, but neither too much nor too little. The way that these can all be carried out in great harmony simultaneously is of vital importance, even if many are unaware of that.

About to cross the street, you turn your head to check the traffic, step forward with your leg muscles, and analyze the time it will take approaching cars to reach you. You



then turn your head to check the traffic coming from the other direction.

And at that point, you hear a familiar voice, one you recognize, from across the street. You compare that voice with records in the other regions of your brain. The face, identity and name of the speaker all come into your mind together. Adjusting the tension in your vocal cords and the shape of your lips, you call that person by name. You wave a greeting with your hand, while crossing the street safely, and then shake the person's hand.

Thanks to your brain's ability to process parallel information, you can perform all these actions at once. The brain does this millions of times a day while you are awake, without your giving any special consideration to how all this comes about.

When you are cold and feel that the air has become chilly, several of your organs are affected by this change. A series of activities spontaneously go into action. Tiny pores in your skin and the outermost blood vessels contract. The muscles tremble, helping maintain normal body temperature by increasing heat production.[69] In order for all these different functions to combine in harmony for a common purpose, a command center needs to initiate them. That center is our brain. However, as we have stressed throughout, this extraordinary capacity cannot be the work of a piece of tissue. It's through Allah's creation that the brain can perform its millions of actions at the same time, in a flawless coordination. Our Lord's might is sufficient for all purposes, as revealed in the Qur'an:

> **Everything in the heavens and the Earth glorifies Allah. He is the Almighty, the All-Wise. The kingdom of the heavens and the Earth belongs to Him. He gives life and causes to die. He has power over all things. He is the First and the Last, the Outward and the Inward. He has knowledge of all things. It is He Who created the heavens and the Earth in six days, then established Himself firmly on the Throne. He knows what goes into the Earth and what comes out of it, what comes down from heaven and what goes up into it. He is with you wherever you are—Allah sees what you do. The kingdom of the**

heavens and the Earth belongs to Him. All things return to Allah. (Surat al-Hadid: 1-5)

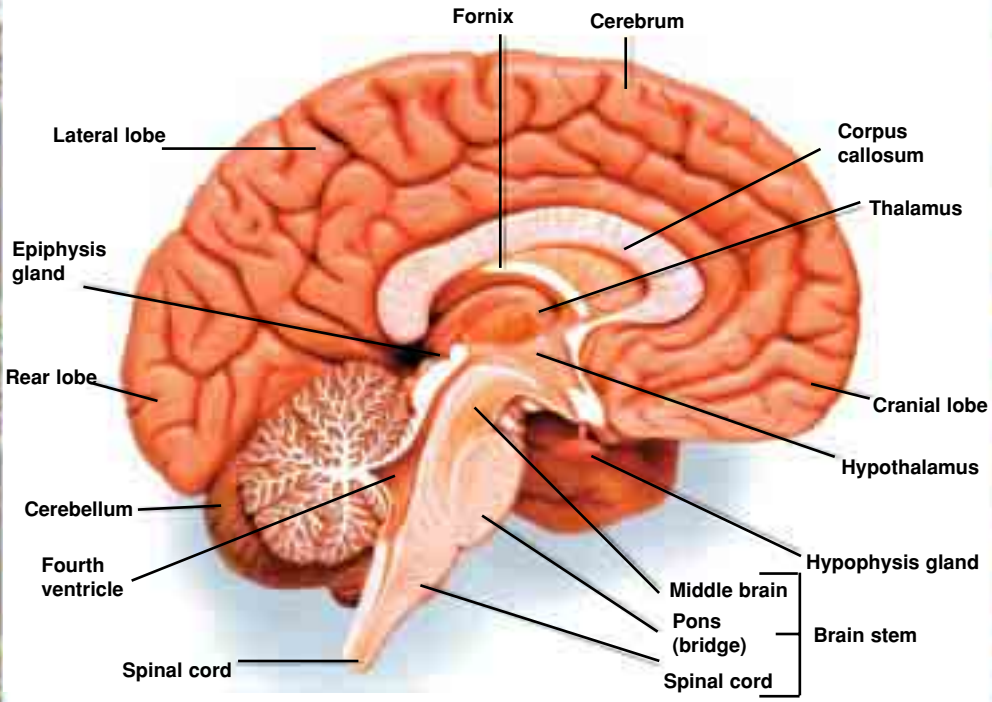
Chance Cannot Have Brought About the Regions Comprising the Brain

The more we examine details regarding the brain, the more illogical all claims of evolution appear to be. The brain possesses a number of components all working together in perfect coordination. Everything with which a human being deals with is transferred through a series of highly complex physical and chemical processes to be analyzed in the relevant regions of the brain. And then the decision is made as to what reaction will be taken. These processes require a chain of exceptionally complex and detailed stages, but we feel none of them.

We hold our arms out when someone throws a ball to us, also carefully examining the ball's angle of approach. Yet at the same time, the electrical signal reaching our eyes is being carried by the axons to the nerve cell, and transmitted from there to the brain for analysis. This way, we recognize everything we see, whether it is dangerous, and what kind of reaction we need to take. Again through the same communication system, the brain commands the arms to catch the ball. The details of the physical and chemical processes are so complicated they would fill many pages.

The Cerebellum That Harmonizes Actions

The cerebellum, that part of the brain responsible for balance and movement, consists of millions of neurons, despite representing only a tenth of the brain's volume. This small piece of tissue constantly gathers information regarding the position and movement of the body, keeping track of all its movements. It enables a person to react without thinking and directs all the muscles in the body. It regulates a balanced posture by sending commands to all the muscles in the body, and ensures smooth movement. Thanks to the coordination provided by the cerebellum, you



can perform such actions as walking and running in a flawless manner. For example, if you come across a stone when you are out jogging, you either jump over it or run round it. Identifying the stone, determining how high you need to jump by analyzing how large it is, planning not to fall over it, and deciding which of your legs to raise first and the overall timing—all consists of exceptionally detailed stages. Yet there is no need for you to waste any time thinking over these. The cerebellum immediately sends a command to the various muscles telling them the stone needs to be avoided, and the process is thus carried out in an impeccable manner.

In short, the cerebellum lets every organ be aware of its position in relation to other organs when the body is in motion. This action, here summarized in just a few lines, is actually of the very greatest importance. Your ability to remain aware of the position of your feet should not be underestimated. If your brain did not exercise such control, then you would fall over at every step. All these systems, operating so flaw-

lessly, are proofs of creation. It is impossible for even one of these systems to come into being by chance.

The Brain Stem: The Body's Automatic Pilot

The second part of the central nervous system is the brain stem, which is about 7 to 8 centimeters (2.7-3.15 inches) long and maintains a connection between the brain and spinal column. This structure contains more complex cell connections than does the spinal column, and essentially links the brain to the spine. This region is indispensable to the performance of vital functions. Respiration, blood flow, blood pressure, heart rhythm, sleep or wakefulness, attention and a great many other vital activities are all controlled from this region. It would be utterly impossible for you to make a conscious effort to regulate the rhythm of your heart beat, if you had to fulfill that responsibility without sleeping and without directing your attention to anything else. That once again reminds us how much we need this system established in our bodies by Allah. In fact, every function of the cerebellum is of vital importance.

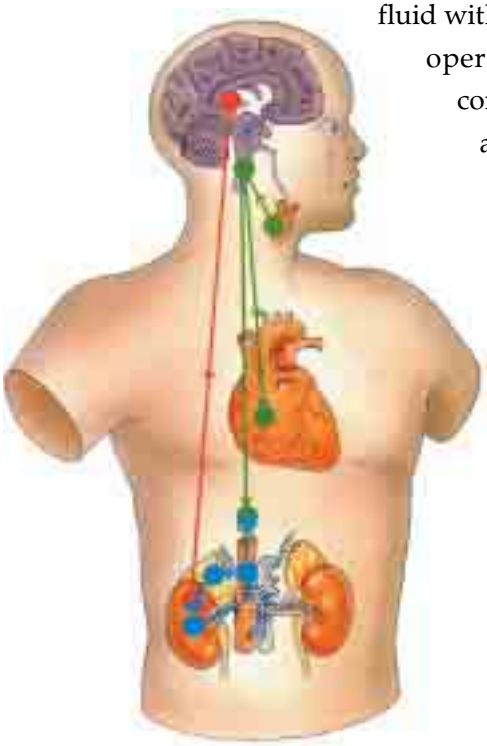
The Hypothalamus and the Other Regions of the Brain

The hypothalamus, no larger than a pea, manages such things as fat and carbohydrate metabolism, the sensations of thirst, sleeping, growth, appetite, body temperature, the size of the blood vessels, digestive secretions and behavior. It also supervises the working of almost all the glands in the body by means of various hormones it secretes. Yet while carrying out these important duties, it represents only 3% of the brain by volume, and weighs a mere 4.5 grams (0.009921 of a pound). Hormones released by the hypothalamus are like chemical messengers that reach every part of the body, carrying various instructions with them. In addition to carrying messages, hormones also set various regions into motion and fully discharge their responsibilities.

For example, if growth hormone is being secreted, it sets into action

all the systems concerned with growth. That the hypothalamus constantly produces such secretions, spreading throughout the entire body and adjusting its equilibrium, is of the greatest importance. However, even though the growth hormones travel throughout the body, it will affect only the relevant locations of the body. These mere secretions, that is to say hormones know which parts of the body they need to act on and affect only these, despite traveling through the entire body. Yet these actions all require consciousness and intelligence. The way that the secretion finds its way and recognizes every region inside the body, arrives at its destination with impeccable timing, initiates the requisite changes and at just the required level— causing hair to grow, for example—are all phenomena that cannot possibly be the result of chance. Also exceptionally important is the way this secretion knows whether the body is a man's or a woman's and establishes a different equilibrium accordingly. In men, hormones cause the beard to grow and the voice to deepen, whereas in women they prevent these changes. The way an unconscious fluid with no ability to make distinctions can operate such a planned, accurate and conscious system definitely cannot be accounted for in terms of chance. This system is the creation of Allah, Lord of infinite intellect and knowledge.

In addition the thalamus in the brain translates signals in



We generally never consider what is going on in our heads. But even when we sit down to rest or go to sleep, the brain continues its activities. Throughout the night, it continues to ensure our breathing, digestion, heartbeat and cell renewal.

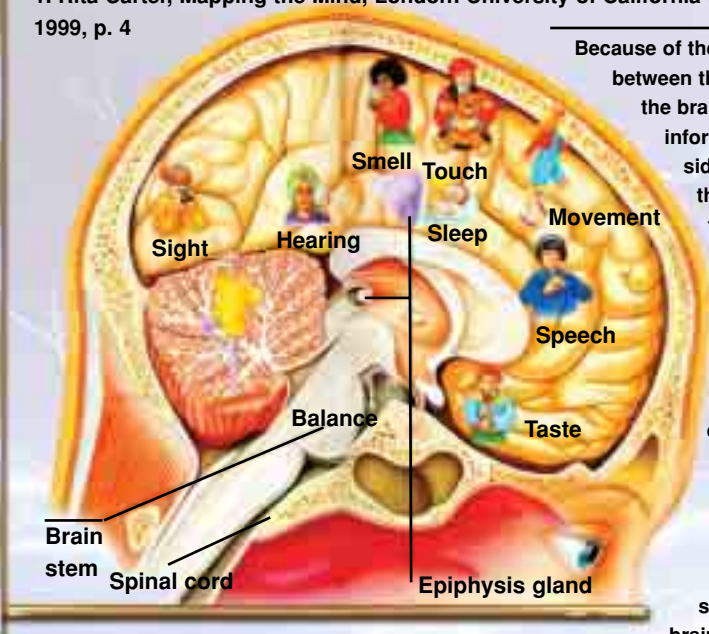
such a way that the brain can perceive them, so that the brainstem regulates such important functions as respiration, blood flow in the veins, heartbeat, sleep and wakefulness. It is impossible for a human to maintain even respiration by conscious control. If that control were handed over to you, then in all probability you would die the moment you fell asleep. Yet even though breathing is one of your most basic needs, you need pay it no conscious attention at all. Without your being aware of it, a mechanism in your body works in a systematic and uninterrupted manner.

THE MODULAR SYSTEM IN THE BRAIN

Each part of the human brain has its own particular function. One converts sounds into speech, one combines colors in the form of an image, one registers smell, and yet another recalls a familiar face or distinguishes fish from fruit. Yet the functions of these components are not fixed, and all function interdependently.

The first research into the brain's being divided into two separate hemispheres was performed by the psychologist Roger Sperry, and won him the Nobel Prize. Sperry showed that the brain was a modular system, not "a homogeneous black box."[1] The importance of the modular system comes from the fact that it can be assembled and dismantled, can change its function according to need, and can be shaped according to the desire of the user. In addition, materials designed for a modular system are exceedingly flexible in application and development. The brain does not have a fixed structure, but alters according to the conditions and is open to development—a feature that astonishes scientists.

1. Rita Carter, Mapping the Mind, London: University of California Press, February 1999, p. 4



Because of the division of labor between the two halves of the brain, the transfer of information from one side to the other is of the highest importance. The mutual flow of data between the two halves in ensured by means of a bridge, the corpus callosum, consisting of some 80 million axons. Were that connection not established, then chaos would ensue inside the brain. Not only must the transfer take place, it also must be done with very sensitive timing, requiring simultaneity accurate to 1/60,000 of a second. For example, were there no such simultaneity in the sense of sight, then the image seen by one eye would be incompatible with that seen by the other, and double vision would ensue. Were there no simultaneity in our sense of hearing, then all we hear would be meaningless echoes.

COMPUTERS THAT TRY TO IMITATE THE BRAIN

Computers perform a wide range of functions that make our lives easier. Our brains, which direct all our bodies' activities, possess a system far superior to that of any computer, and possess superior features that cannot be imitated.

Thanks to this complex design, the brain stores at least 1014 bits (data transmission units) and forwards or calculates 1015 signals a second. The brain's data storage capacity can be compared to the equivalent of a library containing 25 million volumes, which would occupy an approximately 800-kilometer (500-mile) long bookshelf.[1]

Computer engineers sought to imitate this extraordinary structure in the brain by building nerve networks, but eventually concluded that in a great many respects the brain can never be imitated by machines. The brain's design, one of the most perfect systems created in our bodies, is just one example of our Lord's creative artistry and the superior nature of His knowledge.

In the above table various data storage systems are compared in terms of the numbers. As can be seen, the brain has the greatest storage capacity of all.

Storage Device	Information capacity (words)
One typed page	300
3.5" double-density compact disk (CD)	40 to 200 million
20-million-volume library	2 trillion
Brain—25 million volumes of information	2.5 trillion

Comparison of various systems' memory in terms of word count (One word = 5 bytes = 40 bits)

1. D. Meredith, Metamagical Themes, N.Y: Basic Books, 1985; [Dr. Don B.DeYoung, Dr.Richard Bliss, "Thinking about the Brain," Impact, no.200, February 1990; http://www.icr.org/article/326/]

The Spinal Column That Assumes Control in Emergencies

The spinal column, the main pathway of the body's communication network, transmits data to the brain and sends commands to other regions of the body. Like a broad bundle of electrical cables, it enables commands on the nerves to travel with ease between the brain and the body's other regions. In the same way that the brain is protected by the skull, the spinal column is protected by the vertebrae that comprise the backbone. Here, nerve cells analyze the signals coming to the body from the brain, and form complex electrical circuits that determine where and how they are to be transmitted.

Sometimes the spinal column can perform its duties in a partially independent manner, without control from the brain. A reflex may be described as an automatic, fixed reaction to a specific stimulus. Reflexes allow us to react swiftly against risks and threats. The brain normally represents the human body's command center, but for emergency situations, a faster system has been constructed in the nervous system. Many reflex actions are directed by a group of nerve cells in the spinal cord.

The sudden movements we refer to as reflexes take place extraordinarily quickly by means of the circuits in the spinal cord. The very swift decisions to move come not from the brain, but from the spinal column. Were this mechanism directed by the brain instead, then when you touched a hot oven by mistake, there would be a time lag between your feeling the heat and retracting your hand. Yet you immediately retract your hand, preserving your fingers from getting burned. Thus the important spinal cord must be protected in a most secure manner.

We can compare the spinal cord to the cables inside a computer. If you constantly bend and twist them, they will eventually snap, and your computer will not work at all. Similarly, the spinal cord transmits important data, and every precaution for its protection has been taken. For one thing, the backbone is much longer than the spinal cord, so that the latter is entirely encased in bone.

If, for any reason, one or more vertebrae fail to develop fully while

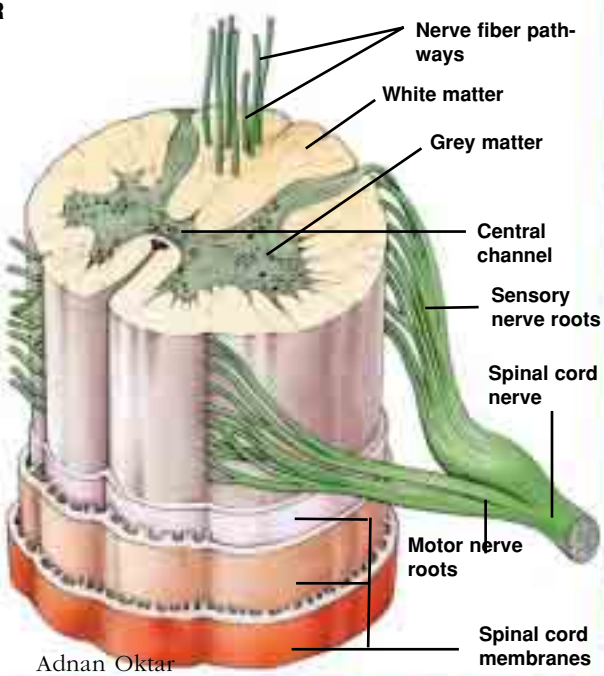
the fetus's backbone is forming, the result is the condition known as spina bifida, in which significant gaps remain between the vertebrae, and the spinal cord and nervous system are impaired. Important messages cannot reach their destinations. The failure of nerves to reach the brain results in paralysis—an inability to move and lack of sensation.

As we have shown, for our bodies to function fully, every component must be fully formed and possess a flawless design. The slightest alteration here may lead to serious consequences. The measure in the creation of man is referred to in these terms in the Qur'an:

> **From what thing did He create him? From a drop of sperm He created him and proportioned him. (Surah Abasa: 18-19)**

CELLS THAT ACT WITH OUR LORD'S INSPIRATION

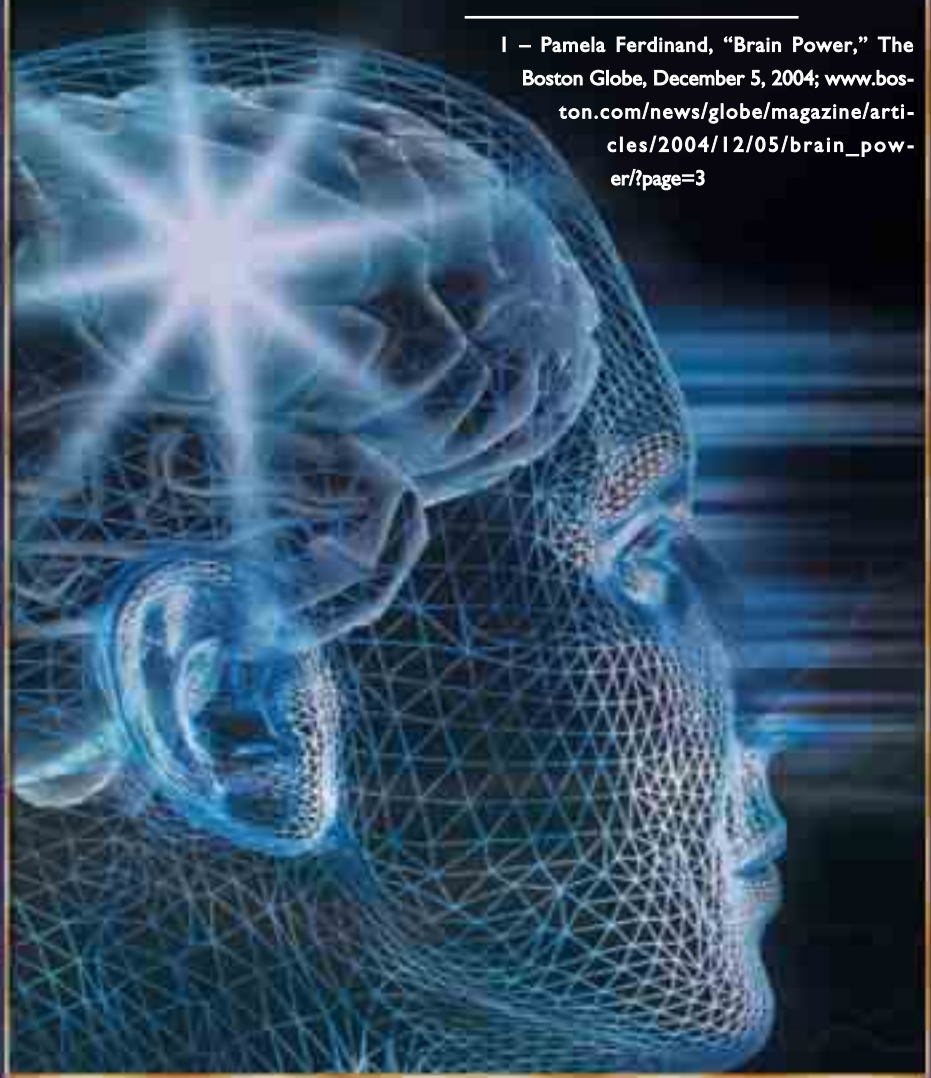
Reflexes must be fast, and so reflex signals move along the shortest paths. For example, if you tread on something sharp, cells responsible for your sense of touch send a signal to your spinal cord. This signal affects the motor cells, causing you to lift your foot. The signal reaches the brain and is analyzed only later.
This system is one of the countless ways in which Allah protects human beings.



Adnan Oktar

COMPUTER TECHNOLOGY ADVANCES BY IMITATING OUR LORD'S CREATION IN THE BRAIN

Scientists believe that the brain works like a kind of computer, although even the most advanced computers are still very elementary compared with the electrochemical complexity of the human brain. Indeed, the information regarding the human brain possessed by scientists who invent computers, examples of the most advanced technology, is severely limited. As an article in The Boston Globe magazine put it, "There is far more we don't know about the brain than we know."1



1 – Pamela Ferdinand, "Brain Power," The Boston Globe, December 5, 2004; www.boston.com/news/globe/magazine/articles/2004/12/05/brain_power/?page=3

Both a computer and the brain can record things in memory. Computers store data on chips, discs and CD-ROMS, while the brain uses neuronal circuits. Computers can be loaded with new programs and storage space, thus expanding their memories. The brain is constantly changing and can learn new things. Sometimes, when necessary, the brain can reconstruct its own electrical system. For example, following some incidents of brain damage, unharmed brain tissue can take over the functions formerly performed by the damaged part. Computers lack such a property, however, despite all the advances in technology.

The brain possesses a system incomparably superior to that of any computer. Our bodies are one of the most perfectly created systems, which perfection is concealed in its details. The structure and depth of the brain reveal details that exceed our conceptual abilities. Every fold, every twist and curve in our brains has been created for a purpose.

VITAL INFORMATION CARRIED BY THE ELECTRICAL CURRENT

Everything we know about the world reaches us by means of our senses, without which we would be cut off from everything around us. Your senses let you obtain comprehensive information about what is happening in your body, as well as in the outside world. You can recognize a friend even you do not see her entire face or if you see her from behind. You can distinguish thousands of different smells and shades of color. You immediately feel a feather touching your skin, or hear the sound of a leaf falling, and you need make no effort to do so.

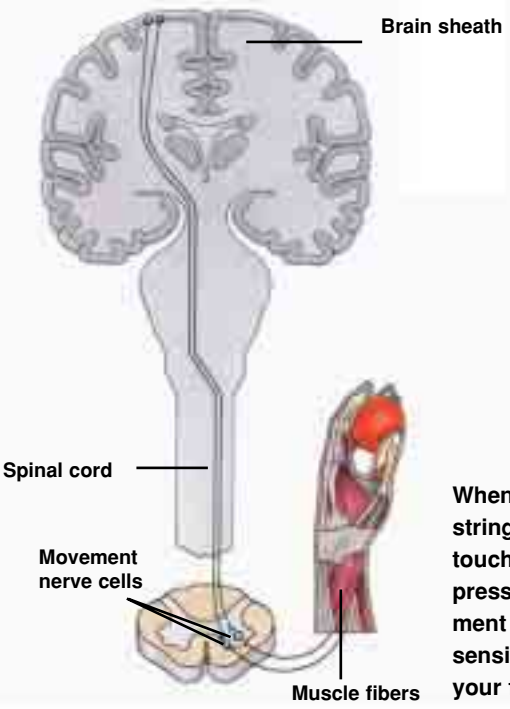
The parts of the sensory organs that collect information about the outside world are known as receptors. These convert the data reaching them into electrical currents to be transmitted

to the brain via the nerve cells. The brain interprets these currents, thus letting you determine the properties of the object concerned. It then sends commands to other regions of your body, to take action in light of that information.

Some receptors in the ear react to sounds. Others ensure balance by reacting to the movements of the head. Receptors in the eye react to light and color, while receptors inside the nose react to chemical borne on the air. Receptors on our tongues react to liquids or foodstuffs dissolved in saliva. The receptors on our skin react to pressure, heat and pain. Receptors in our muscles and joints react when we move and provide information about the body's position.

Our bodies are a marvel of design, but their sensitivity to the outside world and ability to react to what is going on is just as extraordinary. Not even the most advanced technological devices have the coordination necessary for the complex interactions between brain and body.

For example, computers have an encoding mechanism instead of sensory organs. This mechanism turns information into a series of electrical signals in binary code, which is analyzed by the computer's processor, which serves as the computer's brain. A smoke detector, for example, is designed in such a way as to react to rising heat and smoke particles. The detector turns these data into binary codes, which are then analyzed by the computer processor, and issues commands to the water sprinkler system to begin working. Although our perceptual systems resemble this, they possess ability far beyond merely analyzing automated commands. For example, when the brain perceives smoke, depending on the level of the smoke and its source, it can prompt you to open a window, use a fire extinguisher, evacuate everyone, or phone the fire department. This demonstrates that man's creation goes far beyond that of any technical device.



When you pick up a ball or touch the strings of a guitar, no matter how light your touch may be, still you detect a feeling of pressure in your fingers. This light movement sets into action thousands of touch-sensitive nerve receptors concentrated in your fingertips. Together with this pressure, an electrical current begins in special cells covering the nerve endings near the skin surface. This current is transmitted to the brain by nerve fibers at a speed of 130 meters (426 feet) a second.

How Electrical Signals Are Converted into Sensations of Touch

Like all other sensations, feelings of touch form when the brain analyzes electrical signals transmitted from the skin cells. When you touch a piece of cloth, your brain perceives whether it is rough or soft, thick or thin. Receptor cells in your finger tips send information in the form of electrical signals, which the brain perceives as sensations of touch. For example, when you touch a rough surface, you can never know if it is really rough, because you can never make direct contact with a rough surface. All you know about its surface consists of your brain analyzing specific stimuli.

Millions of receptors of various sensitivities in the skin react to heat, cold, touch, pain, pressure and motion. These receptors send electrical signals to the brain and by means of these signals, we obtain information about the object we touch.

This book you are holding, together with all its details, is recreated in your brain. There is a physical book in the outside world, but one you are interacting with consists of a copy in your brain. The sensations of touching the book are entirely the analysis of electrical signals. Therefore, you are actually turning the pages and feeling the texture of the book in your brain. You can never touch the original book.

The wisdom behind sensitivity levels not being the same everywhere in the body

Blind people can read the Braille alphabet with their fingertips, but not with their knuckles or teeth, for instance. That is because the level of sensitivity in the fingertips is very much greater.

There are some 640,000 sensitive skin receptors spread over the surface of the body.[70] The density of these at the fingertips is 9,000 to the square inch, and they react in a millisecond to even the slightest friction. That lets us use our fingers for jobs requiring great sensitivity. Our elbows, however, are far less sensitive. There is considerable wisdom behind this: Were things the other way around, it would be exceedingly uncomfortable to rest your elbows anywhere, since they would feel the slightest roughness. And you would have to use your elbows to feel the roughness or smoothness of any surface. The body is specially created to fulfill all our needs, to be easy to use.

The wisdom behind touch receptors adapting to constant stimuli

Touch receptors react to sudden changes, but soon adapt to fixed stimuli. The brain is informed about the beginning of a contact and its end, but there is not such a heavy flow of information about the contact

in between. There is great wisdom in this, because generally we do not need to be constantly informed about whatever may be touching our skin. It is sufficient that the touch receptors transmit information only when there is a change, which makes our lives very much easier. The ability of touch receptors to adapt quickly to constant stimuli is an important advantage of the nervous system.[71]

For example, when you put on your clothes in the morning, various receptors initially send your brain information concerning their weight, softness and pressure. But soon afterwards, these messages decrease and eventually cease, because, as already seen, receptors stop "reporting" constant stimuli at the same level of intensity. In the same way, when we first strap on a watch, we feel the coolness of the metal, the thickness and weight of the strap, but then we soon forget these details. However, if the strap loosens and is about to fall off, this attracts our attention. In the same way, receptors in our scalp immediately perceive the change when we take off our hats off, but our sensations soon adapt to the hat's removal.

Feeling our clothes and accessories we wear at every moment would give rise to considerable discomfort. Therefore, the way that our skin adapts to fixed stimuli is of enormous importance—and a great blessing from our Lord.

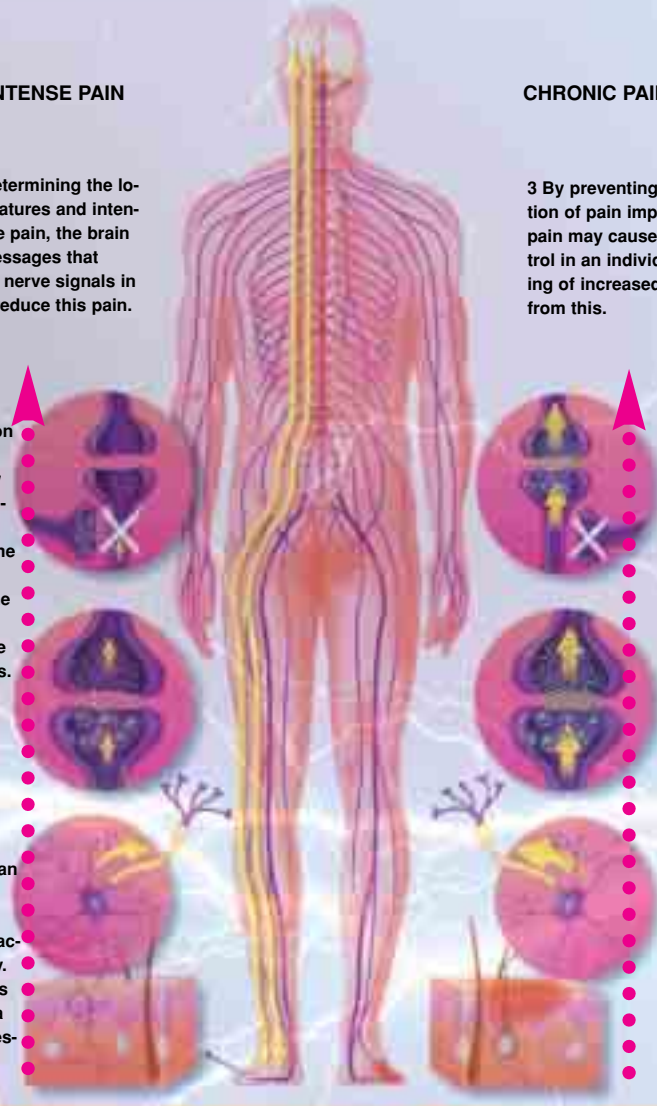
The wisdom behind sensations of pain

Pain is a warning that a part of the body has undergone damage. Several million of our nerve receptors perceive pain, and the greater the shock they receive, the more they are stimulated. For example, when you hit our knee against a table or tread on a fragment of glass, the receptor cells in our skin react to something that is going to harm you. They send an urgent message to the brain, and you immediately take steps to escape that discomfort.

Some painful sensations take the form of aches, or of stings, or of burning. The sensation feeling of being stabbed reaches the brain fastest—at 30 meters (98 feet) per second. Receptors that perceive this are lo-

FEELINGS OF PAIN AND DISCOMFORT: A MANIFESTATION OF OUR LORD'S TITLES OF THE COMPASSIONATE AND MERCIFUL

Feeling pain or discomfort plays a very important role in our lives, because these sensations notify us that there is a problem in our bodies. When the receptors in our skin react to things that are harming us and send urgent messages to the brain, we can then take measures to allay that discomfort.



cated on the outer layer of skin. Burning sensations reach the brain a bit more slowly, at a speed of 2 meters (6.5 feet) per second.

Behind the different speeds at which these sensations are perceived, there is great wisdom. For example, the way that we first experience a bee sting, followed by the gradual arising of a burning sensation, is of great importance. The stabbing feeling ensures rapid protection against the threat. No doubt that this is one of the examples of our Lord's most wise creation.

The wisdom behind the feeling of pain decreasing during injury

Some people experience no pain when they are first injured and for a while afterwards. Even though injured, these people can run away from the danger or protect themselves. Sensations of pain are transmitted by nerve cells, which contain a substance called "endorphin", which eliminates feelings of pain, aching and distress and relaxes the body.

Endorphin is literally a painkiller manufactured in the brain, secreted at the time the pain is felt. Its effect wears off as soon as the initial crisis has been overcome. In this way, even very serious injuries do not cause violent pain sensations for a certain length of time. Painkilling drugs function the same way. They do not actually treat most illnesses or injuries, but are merely chemical substances that prevent us feeling pain. The decrease in sensations of pain after an injury is another example of Allah's mercy on human beings.

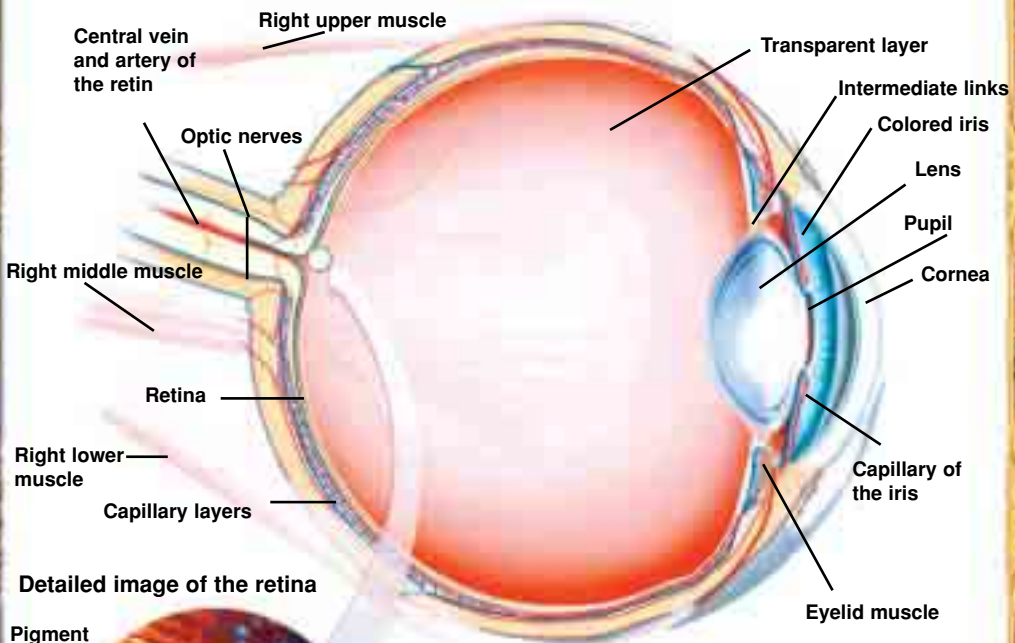
The Transformation of Light Energy into Sight Perception

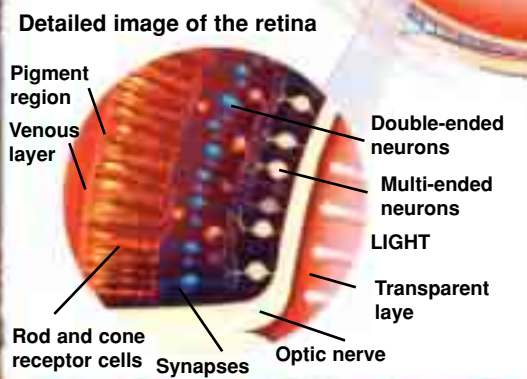
The phenomenon of sight takes place gradually. Light particles (photons) pass through the lens in front of the eye, are refracted, and fall onto the retina at the rear of the eye as a reversed image. There, visual stimuli are transformed into electrical signals and transmitted by the op-

tic nerves to a very small region in the rear part of the brain, known as the visual center. After undergoing a series of processes, this electrical signal is perceived in the brain as a visual image.

The two kinds of receptor cells in the eye are known as cone and rod cells. Rods are so sensitive to light that they enable one to see even under a pale light. However, in strong normal daylight, they become unable to transmit any signal. Cones, on the other hand, function in intense bright conditions and enable images to be perceived in broad daylight.

When you look at a television screen, for instance, your optic nerve consisting of 1 million nerve fibers transmits information from your eye





You blink every two to ten seconds. Your eyes move backwards and forwards many times a second as you focus on each of these words, and your retinas perform tens of millions of computer-like calculations. These all function so flawlessly that you generally never wonder how it is that we actually see.

to the brain.[72] The stimulation of light from the screen causes a chemical chain reaction in the retina's light receptors. As a result, the signals from the retina stimulate the optic nerves, which in turn stimulate the brain.

Signals sent from the brain travel at a speed of 100 meters (328 feet) per second and stimulate the muscles controlling the toes, ankles, legs, shoulders, arms, wrists and fingers. With the perception of an image, reactions such as heading towards one's chair or pressing the remote control soon follow.

The human eye perceives various colors, ranging from red to mauve. It cannot perceive frequencies that lie outside this range, such as infrared or ultraviolet. This is, again, a very wise precaution. If our eyes were arranged to perceive lower frequencies of light waves instead of that specific range, then we would end up perceiving blurred images like those on a radar screen. If our eyes were arranged to perceive higher wavelengths, then we would perceive images rather like x-rays. Through the mercy of Allah, however, the cells in the eye transform only light waves within those dimensions into electrical signals, and thus allow us to see such colorful and detailed images.

The Three-Dimensional World That Forms in the Brain

The brain is exceedingly adept at determining the distance of objects. Both eyes act in tandem and register images seen from different angles. The difference of angle between the two images helps the brain calculate the distance of the perceived object. The two images transmitted to the brain are compared and the distance of the object determined.

That is why you perceive this book as a three-dimensional image. Were it not for that ability, we would see everything double and in a single plane. And so, the fields of vision of the two eyes being at different angles is a very wise result of creation.

Let us imagine that you are watching a tennis match. One of the

players easily returns a shot from over the net. Your brain forms an opinion of what the shot is like. The light illuminating the ball, net and racket all reach your eyes simultaneously, without your being aware of it. Yet what you perceive as a racket or a tennis ball is an image resulting from collaboration between your brain and a number of electrical signals, each directed towards the relevant region of the brain. However, there is no clue in your brain that you are watching this tennis match. Scientists can describe how the data regarding sight, sound or scent is transmitted toward the relevant parts of the brain. But what really surprises them is how these electrical signals are reconstituted within the brain back to their original form.

Gerald L. Schroeder describes a few of the miraculous aspects of the phenomenon of sight:

> The process of biological information transfer is a tale of awe. Consider just one aspect of this bodily train of events. How does the brain decide that the two-dimensional image protected onto the eyes' retinas represents a three-dimensional world? After all, the visual image is converted into an array of electrical stimuli, each of which is a one dimensional pulse of voltage . . . From where does it get its smarts? [73]

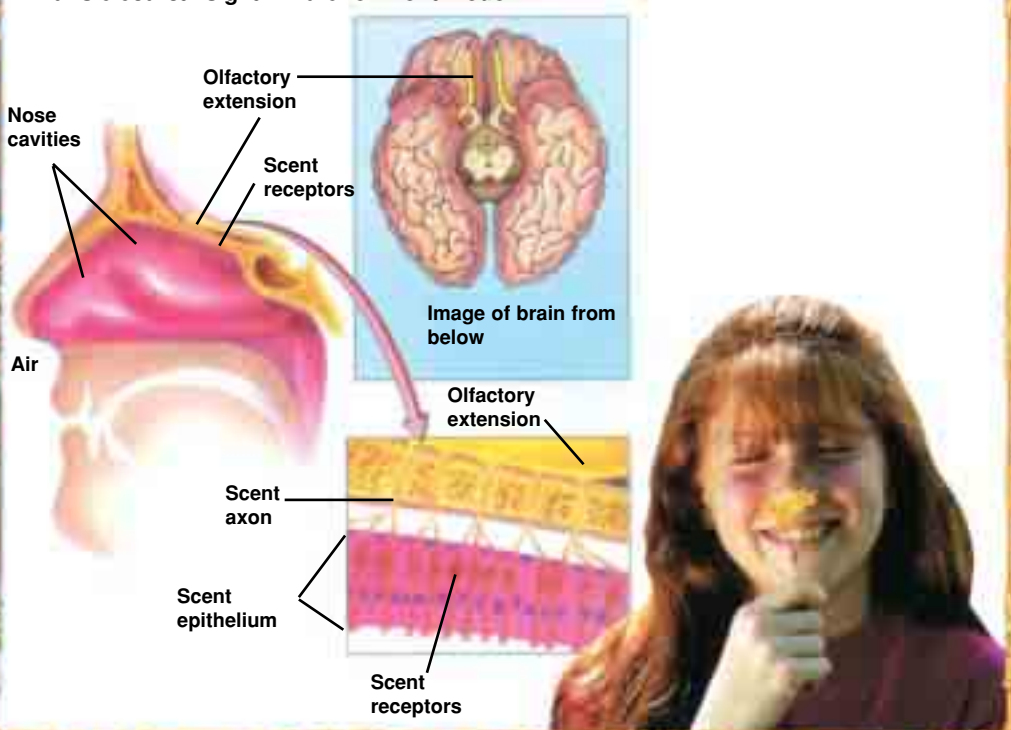
As Schroeder emphasizes, the way that electrical impulses carry encoded information, and how they are then interpreted as practically identical to their counterparts in the material world, is the product of a superior Intellect. The mind that Schroeder refers to belongs to our Lord, Who created us all and gave us eyes with which to see. This fact is revealed in the Qur'an:

> **Say: "Who provides for you out of heaven and Earth? Who controls hearing and sight? Who brings forth the living from the dead and the dead from the living? Who directs the whole affair?" They will say, "Allah." Say, "So will you not guard against evil?" That is Allah, your Lord, the Truth, and what is there after truth except misguidance? So how have you been distracted? (Surah Yunus: 31-32)**

The Transformation of Scent Molecules into Electrical Signals

How the sense of smell works is similar to that of our other senses. That part of the nose that can be seen from the outside merely takes in scent molecules in the air. Flying molecules from a rose or a spoonful of vanilla come to receptors on vibrating micro-hairs in the region of the nose known as the epithelium, where they set up a reaction that reaches the brain in the form of electrical signals, which our brain then perceives as smells.

The upper part of the nose contains two small areas known as the scent epithelia, which contain a great many nerve cells. These regions are responsible for scent detection. Smells are carried in the air in the form of floating molecules, which enter the nose together with air as we breathe. When the scent molecules reach the receptors in the nose, the cells there are stimulated and send electrical signals to the brain. The brain has direct dealings only with the electrical signal that reaches it, not with the scent molecules. A person perceives the brain's interpretation of this electrical signal in the form of an odor.



There are astonishing systems in the transformation of the effect caused by scent molecules into electrical energy. In the sensitive membrane inside the nose are some 50 million nerve cells, each of which contains a large number of proteins. A scent molecule can attach to one of the protein molecules in these nerve cells for as long as its form dictates. An electrical polarization thus results in this region, which gives rise to electrical signals that reach the scent perception region immediately beneath the forehead. Here the information from the different cells is analyzed, and the source of the scent is determined when they are sent to various brain structures. (For details, see Harun Yahya, *The Miracles of Smell and Taste*.)

You are indebted to the sensitive structure in your nose for your ability to enjoy the smells of newly baked bread, the roses in the garden, new-mown grass, soil after rain, hot soup, strawberries, parsley, the soap you use or shampoo. Most people never stop to think about how many scents they detect each day and how an image of their origin forms in the mind, thanks to these scents. Yet your sense of smell is one of the most important factors in your ability to recognize foods and beverages.

Smells from the environment enter your nose with every breath you take. The human nose has a very impressive ability to analyze a smell it detects within 30 seconds and to distinguish between 3,000 different aromas.[74]

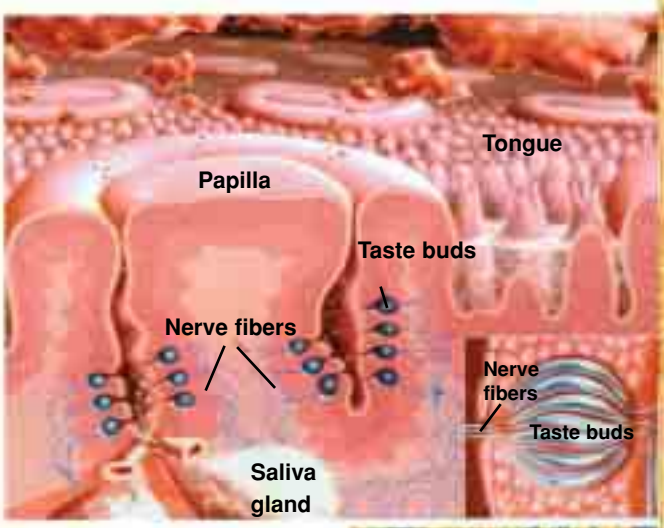
Electrical Signals Perceived as Tastes

Our sense of taste analyzes proteins, ions, complex molecules and a great many other chemical compounds, working non-stop on our behalf right through our lives. The tongue functions just like a laboratory, analyzing different chemical compounds. Every food we eat or drink consists of an enormous number of taste molecules. There are hundreds of thousands of separate chemical substances in every dish we eat. Taste receptors in the tongue analyze these different molecules with impeccable accuracy. (For details see, Harun Yahya, *The Miracles of Smell and Taste*.)

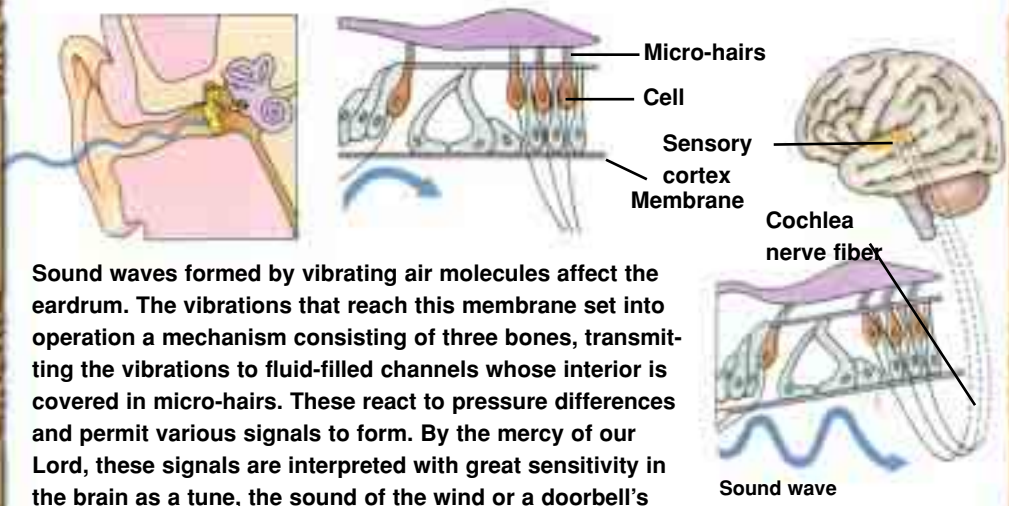
A special design allows this analysis to take place. There are specialized cells in the tongue, the first phase of the digestion process, that are found nowhere else in the body. These cells analyze foodstuffs and transmit data regarding them to the brain in the form of electrical signals, which the brain again interprets as flavors.

The way that the tongue's taste-perceiving cells in the system are in just the right place, numbers and form is an example of their superior creation. The way that the brain, which interprets the electrical signals, tells us what we are eating, distinguishes what we are eating on every occasion, and tells us whether they are bitter, sweet or sour by analyzing chemicals is one of the miracles of creation in our bodies.

Any dish of food contains hundreds, even thousands, of separate chemical substances. The tongue identifies the chemical structures of countless different molecules with an astonishing accuracy. Taste receptors in the tongue send information regarding these molecules to the brain in the form of electrical signals. The flavor of the orange or strawberry we eat consists of an interpretation of this signal that our Lord forms in our brain.



To the right, the papillae that give the tongue its rough appearance, magnified 60 times. Up to 10,000 taste buds comprise the papillae on the tongue, and there are up to 50 taste cells in each taste bud.



Sound waves formed by vibrating air molecules affect the eardrum. The vibrations that reach this membrane set into operation a mechanism consisting of three bones, transmitting the vibrations to fluid-filled channels whose interior is covered in micro-hairs. These react to pressure differences and permit various signals to form. By the mercy of our Lord, these signals are interpreted with great sensitivity in the brain as a tune, the sound of the wind or a doorbell's ring.

Perception of Electrical Signals as Sound

The outer ear collects sounds from the outer world and forwards them to the middle ear, which reinforces the sound vibrations reaching it and transmits them to the inner ear. The inner ear then sends them to the brain by turning them into electrical signals according to their intensity and frequency. After visiting several places in the brain, the messages are finally transmitted to the hearing center where these signals are processed and interpreted, and the process of hearing finally takes place.

One of the most surprising things is the speed at which the 20,000 micro-hairs in the channels in the ear react. The middle channel vibrates at 256 times a second. The channel immediately above it vibrates at 512 times a second, and the channel above that, at 1,024 times. The micro-hairs' efficiency in analyzing such fast vibrations allows us to distinguish with great sensitivity among musical notes. This constitutes one of the most sensitive and rapid reactions in the body.

As the brain resolves the sound vibrations of speech reaching it, it must convert the sound into syllables, and then into sentences, without being affected by the speaker's speed, tone or accent. We are generally

completely unaware of this amazing analytical system inside our heads. The ear's complex design has frequently been the subject of praise from scientists.

> Of all the organs of the body, few can accomplish as much in so little a space as the ear. If an engineer could duplicate its functions, he would have to compress into approximately one cubic inch a sound system that includes an impedance matcher, a wide range mechanical analyzer, a mobile relay and amplification unit, a multi channel transducer to convert mechanical energy to electrical energy, a system to maintain a delicate hydraulic balance and an internal two-way communication system. Even if he could perform this miracle of miniaturization, he would be unable to match the ear's performance. It can set itself to hear the low throb of a foghorn at one end of its range and the piercing wail of a jet engine at the other end. It can make the fine distinction between the music played by the violin and the viola sections of a symphony orchestra. . . . Even during sleep the ear functions with incredible efficiency. Because the brain can interpret and select signals passed to it by the ear, a man can sleep soundly through noisy traffic and the blaring of a neighbor's television set and then awaken promptly at the gentle urging of a chime alarm clock. [75]

The ear also performs selective perception. Consider what happens when you hear the sound of a child crying at night. The sound is sent to the relevant region of the brain and gradually deciphered there. What kind of sound it is, and whom it belongs to is determined. Since you have a long-term memory, this sound seems familiar and you realize that it belongs to one of your children. With this information your brain now knows that your child wants help, and carries out preparatory measures such as the release of adrenaline in order to set your body in motion. All this encourages you to head directly for your child's bed. In addition, your memory tells you where your child's bed is. This perception and chain of events, here described in very simple terms, actually involve miraculous biochemical and bio-electrical processes, taking place as the result of hundreds of thousands of axons, each with thousands of terminals, establishing a connection with a quadrillion (1,000,000,000,000,000) fibers. You never realize that the brain is deciphering the signals. So how

can it be structures of tissue that perceive all this? This question encourages unbiased scientists to reflect upon.

Gerald L. Schroeder, Professor of Nuclear Physics at the Massachusetts Institute of Technology one of these scientists, questions the following about the sense of hearing:

> And then comes the hard part of the hard question: the sound of music . . . become[s] converted to bioelectrical pulses that are chemically stored in the cortex of my brain. But how do I hear the sound?. . .But I don't hear biochemistry. I hear sound. Where is the sound generated in my head? Or the vision; or the smell? Where is the consciousness? Just which of those formerly inert atoms of carbon, hydrogen, nitrogen, oxygen, and on and on, in my head have become so clever that they can produce a thought or reconstitute an image. How those stored biochemical data points are recalled and replayed into sentience remains as enigmatic mystery. [76]

Schroeder's use of the term "mystery" is inaccurate. Of course it is not the brain that perceives the outside world, but the Soul given to man by Allah. The human mind is not a result of biochemical processes, but a blessing bestowed on Man by Allah. In one verse our Lord states:

> **Then [He] formed him and breathed His Spirit into him and gave you hearing, sight and hearts. What little thanks you show! (Surat as-Sajda: 9)**

Balance and Movement

How do you manage to stand upright, despite the constant tug of gravity? How can you suddenly turn around without falling over?

Organs at the entrance to the inner ear assist with balance by sending information to the brain about the movement and position of the head. Head movement causes the liquid in the channels to move and the micro-hairs to bend, which initiates messages that go directly to the brain. However, the tissues in this channel react differently to different movements. One is very sensitive to up and down movement, another to movements to either side, and another to forward-bending movements.

In the inner ear there is a special mechanism, known as the vestibular system that helps us keep our balance and reports which direction we are moving in. The vestibular system consists of three tunnels or semicircular channels and filled with a special fluid. Each channel has a region covered in hairs—receptor cells. And when we move, the liquid in the channels flows over the hairs and bends them. This bending is converted into electrical signals that are sent to the brain, which then decodes them to tell us what position we are in.

The reason why we sometimes lose our balance is a shock experienced in the inner ear. When you bend your head or turn it from right to left, the hairs begin to lean over, and this causes them to move in a very small fraction of a second in relation to the movement of the head and muscles. As these hairs move, chemical reactions that take place in the nerves at the base of every hair produce electrochemical signals that transfer information to the brain. Subsequently, it combines these signals—indicating the angle of the joints and contractions in the muscles—to analyze movement in the body.

How are you able to stand up against the continual pull of gravity? How can you turn round quickly without falling over? Organs in the inner ear help us maintain our balance by sending information about the movement and position of our head to the brain. Head movement causes the fluid in the canals to move and the micro-hairs to bend, initiating messages that go directly to the brain. The three channels are located perpendicular to one another, so that they react to different movements. One is very sensitive to vertical motion, one to sideways movements, and the other to bending.

This system in the ear works together with receptors in the eyes, neck, muscles and tendons. On its own, none of these is sufficient for a person to remain on balance. When you look out the window of a stationary train and see another train pulling out, your eyes will provide information as if you were actually moving. However, other nerve receptors in your body will report just the opposite and let you perceive your surroundings correctly. In this way, you realize that you are standing still and the other train is in motion.

Of course the process of the brain putting these data together actually takes place thanks to the flawless communication transmission of more than a billion axons. Our bodies' equilibrium is the product of a conscious creation, as revealed in the Qur'an:

> **The kingdom of the heavens and Earth belongs to Allah. Allah has power over all things. (Surah Al 'Imran: 189)**

Similar Signals Carry Very Different Messages

The common feature in our sense organs all turn the electrical stimuli reaching them into electrical signals and forward them to the relevant sense centers in the brain. At this point, we find a most surprising fact: All of the messages the brain received from the sense organs consist of the same kind of signal. All the stimuli transmitted to various centers in the brain are in the form of electrical currents, yet these identical currents contain very different information and cause different effects in the different centers of the brain—which is most astonishing.

In her book *The Human Brain*, Susan Greenfield draws attention to this extraordinary situation:

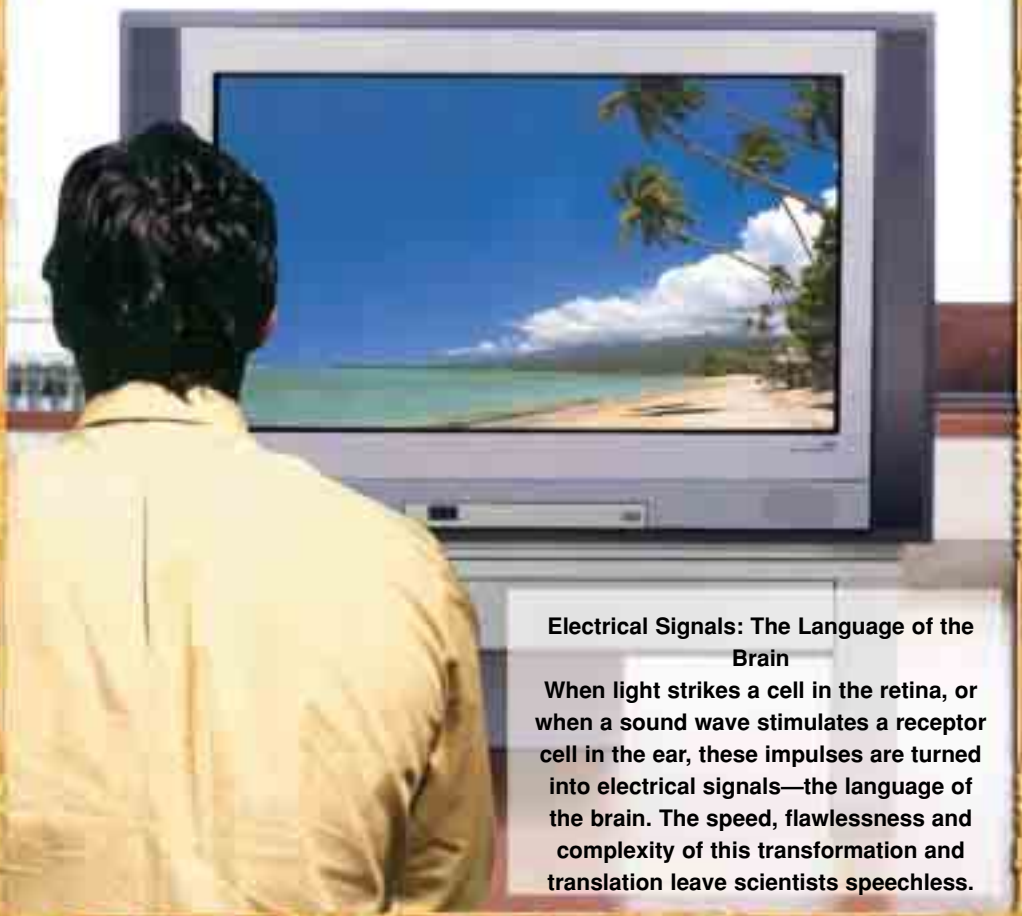
> Another tantalizing and related mystery of the brain is why electrical signals arriving the visual cortex should be experienced as vision, while exactly the same kind of electrical signals, arriving in another part of the brain such as the somatosensory cortex or the auditory cortex, should be perceived as touch and hearing respectively.[77]

The truth that Greenfield describes as a "mystery" is quite obvious:

The functions of our sense organs were brought into being with a flawless creation, just like all the other systems of our bodies. Our Lord has arranged matters in the same way that He produces plants and fruits with very different tastes, colors and smells from the same black soil, He has also ensured that identical signals are perceived in totally different ways in our brains, making us able to perceive the colors, scents and tastes in the outside world.

Conclusion:
The Perceptual World Created in Our Minds

The subject matter of this chapter, the way the signals collected by our sense organs are perceived in the brain, shows us another important



Electrical Signals: The Language of the Brain

When light strikes a cell in the retina, or when a sound wave stimulates a receptor cell in the ear, these impulses are turned into electrical signals—the language of the brain. The speed, flawlessness and complexity of this transformation and translation leave scientists speechless.

fact: we can never have direct contact with the outside world itself. There is matter outside us, whether we see it or not. But we can never make direct contact with it. The world we have direct experience of consists of interpretations of electrical signals in our brains. (For detailed information, see Harun Yahya, *The Other Name of the Illusion: Matter*, Istanbul: Kultur Publishers, 2002,Harun Yahya, *Idealism: The Philosophy of the Matrix*, and *The True Nature of Matter*, Maryland: Khatoons Inc., 2003)

As mentioned earlier, what you perceive as the outside world is merely an effect in your brain created by electrical signals. The blue of the sky you see from your window, the softness of the chair you sit in, the aroma of the coffee you drink, the tastes of the food you eat, the sound of the telephone ringing, your nearest and dearest, and even your own body are all interpretations of electrical signals in the brain. Professor of Nuclear Physics Gerald L. Schroeder, refers to this in these terms:

> Wiggle your toes. Feel them? But where do you feel them? But where do you feel them? Not in your toes. Toes feel nothing. You feel them in your brain. Anyone who has had the misfortune of having. . . . The brain has within it maps if the body that record every sensation and then project that sensation onto the mental image of the relevant body part. But it certainly feels like I'm feeling my toes in my toes. And it is not just the toes. The entire reality, what we see and what we feel, what we smell and what we hear, is mapped in the brain and then those recorded out to out consciousness from within the two-to-four millimeter (about one-eight inch) thin wrinkled gray layer, the cerebral cortex, that rests at the top of each of our brains. There is a reality out there in the world, but what we experience—every touch and every sound, every sight, smell and taste—arises in our heads. All our mental images, fantasy or factual, are built on our life's experience.[78]

The conclusion we arrive at is a scientifically proven fact. For anyone to believe, in the face of all the evidence, that he or she can have actual direct experience of the outside world is rather like believing that the characters in a television program are real.

So where does this fact about the essence of matter lead us?

Who is it who, in a tiny space and without the need for an eye, retina, lens, optic nerves or pupil, perceives electrical signals as a bright garden, and takes pleasure from that?

Who is it who, in a brain which no sound enters, perceives electrical signals as a delightful melody?

Who is it who, without the need for hands, fingers or muscles, perceives electrical signals in the brain as the softness of velvet?

Who is it who experiences sensations such as hot, cold, texture, form, depth and length as identical to their originals?

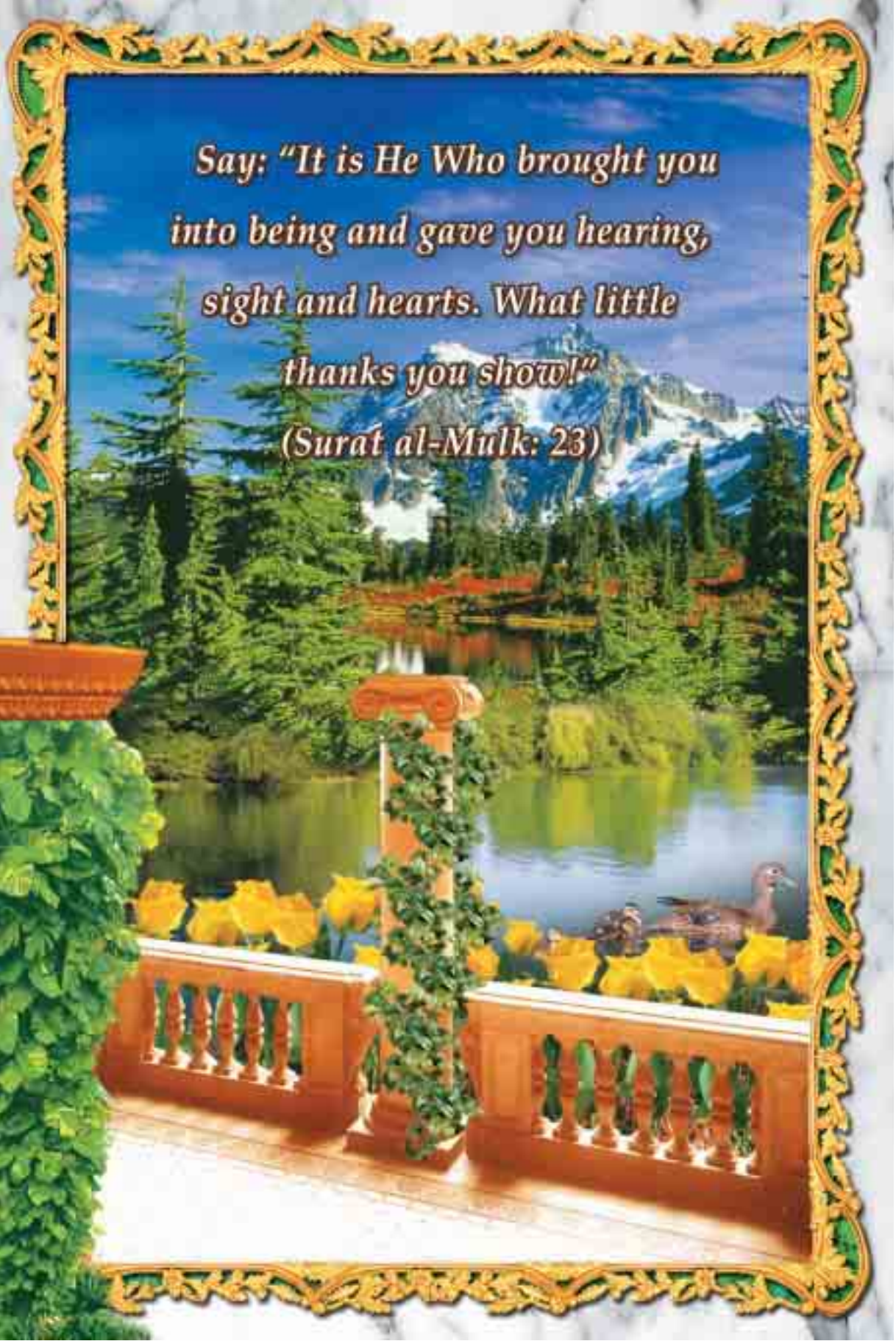
Who is it who, in the brain which no smells enter, distinguishes the scents of many different flowers, or who becomes hungry on smelling a favorite food?

To whom does the consciousness that will interpret all you see and feel belong? And who is the conscious entity who watches all these images, reflects, draws conclusions and makes decisions?

Clearly, it cannot be a brain consisting of water, fat and proteins, made up of unconscious molecules perceiving all these. Every rational person of good conscience will immediately grasp the existence of an entity or soul that watches all the events throughout the course of one's life on the screen within his brain. Every human possesses a soul capable of seeing without eyes, hearing without ears, and thinking without the need for a brain. It is Almighty Allah Who created the world of perceptions of which the soul has direct experience and Who continues to create at every moment.

In one verse it is revealed that:

Clear insights have come to you from your Lord. Whoever sees clearly, does so to his own benefit. Whoever is blind, it is to his own detriment. (Surat al-An'am: 104)


Say: "It is He Who brought you
into being and gave you hearing,
sight and hearts. What little
thanks you show!"
(Surat al-Mulk: 23)

OUR LIFE, NO DIFFERENT FROM A DREAM

What is the difference between dreams and real life? Dreams, generally, are logically contradictory and inconsistent compared with what we perceive in the real world. Apart from that, however, there is no difference, technically speaking. Both form as a result of the stimulation of sense centers in the brain.

One encyclopedic source describes how dreams and reality are experienced in the same way:

> Dreaming, like all mental processes, is a product of the brain and its activity. Whether a person is awake or asleep, the brain continuously gives off electrical waves. Scientists measure these waves with an instrument called an electroencephalograph. At most times during sleep, the brain waves are large and slow. But at certain times, they become smaller and faster. During periods of fast brain waves, the eyes move rapidly as though the sleeper were watching a series of events. This stage of sleep, called REM (Rapid Eye Movement) sleep, is when most dreams occur. If awakened during REM sleep, the person is likely to recall details of the dream. . . During REM sleep, the pathways that carry nerve impulses from the brain to the muscles are blocked. Therefore, the body cannot move during dreams. Also, the cerebral cortex-the part of the brain involved in higher mental functions-is much more active during REM sleep than during non-dreaming sleep. The cortex is stimulated by neurons (nerve cells) that carry impulses from the part of the brain called the brain stem.[1]

Both real life and dreams are ensembles of perceptions that form by the interpretation of impulses reaching the relevant centers in the brain.

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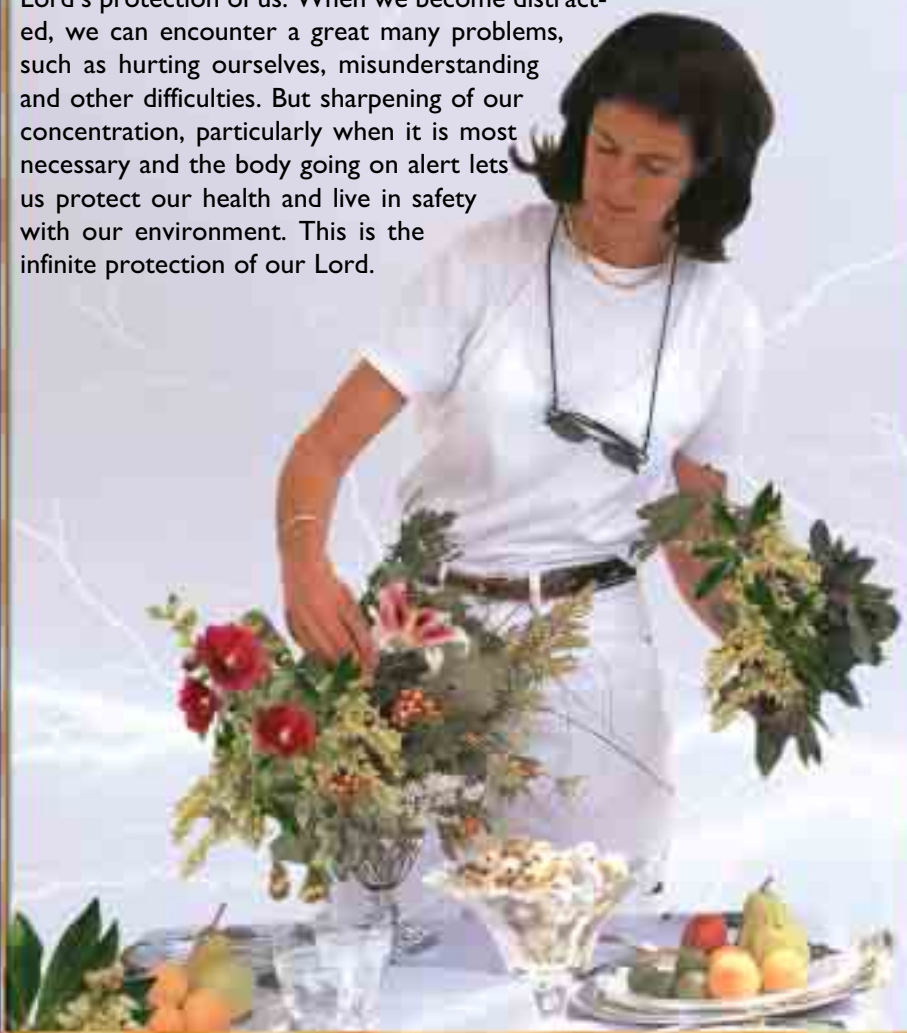
1. World Book Multimedia Encyclopedia, "Dream", World Book Inc., 1899

ALLAH'S PROTECTION ON US:

THE CONCENTRATION MECHANISM

The brain is where the body's alarm system starts. An alerted brain employs a special mechanism at moments of danger. If the brain receives an impulse that might constitute a threat—such as growling from a bush it signals the adrenal glands to secrete adrenaline. The brain becomes an activated scanner, halting all unnecessary activities.

The brain waits for something to react to, looking to detect regular impulses from its surroundings. This process is mainly discharged by an automatic mechanism in the brain—the concentration mechanism that is part of our Lord's protection of us. When we become distracted, we can encounter a great many problems, such as hurting ourselves, misunderstanding and other difficulties. But sharpening of our concentration, particularly when it is most necessary and the body going on alert lets us protect our health and live in safety with our environment. This is the infinite protection of our Lord.



THE FLAWLESS CONSTRUCTION THAT BEGINS WITH THE EMBRYO

The development of the human body inside the mother's womb takes place according to a blueprint, just like the construction of a building. Yet this blueprint is far more wide-ranging than any architect may be familiar with. In the same way that you need to calculate electrical wiring before plumbing in planning a building, so the systems that will constitute the infrastructure of the human body must also be considered, and growth must proceed in light of all these details.

One of these essentials is the body's nervous system. During the emergence of this electrical facility, a huge number of details must be borne in mind, such as the neurons that form the nerve fibers extending to all parts of the body, establishment of connections between these nerve fibers and the brain, the backbone opening enough to let the spinal cord

to pass through it, and for countless neurons to be organized so as to fulfill the functions of the brain.

Yet the cells themselves possess no such blueprint or project, and have no conscious engineer or architect to direct them. Nonetheless, cells know just what part of a human being to form and when to cease their activity. Embryonic cells act in a pre-programmed manner, producing their own materials, are organized within a perfect plan, and carry out the actual construction work themselves. To claim that this extraordinary planning was carried out spontaneously by unconscious collections of cells would doubtless be irrational. It is impossible for a sound structure to come out of an unregulated workshop, even if the blueprint and materials are known. This flawless design in our bodies is Allah's, and this construction happens with His inspiration of the cells:

> **Does man reckon he will be left to go on unchecked? Was he not a drop of ejaculated sperm, then a blood-clot which He created and shaped, making from it both sexes, male and female? (Surat al-Qiyama: 36-39)**

The Timetable of Flawless Construction

The first cell that will give rise to a brand-new human being forms when an egg cell from the mother combines with a sperm cell from the father (for details see Harun Yahya, *The Miracle of Human Creation*, New Delhi: Goodword Books, 2003). In the first stage of this miraculous development, cells begin to divide until they number in the millions. The cells, which initially resemble a sphere of tissue in the mother's womb, continue dividing and coming together in specialized groups. They continue forming light-sensitive eye cells; nerve cells able to perceiving bitter, sweet, pain, heat and cold; ear cells that will detect sound vibrations, stomach and intestinal cells that will digest foodstuffs, and all the other necessary tissues and organs.

The first structure to take form in an embryo is the central nervous system. Later it develops further, giving rise to the brain and spinal cord. Only two and a half weeks after fertilization, a lengthy cavity can be


23rd -25th day
28th day
44th day
54th day
11th week

The fertilization of the egg by the sperm begins with a change in the electrical potential in the cell membrane. At the very moment that the sperm cell combines with the egg, the ion channels in the egg are activated. As a result of the change in potential in the egg cell's membrane, other sperm cells are unable to penetrate it. The electrical balance in our bodies is of special importance in the fertilization process, the first phase of creation.

seen, caused by cells moving inwards from the periphery. By the third week, this cavity closes up; forming a cylindrical tube that belongs to the nervous system. The embryo itself, meanwhile, is still less than 2 millimeters (0.078 of an inch) in length.

In the third or fourth weeks, the heart starts to beat, yet not by means of any stimuli from the brain or central nervous system. It begins beating by way of impulses from the region immediately beneath the brain itself, which will subsequently develop into the head.

Approximately one day later, two protrusions from the brain begin emerging that will later form the eyeballs. In this sense, the eyes are outward extensions of the brain.

By the thirty-fifth day, the brain's cortex, regarded as the

Nine months after fertilization, most of the neurons that will make up our brain have multiplied and become ready to pass to the relevant area of the brain. When they reach their target, each neuron sends out roots and begins establishing communication with neighboring neurons.

center of conscious thought in a human, can be seen with the naked eye. The brain slowly keeps growing, the beginning of a process that will last for years. At birth, the volume of a baby's brain is a quarter of that of an adult. There is very definitely great foresight in this, given the narrowness of the birth canal through which the baby must pass. In the sixth month after birth, the baby's skull has reached half its eventual size, and three quarters of it by the end of the second year.

In the fourth year, the human brain is four times the size it was at birth, in other words 1,400 cubic centimeters. It is of course impossible for a collection of cells to know how little they need to grow in order to be able to leave the mother's body without difficulty, nor to prefigure this in such a flawless manner. Their intelligent action is just one of the signs of their acting through the inspiration of Allah, the Compassionate and Merciful.

Some 5,000 neurons a second are produced in the spinal cord, which forms during the fifth week of development in the womb.[79] The brain will later form in this region. By the moment of birth, the number

The formation of the nervous system:
From the fifth week, cells in the upper part of the embryo begin thickening around the central line of the body. Two layers and a tube form here. This is the initial formation of the brain, to which the spinal cord and nerve fibers later attach.

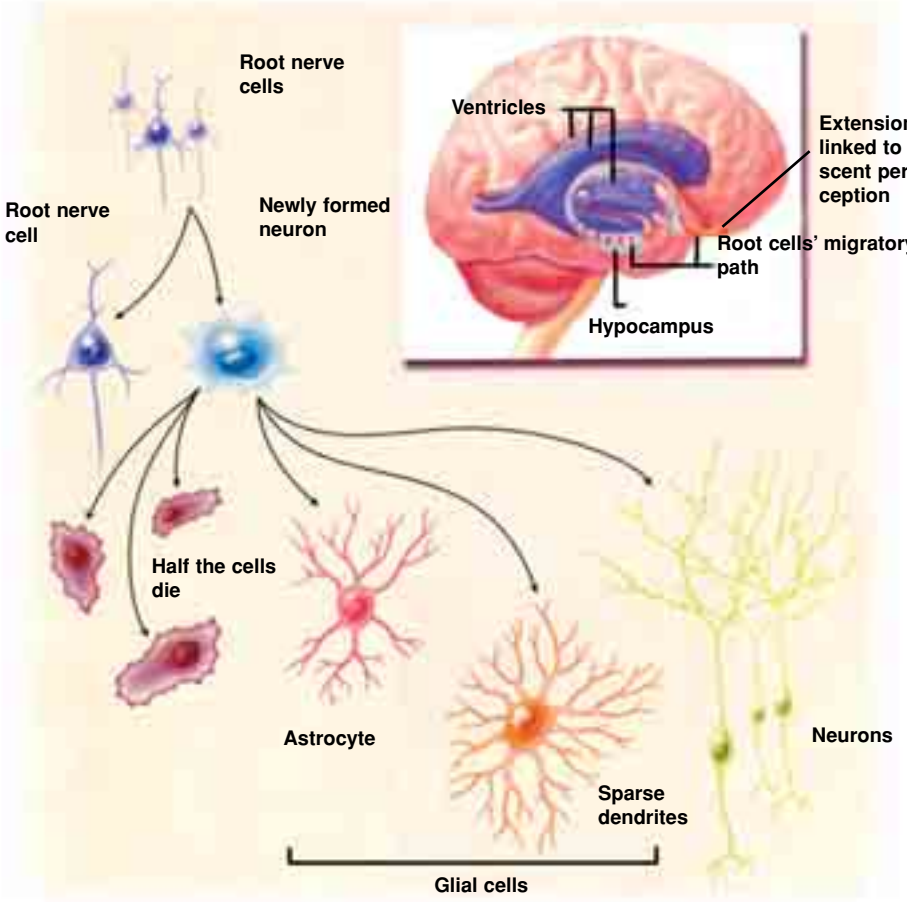
of neurons in the brain has reached one hundred billion.[80] A large part of the brain cells form during the embryo's first five months, and each one takes its necessary place before birth. Shortly afterwards the cells, which divide at great speed, start migrating to form the extensions of the central nervous system.

Migration, of course, is an extraordinary ability for an unconscious cell. The way that a cell senses the need to move to a specific location, determines its way there without getting lost, and stops when it reaches its destination are astounding phenomena. It is impossible for a cell consisting of fat and protein to decide spontaneously to migrate, and to do so for a particular purpose. This is an indication of Allah's dominion over us, and just one of the infinite examples of His knowledge.

It is essential that each neuron should find its target, determined for it in the nervous system. Young neurons need guides, therefore, to show them the way to go. These "guides" are special cells that stretch like cables in the spinal cord and developing brain. Each cell quickly sets out for its target organ. Neurons emerge from the site where they are produced and migrate by attaching to these guides, until they arrive at the place they set out for, and settle there. Immediately after, they establish contact with other neurons to form connections among one another.

Throughout this journey, the neurons are accompanied by trillions of support cells known as glial cells. But how do neurons know, as soon as they come into existence, that they will be setting out on such a journey? How do they realize they will need guides to find their destinations, and what kind of cooperation they must engage in? These neurons are cells made up of molecules, too small to be seen with the naked eye. They can't possibly take their places in such a conscious manner, of their own free will. Nor is the brain the center that directs this process, because the brain of the embryo in the womb has not yet formed. The conscious behavior here clearly proves the existence of a conscious creation.

The way that some cells in the brain turn into glial cells is also miraculous. These cells are present in large numbers in the brain, and they number ten times more than the neurons. One kind of glial cell are the



The brain must be able to function from the moment of birth if a person is to enjoy a normal life. Therefore, the number of neurons in the brain of a newborn is the same as that in an adult, even if the connections between them have not yet been completed. During the development of the fetus, the brain produces around 360 million new cells a day.

macrophages, cells responsible for cleaning up the remains of dead cells in the brain. Another class of glial cell constitutes a fatty layer around neurons, acting as a kind of electrical insulation. Another kind of glial cells, found everywhere and known as astrocytes because of their star-like shape, protects the neurons, acting like a kind of sponge to soak up excess toxic chemicals. When the neurons themselves are actively damaged, astrocytes work twice as hard, doubling in size and number to maintain the high levels of substances needed to repair the damage.

Each one of these important tasks is carried out by cells invisible to the naked eye.

While all these activities are taking place, around 5,000 incomparably complex cells a second continue to be produced.[81] Structures such as DNA, RNA, ribosome, proteins and ion channels are all present, perfectly constituted, in every cell. That all these cells, multiplying at such a rapid rate, know where they have to be, what their function will be, and what features they must possess as components of a given organ, is most striking. Moreover, cells belonging to every tissue produce proteins that determine the particular character of those cells. For example, brain cells produce proteins that help transmit electricity. Another miraculous phenomenon is how a cell knows which organ it will be a part of and what kind of activity it will perform, and that it must produce proteins to meet those requirements. But only when all these details come together can perfect system actually function. Therefore, in the human body there are a great many more detailed marvels that we haven't considered here.

By the eighth week, all the fundamental parts of the body have developed, and the embryo turns into a fetus. At this point testosterone is produced, enabling brain development to continue according to the embryo's gender. In the following weeks, the frontal part of the brain divides into two hemispheres. In the 11th week, the rear part develops in such a way as to form the very visible cerebellum. Cavities in the brain known as ventricles eventually form an interconnected labyrinth opening to the spinal cord. Pores in this labyrinth permit a colorless fluid to travel and wash the spinal cord and the brain for the entire lifetime.

By the twentieth week, nerve connections emerge between the brain's outer cortex and the baby's body. Over the next five weeks, connections between the sensory system and the brain are completed.

A large increase in the substance myelin, the brain's insulation, is observed in the first months after birth. As soon as the axons have been insulated, they begin carrying electrical signals much more efficiently. We are able to carry out a delicate movement only through the neurons in the brain working efficiently. The axons continue being insulated with

myelin until the age of fifteen, or even later.

The way that such a complex nervous system and command center emerge from the union of two microscopic germ cells, the egg and sperm, is a miracle of creation. As soon as the cells emerge, they act in one direction only, in the light of the information inspired in them. It is evident that none of the events that occur during the formation of the brain and nervous system could come about by chance. A deficiency in any single phase would impair the whole system. The way neurons emerge and grow into a network is just one of the stages in the development of the brain, yet it is impossible for even a single neuron to come into existence by chance, let alone the whole brain, as evolutionists would have us believe.

Electrical charge is of great importance in a sperm cell's combining with an egg. The egg always has a negative charge. Sperms, on the other hand, are positively charged. Since opposite charges attract, the egg draws all the spermatozoa toward it. However, once the first sperm has penetrated it, that electrical charge suddenly changes. Like the sperm, the egg now has a positive electrical charge. Since like charges repel one another, the egg begins to repel all other sperms once the first penetration has occurred.
If the egg and sperm had the same electrical charges right from the outset, then the egg would repel all the spermatozoa, and none could get close to it. As you can see, there is an extraordinary balance and calculation in the combining of a single sperm and egg.

Susan Greenfield describes this extraordinary state of affairs in the creation of human beings:

> Clearly, the single fertilized egg is not conscious, so when would consciousness suddenly intervene? And how can a fetus be conscious? Another idea might be that the baby becomes conscious precisely as it is born. So is it the act of birth itself that evokes consciousness? It seems hard to accept this line of thought as the brain itself is completely unaffected by the birth process . . . On the one hand, there are very specific questions to be resolved, such as how a neuron knows when to alight from its glial monorail to the correct region of brain, and how it recognizes similar neurons with which it will team up into. On the other hand, there are more general puzzles that remain complete enigmas. At what stage does individuality creep into the developing brain? How does the collection of circuits of neurons give rise not just to an individual brain but an individual consciousness? What might a fetus be conscious of? [82]

It is our omniscient Lord Who creates the neurons with all their properties, Who gives them the correct form at the correct moment, and installs them where they are to go. Everyone—whether they reflect on this or not—was created by going through the stages here outlined in general terms. Before the body was even aware of itself, all the necessary systems were created within it. In addition, they had no responsibility to function as an ordered system. This perfect order in our bodies is just one of the innumerable examples of our Lord's mercy on us. The miracle of human creation is revealed in these terms in the Qur'an:

> **We created man from the purest kind of clay; then made him a drop in a secure receptacle; then formed the drop into a clot and formed the clot into a lump and formed the lump into bones and clothed the bones in flesh; and then brought him into being as another creature. Blessed be Allah, the Best of Creators! (Surat al-Muminun: 12-14)**

> **Do you then disbelieve in Him Who created you from dust, then from a drop of sperm, and then formed you as a man? He is, however, Allah, my Lord, and I will not associate anyone with my Lord. (Surat al-Kahf: 37-38)**

THE MIRACLE IN CELL MIGRATION

Among cells' most important abilities are those of growth, variation and multiplication. There is an electrical charge around every cell membrane, which acts from inside the cell to the outside, and many of the stages in cell division are stimulated electrically.

During the course of development in the mother's body, millions of cells must assume their predetermined places. To that end, the cells journey to the target destinations set out for them in the embryo. The timing is just as important as the destinations. A positional error of just 1/100 of a millimeter (0,000,393inch), or an error in timing of just 1/100 of a second could lead to organs forming in the

During the process of cell variation, cells behave just as if they know their duties—not only in terms of the proteins they produce, but their forms also change for the duties they will undertake in future. Cells that will become nerve cells acquire an extended structure so as to be able to transmit electrical signals. Joint cells become spherical, a shape well-suited to resisting pressure. Through Allah's inspiration, all these cells know their own tasks, and are created with a design appropriate to them.

wrong place. The system functions perfectly, however, so that no error is ever made.

The cells make a long journey inside the embryo following a special path. Upon reaching their destination, they recognize it and stop. In other words, billions of cells know beforehand the routes they need to take and their destinations, and decide to halt when they reach the places where they belong. There is never any confusion in all this. For example, stomach cells and liver cells never become mixed up, nor do the perfectly functioning internal organs. In this way, the initial embryo slowly assumes human form. Not the slightest irregularity or disorder emerges during this entire process.

Here, the migrating cells and those they will adhere to at their destination literally recognize one another. It has been observed that as the nervous system develops, billions of neurons try to locate their partners so as to attach to one another. They also combine together in a perfect design to determine the final form and structure of the organs they constitute. For example, brain cells establish around 120 trillion electrical connections to permit the necessary communications between them. It is not hard to imagine the consequence of a single connection error or short circuit in a system of such perfection.

It is impossible for unconscious cells, lacking the ability to think and plan, to act in harmony with one another and cooperate with such immaculate calculation. It is Allah, the Sovereign of all, Who shows these cells the path they must follow and ensures that every one reaches its destination.

What! Are they in doubt about the meeting with their Lord? What! Does He not encompass all things? (Surah Fussilat: 54)

OUR BODIES' ELECTRICAL SYSTEM REFUTES THE CLAIMS OF EVOLUTIONISTS

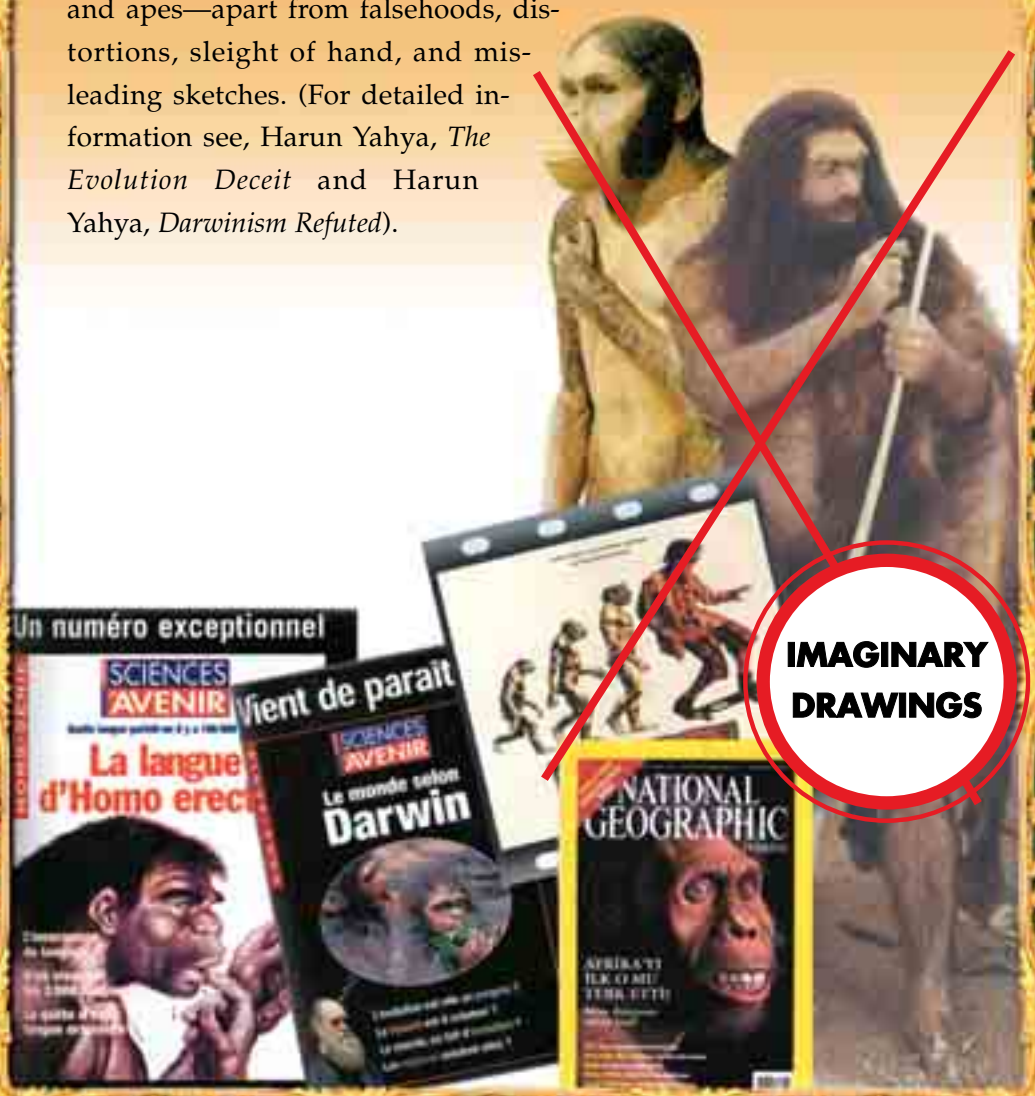
One frequently encountered evolutionist scenario is that human beings and apes being descended from a common ancestor. Through imaginary drawings and stories, the written and visual media encourage the myth that apes with a stooped posture gradually turned into upright walking human beings.

More than 6,000 ape species have lived during the course of geologic history. A great many of these became extinct and vanished. Today there are only 120 living ape species. But fossils of the 6,000 or so extinct species form a rich source for evolutionist tall tales.

Evolutionists have selected out the skulls and other bones of those ape species, from small to large, that most suit their purposes and have then added

skulls belonging to a few extinct human races, to write the fictitious scenario of human evolution, which states that human beings and present-day apes share common ancestors. These creatures gradually evolved, with some giving rise to present-day monkeys. And another group, following another branch of development, gave rise to present-day human beings.

The fact is, however, that all the paleontological, anatomical and biological findings show that this claim is totally unfounded. There is absolutely no concrete evidence of any familial relationship between man and apes—apart from falsehoods, distortions, sleight of hand, and misleading sketches. (For detailed information see, Harun Yahya, *The Evolution Deceit* and Harun Yahya, *Darwinism Refuted*).



The fossil record shows that human beings have been human and apes have been apes right from their beginnings. Some of the fossils that evolutionists seek to depict as belonging to the ancestors of Man belong to old human races that survived until very recent times, until 10,000 years ago, for example. Furthermore, a great many human communities still living today have the same physical appearance and characteristics as these "extinct" human races.

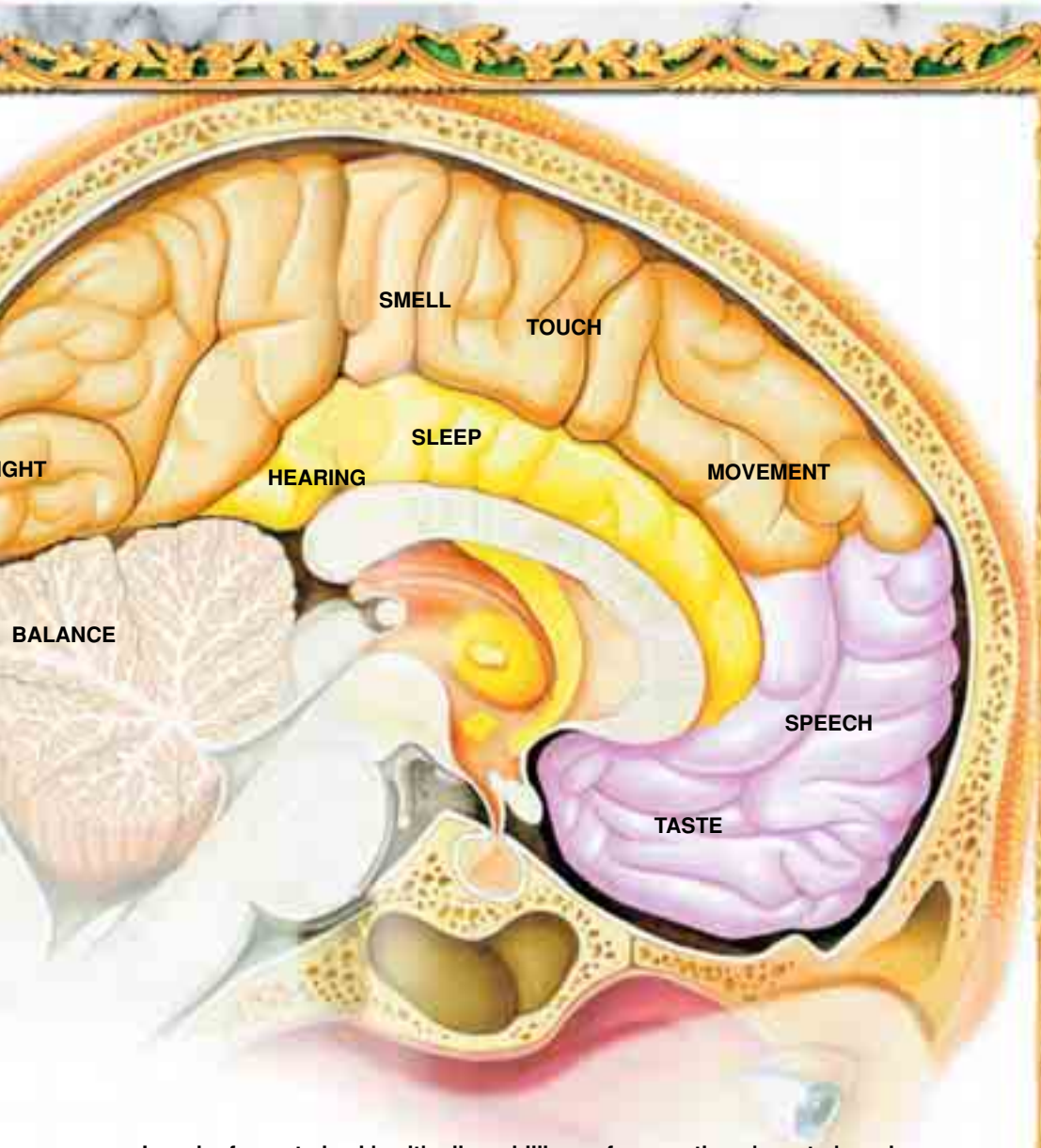
Most important of all, there are countless anatomical difference between apes and human beings, and could not have come about through evolution.

The Evolution of the Human Brain: A Blindly Supported Darwinian Dogma

Evolutionists maintain that man evolved from some ape-like ancestor, and that our brains grew and developed during the course of this imaginary process. According to them, the growth of our brain is an evolutionary adaptation. Again according to this claim, random mutations and natural selection, with no purpose or objective, are responsible for this same evolution. The "fact" that Darwinists resort to most frequently to support these claims is the succession of skulls they have arranged, all in the light of their own preconceptions, from smallest to large.

Various sources constantly present us with this claim and imaginary diagrams. However, all the propaganda regarding the evolution of the brain is invalid. In fact, the skulls included in the illusory human family tree reveal no ordered progression at all, contrary to what we are led to believe. Moreover, the processing capacity in the human brain is very superior to apes', and its design extremely complex. These abilities are used as inspiration by computer engineers as they develop new designs. The claim that such a sophisticated organ developed and "evolved" through random mutations is utterly ridiculous.

Firstly, it needs to be made clear that there is no direct correlation



In order for us to lead healthy lives, billions of connections have to have been established in our brains, without the slightest defect. Any interruption or error in these connections may lead to various diseases or handicaps. In order for this design to come about in the human embryo, formed by the division and multiplication of a single cell, each cell must be in the right place. The right connections must be established between them, and they must all be kept in a structure that will preserve them. None of these stages takes place without conscious direction and planning.

Finally, since a network of neurons that will constitute the brain is also required, each cell acquires a different structure according to its function. In order for this network to be interconnected, it needs a system that can perform many tasks at the same time.

between brain size and functionality. The well-known linguist David Bickerton describes the situation:

> The average human brain size is between 1,400 and 1,500 cubic centimeters, representing a range of roughly 1,000 to 2,000 cubic centimeters. This wide variation seems not to correlate with any differences in intelligence. There are people with brains of 2,000 cubic centimeters, like Oliver Cromwell, and there are people with brains of 1,000 cubic centimeters, like Anatole France. Was Oliver twice as smart as Anatole? The question doesn't make sense. Those at the lower end of the scale have as great a command of language and the same kind of mind and consciousness and intelligence as anyone else.[83]

Since there is no direct correlation between brain size and intelligence, there can be no significance to any claim of evolution based on cerebral dimensions. This shows that claims that the brain grew in size in response to needs is based not on any scientific observation or evidence, but on blindly supported Darwinism.

In addition, evolutionary scenarios based on brain size are also internally inconsistent. One major inconsistency is that so-called primitive humans possess rather large brains in comparison with the status of apeman ascribed to them. According to the scenario, creatures living in an almost identical manner to apes have large brains, which contradict the logic of evolution.

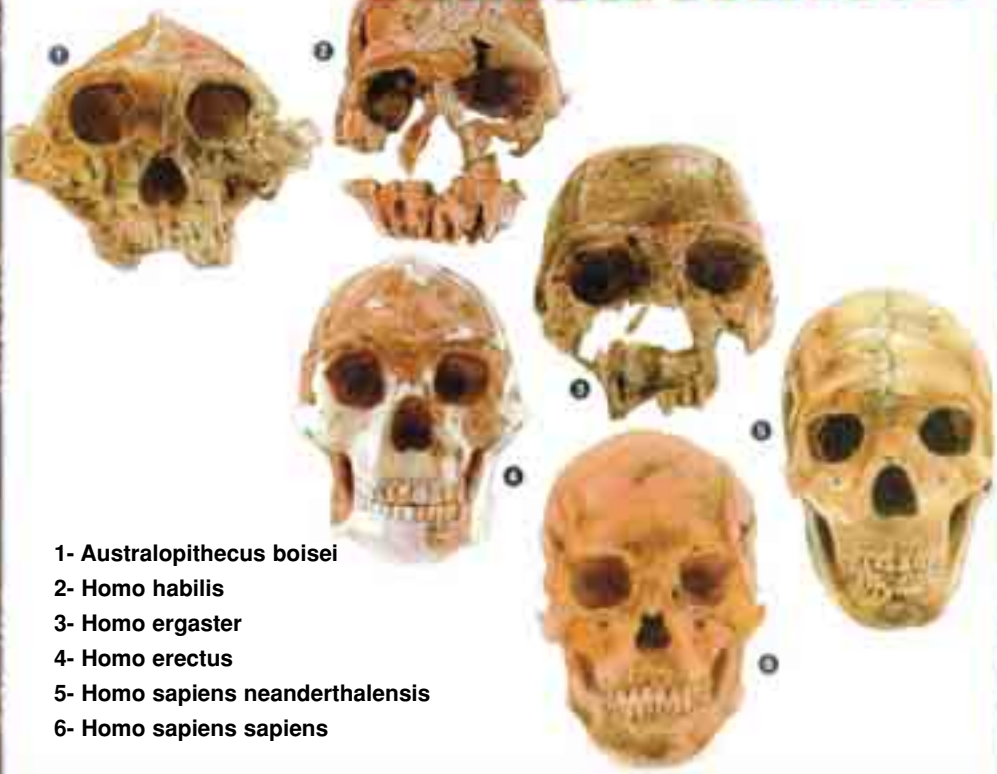
Charles Darwin himself first identified this inconsistency.

In 1869 Alfred R. Wallace, a naturalist who developed the theory of natural selection together with Darwin, wrote to Darwin expressing his concern that natural selection could not account for the human brain:

> Natural Selection could only have endowed [the so-called] savage man with a brain a little superior to that of an ape, whereas he actually possesses one very little inferior to that of the average members of our learned societies.[84]

Darwin immediately realized that this posed a threat to his theory, because the human brain he had branded as allegedly primitive was very much larger than that of the primitive man predicted by his own theory. In his response to Wallace, Darwin warned,

FALSE CLASSIFICATION



1- Australopithecus boisei
2- Homo habilis
3- Homo ergaster
4- Homo erectus
5- Homo sapiens neanderthalensis
6- Homo sapiens sapiens

Evolutionists have created the scenario of human evolution by arranging skulls belonging to extinct species of ape and various human races according to size, from small to large. However, the attempts to establish a family relationship between Man and ape have gone no further than fraud, distortion, sleight of hand, deceptive illustrations and fantastic interpretations. These evolutionist scenarios are refuted by all paleontological, anatomical and biological findings.

> I hope you have not murdered completely your own and my child [the theory of evolution].[85]

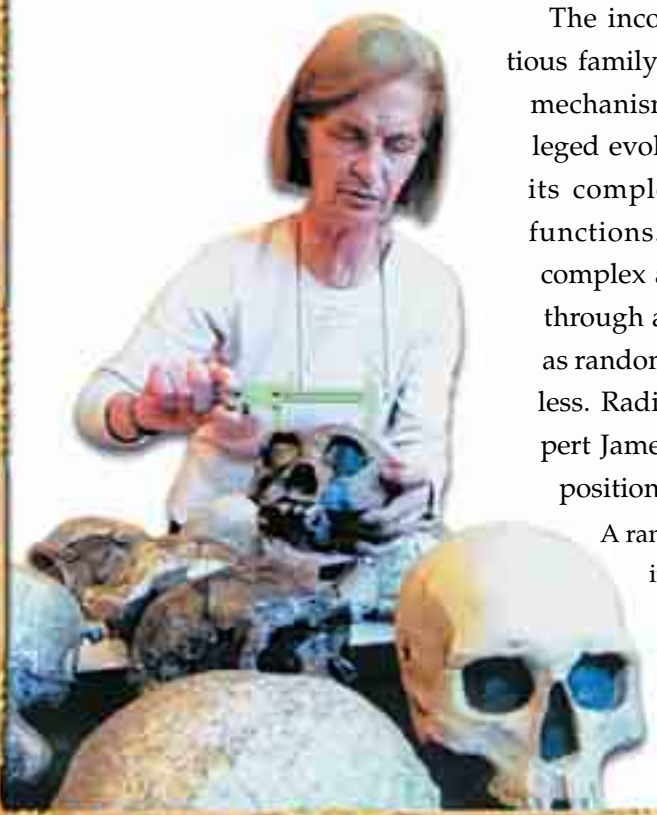
None of the fossils discovered since then have eliminated Darwin's fears. For these reasons, when asked why and how such a complex organ as the human brain developed in primitive man, the evolutionist paleontologist Richard Leakey replied, "I have not the slightest idea." [86]

Skulls Laid out in Order of Size Constitute No Evidence of Evolution

The skull sequences drawn up by Darwinists to defend the evolution of the human brain actually constitute no scientific evidence. In fact, no evolutionary link has been scientifically demonstrated to exist among them. This link exists solely in the minds of those who set the fossils out in these sequences.

One authority to express this openly is Colin Patterson, chief paleontologist at London's Natural History Museum. He has frequently made it clear that Darwinism is supported for philosophical reasons. In an interview, Patterson said that the series that people are so fond of portraying as having existed are actually nowhere to be found in the fossil record. He went on to say:

> If you ask, "What is the evidence for continuity?" you would have to say, there isn't any in the fossils of animals and man.[87]

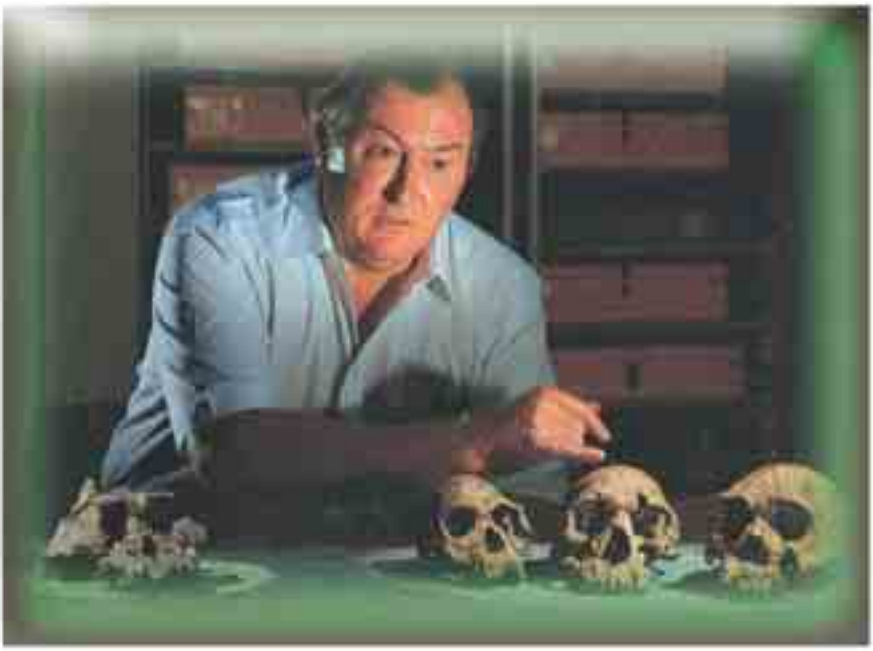


The inconsistencies in the fictitious family tree also appear in the mechanism suggested for the alleged evolution of the brain, with its complex structure and vital functions. Maintaining that so complex an organ could develop through a blind mechanism such as random mutations is meaningless. Radiation and mutation expert James F. Crow describes the position:

> A random change in the highly integrated system of chem-

ical processes which constitute life is certain to impair—just as a random interchange of connections [wires] in a television set is not likely to improve the picture.[88]

The human brain has a far more complex design than that in the most advanced modern technology. World-famous computer companies hold seminars for their engineers about the organization inside the brain, and encourage them to draw inspiration from the brain for their new designs.



Darwinists use the variety in the fossil record and the differences between human races to account for the origin of life. According to their claims, apes came to assume a human form as the result of small, coincidental changes over time. Under this logic, there should have been a great many intermediate forms until man assumed his perfect state, and there should have been many stages bearing semi-animal and semi-human characteristics. Yet apart from a few distortions or falsehoods in the scientific literature that have been exposed as frauds, evolutionists have nothing to propose. No transition from ape to man, of the kind evolutionists claim, ever happened. Right from the very outset, apes have always been created as apes, and human beings as rational, sentient human beings.

The late biochemist and science writer Isaac Asimov says this:

> And in Man is a three-pound brain which, as far as we know, is the most complex and orderly arrangement of matter in the universe.[89]

Considering the perfection of the brain's creation, the nonsensical nature of the claim that the brain is the work of blind coincidences is plain. Indeed, no evolutionist asked "How?" has ever been able to find a logical answer, and many have admitted that this scenario is untenable. For example, Henry Fairfield Osborn, speaking at an American Association for the Advancement of Science meeting, felt the need to say this:

> To my mind the human brain is the most marvelous and mysterious object in the whole universe. [90]

And he spoke these words in 1929, when we knew incomparably less about the brain than we do today.

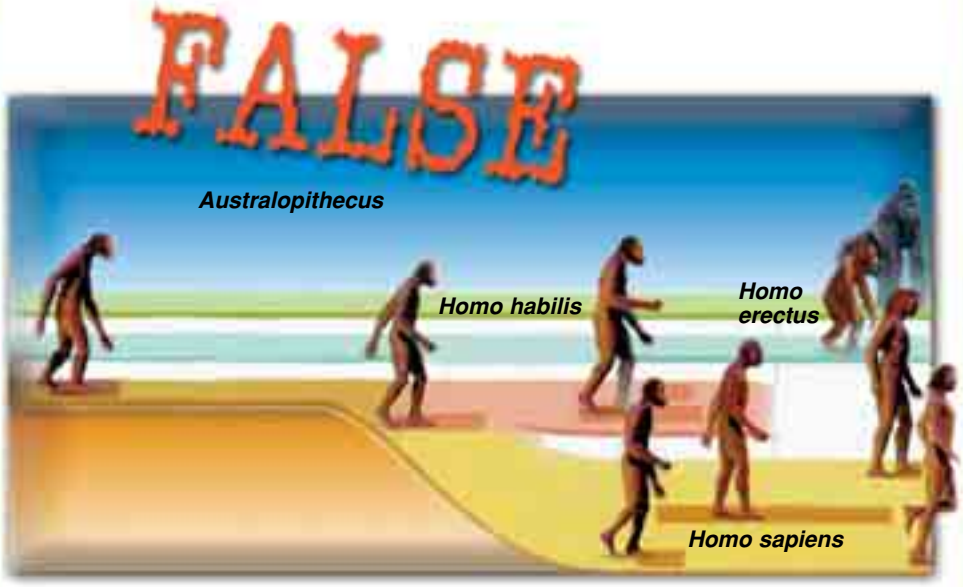
The well-known biologist Jean Rostand says that no matter how long a time frame was involved, he still finds the concept of the human brain emerging through evolution impossible to believe:

> No, decidedly, I cannot make myself think that these "slips" of heredity have been able, even with the cooperation of natural selection, even with the advantage of the immense periods of time in which evolution works on life, to build the entire world, with its structural prodigality and refinements, its astounding adaptations . . . I cannot persuade myself to think that the eye, the ear, the human brain have been formed in this way.[91]

Lyall Watson, an evolutionist anthropologist, states that he doesn't know how a human being with a large brain could have emerged in stages:

> Modern apes, for instance, seem to have sprung out of nowhere. They have no yesterday, no fossil record. And the true origin of modern humans—of upright, naked, tool making, big-brained beings—is, if we are to be honest with ourselves, an equally mysterious matter. [92]

This all goes to show that claims of the human brain emerging through evolution are based on no scientific foundation. They are merely imaginary scenarios stemming from philosophical preconceptions. To



One evolutionist scenario frequently encountered is the myth that human beings are descended from apes. Right from childhood, people are indoctrinated through fantastic illustrations and tales with the idea that apes, with their stooped gait gradually evolved into human beings able to walk upright. This cunning propaganda attempts to give the impression that evolution is an indisputable fact and that human beings exist as the result of a chain of coincidences. This organized scientific fraud that Darwinists offer to deny the fact of creation is full of countless illogicalities.
Yet there is no need to know all the details of evolutionist claims to see the illogicalities here. One single human attribute is sufficient to show how irrational it is to claim that chance has any creative power.

maintain that the human brain, with a design that no technology is able to match, emerged as the work of chance is equal to claiming that computers were not designed by engineers, but came into being by metals and plastics combining haphazardly together. A more consistent, logical approach would be to accept that since computers must have designers, then the brain's infinitely superior design must have been designed, too. The evident truth is that the brain's design is Allah's creation.

Chance Cannot Ensure the Protection of the Brain

Since the brain controls our entire body, the slightest damage that might occur to it could give rise to irreparable consequences. Since a millimetric amount of damage can harm an enormous number of cells and connections, there would be serious repercussions in such fundamental processes as movement, perception and memory.

In the face of such possible dangers, however, the necessary precautions have been taken. The task of protecting the brain has been assumed by the skull of the required hardness, wholly surrounding the brain. No other organ in the body has been given its own separate protection in this way. Thanks to this effective precaution against possible blows, the brain can perform its vital functions perfectly. There can only be one explanation for the way that the bone cells are aware of the brain's vital importance to the body, and come together to enfold the brain without inflicting pressure on it: intelligent Creation. Any rational person knows that such a design cannot be the work of blind coincidences.

Our brain's very delicate system consists of nerve cells that function with electrical signals, support cells that harbor and feed these nerve cells, and blood vessels. These vessels filter serum from the blood, filling the spaces in the brain with that liquid.

From one point of view, the brain is swimming in fluid. Thus the weight of the brain falls to 50 grams (0.1102 pounds), 1/30 of its own weight (approximately 1,500 grams, or 3.307 pounds). This fluid in the brain is in a constant circulation, which also permits the pressure of the fluid to be controlled. Any rise in pressure means a rise in pressure on the brain, and thus to possible brain damage. However, the brain, which has both a very delicate structure and vitally important responsibilities, is protected by a variety of means within the body.

If the brain were not cushioned by this fluid but instead made direct contact with the skull, it would be crushed under its own weight, pressure would rise to very high levels and severely affect its functioning. Indeed, death could even result when pressure forms in one of the brain's vital centers. Yet with the exception of incidences of sickness, we

Millions of signals arrive at the brain at every moment, carrying an enormous load of information, about what is happening inside and outside the body: about cramp in your toes, or the smell of coffee or a familiar face. As other signals arrive and data are analyzed, they establish feeling, memories or thoughts, or plans by which decisions are taken. Signals leaving the brain, on the other hand, tell the various regions of the body what needs to be done: wriggle your toes, drink some coffee, greet a friend. It is highly superficial to say that these commands are directives issued by a moist, grayish organ weighing just one kilogram, made up of unconscious cells, themselves consisting of combinations of unconscious atoms. There must be some other explanation apart from unconscious components coming together within a specific design and undertaking conscious tasks. The consciousness here is that of our Lord, and every cell performs the responsibilities imposed on it through His inspiration.

never encounter such a problem. In the condition known as hydrocephalus, for example, fluid in the brain starts to accumulate as a result of a circulatory defect, and the resulting pressure impacts on brain function. Unless this fluid is drained off through surgery, the increasing pressure results in mental retardation, problems of coordination, blindness, or even death. Conversely, when the pressure of the fluid in the brain falls to below-normal levels, this causes intense headaches, and the brain

again starts to suffer damage.

Another example of this protection is the system that meets the brain's requirements for blood. Since the brain controls all the processes in the body, it therefore requires a steady supply of blood. Its blood flow must be maintained at no matter what cost, and this vital need is met with an extraordinary supervision. Even if the blood supply to all other organs is cut off as a result of hemorrhaging, various nerves go into operation to transmit blood to the brain, and the diameters of the blood vessels are adjusted accordingly. Blood vessels leading to a number of organs are temporarily shut down, and the blood flow is redirected to those arteries leading to the brain.

Faced with these miraculous facts, evolutionists cannot offer any consistent explanation for their claims that the brain developed gradually. They therefore expand on their fairy tale-like explanations, uttering hints that the brain needed to be protected and that coincidence responded to that need. It's of course impossible for unconscious coincidences to determine any such need and to give rise to such an extraordinary solution as a protective skull. Evolutionists who maintain that the skull emerged by chance for protective purposes also need to explain how it was protected until such time as the skull came into being. It is out of question for a brain without a skull to survive or to fulfill its many functions.

Assume that the opposite was actually the case: that according to the evolutionary scenario, first the skull formed and then a brain formed by chance inside it. As we know, evolution maintains that everything is determined by needs, and that these needs are met by chance. It is impossible for an organ or system with no function to come into being. That being so, chance must have seen into the future and anticipated the brain's delicate nature and the protective skull must therefore have come into being at the same time. No logical person could ever believe such a thing.

No matter how impossible it might be, according to evolutionists' imaginary scenarios, the brain developed in stages. One would therefore

expect the skull to develop in accord with those stages. Yet all the fossil skulls in the world exhibit their most fully advanced states. No partly formed or semi-developed skull has ever been excavated.

In order for evolutionist hypotheses to be valid, we must assume that coincidences could think, take precautions and plan ahead, and that they constitute a superior power in their own right. Despite having come into being at random, evolutionists' coincidences must be literally conscious, and everything they do is planned. These coincidences can think of details even beyond the abilities of human beings, and act with foresight. Moreover, the coincidences in evolutionists' dreams generally never make mistakes.

The world's most eminent scientists and technicians cannot invent a device with working capabilities anywhere approaching those of the brain, even with all the 21st-century technology at their disposal. But evolutionists' coincidences managed to build a communication network among billions of cells. It's of course impossible to attach any credence to that claim.

Yet we are still being told tall tales about coincidences acting in a conscious manner, even though the invalidity of the theory of evolution has been demonstrated many times. Those who spin these yarns look completely ridiculous. It is impossible for the detailed creation of the brain to have arisen by chance. It is Allah, the Creator of all things, Who created these delicate balances within a flawless order.

We are reminded of this in the verses of the Qur'an:

O man! What has deluded you in respect of your Noble Lord? He Who created you and formed you and proportioned you and assembled you in whatever way He willed. (Surat al-Infitar: 6-8)

CONCLUSION:

ALLAH PERVADES ALL PLACES

There is a purpose behind the creation of everything on Earth. Allah reveals this in the Qur'an:

Did you suppose that We created you for amusement and that you would not return to Us? (Surat al-Muminun: 113)

We did not create the heavens and Earth and everything between them, except with truth . . . . (Surat al-Hijr: 85)

There is also a purpose behind every detail in human creation. Our eyes, ears, noses, all our cells, the ion channels in our cells, the nucleic acid sequences in our DNA, the connections in our nervous network, the spaces between the neurons, the fatty sheath that surrounds the nerves, the enzymes that accelerate activities and countless other details—all have been created to serve a specific purpose.

Our Lord surrounds and enfolds

us everywhere, as is clearly revealed in verses of the Qur'an:

> **. . . We are nearer to him than his jugular vein. (Surah Qaf: 16)**

> **Both East and West belong to Allah, so wherever you turn, the Face of Allah is there. Allah is All-Encompassing, All-Knowing. (Surat al-Baqara: 115)**

The details and incomparable creations considered throughout the course of this book are just some of the signs of the existence of our Lord and of His dominion over His creation. Everyone can interpret these signs to the extent of his or her conscience and intellect.

Confronted with all these details, some people are unable to understand the wisdom in Allah's creation, even though they may have studied it close up, researched it and written books about it. These people are referred to in the following terms in the Qur'an:

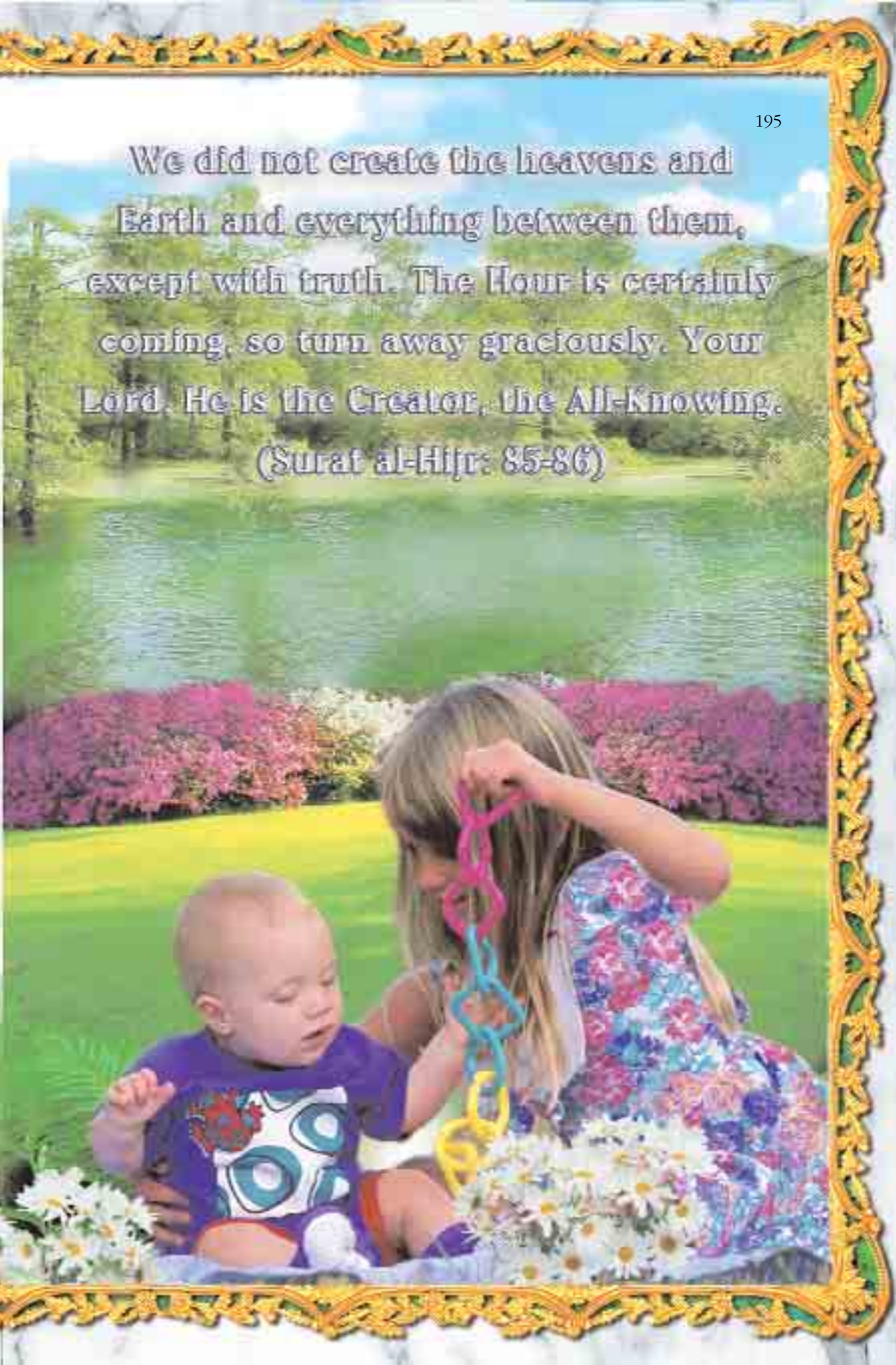
> **They do not measure Allah with His true measure. Allah is All-Strong, Almighty. (Surat al-Hajj: 74)**

The exemplary behavior of the faithful is revealed thus:

. . . Those who remember Allah, standing, sitting and lying on their sides, and reflect on the creation of the heavens and the Earth: "Our Lord, You have not created this for nothing. Glory be to You! So safeguard us from the punishment of the Fire." (Surah Al 'Imran: 191)

The knowledge, artistry and superior intellect of Allah that we encounter in every square millimeter of the human body contain very important messages. The importance of evaluating this information is revealed in the words: . . . **Only those of His slaves with knowledge have fear of Allah . . .** (Surah Fatir: 28) It is utterly meaningless to think that human beings have no purpose when there is such a detailed and purposeful creation all around us, including our own bodies. Of course there is a reason for people's presence in this world. Every second we live and breathe and all these countless details have been bestowed upon us as a blessing. Since such beauty and delicacy have been brought into being, then they must have significance for us. These messages remind us to appreciate Allah as we ought, come to know the Lord Who created us, see His mercy on us, and to fulfill our duties as His servants by rendering Him due thanks.

Has man ever known a point of time when he was not something remembered? We created man from a mingled drop to test him, and We made him hearing and seeing. We guided him on the Way, whether he is thankful or unthankful. (Surat al-Insan: 1-3)


We did not create the heavens and
Earth and everything between them,
except with truth. The Hour is certainly
coming, so turn away graciously. Your
Lord, He is the Creator, the All-Knowing.
(Surat al-Hijr: 85-86)

THE DECEPTION OF EVOLUTION

Darwinism, in other words the theory of evolution, was put forward with the aim of denying the fact of creation, but is in truth nothing but failed, unscientific nonsense. This theory, which claims that life emerged by chance from inanimate matter, was invalidated by the scientific evidence of miraculous order in the universe and in living things. In this way, science confirmed the fact that Allah created the universe and the living things in it. The propaganda carried out today in order to keep the theory of evolution alive is based solely on the distortion of the scientific facts, biased interpretation, and lies and falsehoods disguised as science.

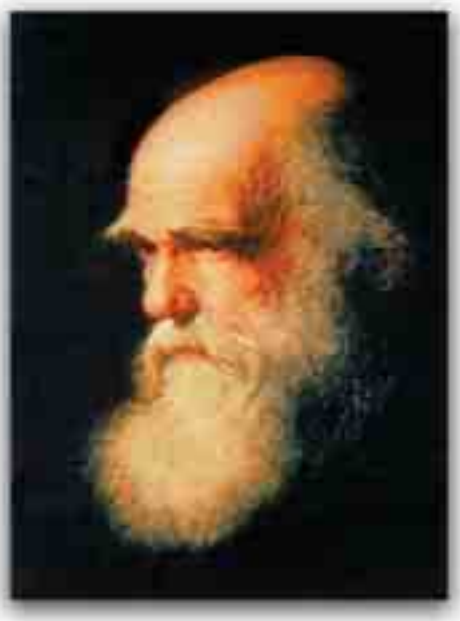
Yet this propaganda cannot conceal the truth. The fact that the theory of evolution is the greatest deception in the history of science has been expressed more and more in the scientific world over the last 20-30 years. Research carried out after the 1980s in par-

ticular has revealed that the claims of Darwinism are totally unfounded, something that has been stated by a large number of scientists. In the United States in particular, many scientists from such different fields as biology, biochemistry and paleontology recognize the invalidity of Darwinism and employ the fact of creation to account for the origin of life.

We have examined the collapse of the theory of evolution and the proofs of creation in great scientific detail in many of our works, and are still continuing to do so. Given the enormous importance of this subject, it will be of great benefit to summarize it here.

The Scientific Collapse of Darwinism

Although this doctrine goes back as far as ancient Greece, the theory of evolution was advanced extensively in the nineteenth century. The most important development that made it the top topic of the world of science was Charles Darwin's *The Origin of Species*, published in 1859. In this book, he denied that Allah created different living species on Earth separately, for he claimed that all living beings had a common ancestor and had diversified over time through small changes. Darwin's theory was not based on any concrete scientific finding; as he also accepted, it was just an "assumption." Moreover, as Darwin confessed in the long chapter of his book titled "Difficulties on Theory," the theory failed in the face of many critical questions.



Charles Darwin

Darwin invested all of his hopes in new scientific discoveries, which he expected to

solve these difficulties. However, contrary to his expectations, scientific findings expanded the dimensions of these difficulties. The defeat of Darwinism in the face of science can be reviewed under three basic topics:

1) The theory cannot explain how life originated on Earth.

2) No scientific finding shows that the "evolutionary mechanisms" proposed by the theory have any evolutionary power at all.

3) The fossil record proves the exact opposite of what the theory suggests.

In this section, we will examine these three basic points in general outlines:

The First Insurmountable Step: The Origin of Life

The theory of evolution posits that all living species evolved from a single living cell that emerged on the primitive Earth 3.8 billion years ago. How a single cell could generate millions of complex living species and, if such an evolution really occurred, why traces of it cannot be observed in the fossil record are some of the questions that the theory cannot answer. However, first and foremost, we need to ask: How did this "first cell" originate?

Since the theory of evolution denies creation and any kind of supernatural intervention, it maintains that the "first cell" originated coincidentally within the laws of nature, without any design, plan or arrangement. According to the theory, inanimate matter must have produced a living cell as a result of coincidences. Such a claim, however, is inconsistent with the most unassailable rules of biology.

Life Comes From Life

In his book, Darwin never referred to the origin of life. The primitive understanding of science in his time rested on the assumption that living beings had a very simple structure. Since medieval times, spontaneous generation, which asserts that non-living materials came together

to form living organisms, had been widely accepted. It was commonly believed that insects came into being from food leftovers, and mice from wheat. Interesting experiments were conducted to prove this theory. Some wheat was placed on a dirty piece of cloth, and it was believed that mice would originate from it after a while.

Similarly, maggots developing in rotting meat was assumed to be evidence of spontaneous generation. However, it was later understood that worms did not appear on meat spontaneously, but were carried there by flies in the form of larvae, invisible to the naked eye.

Even when Darwin wrote *The Origin of Species*, the belief that bacteria could come into existence from non-living matter was widely accepted in the world of science.

However, five years after the publication of Darwin's book, Louis Pasteur announced his results after long studies and experiments, that disproved spontaneous generation, a cornerstone of Darwin's theory. In his triumphal lecture at the Sorbonne in 1864, Pasteur said: "Never will the doctrine of spontaneous generation recover from the mortal blow struck by this simple experiment."[93]

Louis Pasteur

For a long time, advocates of the theory of evolution resisted these findings. However, as the development of science unraveled the complex structure of the cell of a living being, the idea that life could come into being coincidentally faced an even greater impasse.

Inconclusive Efforts of the Twentieth Century

The first evolutionist who took up the subject of the origin of life in the twentieth century was the renowned Russian biologist Alexander Oparin. With various theses he advanced in the 1930s, he tried to prove

that a living cell could originate by coincidence. These studies, however, were doomed to failure, and Oparin had to make the following confession:

> Unfortunately, however, the problem of the origin of the cell is perhaps the most obscure point in the whole study of the evolution of organisms.[94]

Evolutionist followers of Oparin tried to carry out experiments to solve this problem. The best known experiment was carried out by the American chemist Stanley Miller in 1953. Combining the gases he alleged to have existed in the primordial Earth's atmosphere in an experiment set-up, and adding energy to the mixture, Miller synthesized several organic molecules (amino acids) present in the structure of proteins.

Barely a few years had passed before it was revealed that this experiment, which was then presented as an important step in the name of evolution, was invalid, for the atmosphere used in the experiment was very different from the real Earth conditions.[95]

After a long silence, Miller confessed that the atmosphere medium he used was unrealistic.[96]

All the evolutionists' efforts throughout the twentieth century to explain the origin of life ended in failure. The geochemist Jeffrey Bada, from the San Diego Scripps Institute accepts this fact in an article published in Earth magazine in 1998:

> Today as we leave the twentieth century, we still face the biggest unsolved problem that we had when we entered the twentieth century: How did life originate on Earth?[97]

The Complex Structure of Life

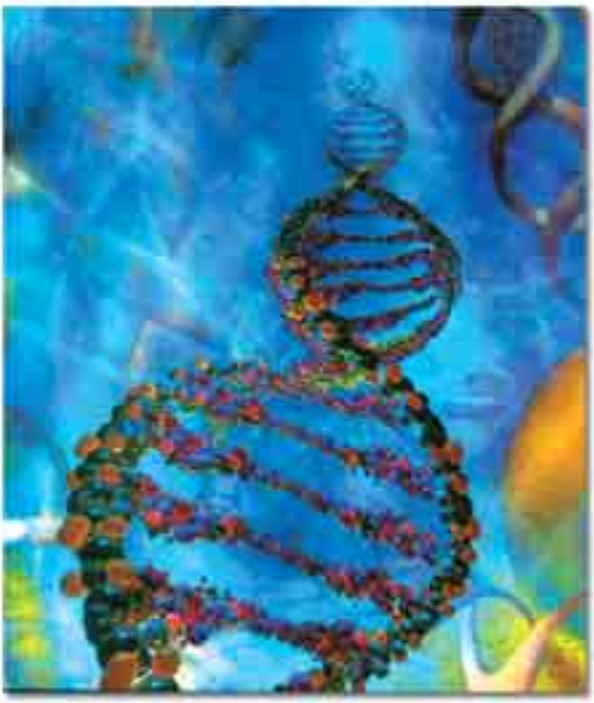
The primary reason why the theory of evolution ended up in such a great impasse regarding the origin of life is that even those living organisms deemed to be the simplest have incredibly complex structures. The cell of a living thing is more complex than all of our man-made technological products. Today, even in the most developed laboratories of the world, a living cell cannot be produced by bringing organic chemicals together.

The conditions required for the formation of a cell are too great in

quantity to be explained away by coincidences. The probability of proteins, the building blocks of a cell, being synthesized coincidentally, is 1 in 10^{950} for an average protein made up of 500 amino acids. In mathematics, a probability smaller than 1 over 10^{50} is considered to be impossible in practical terms.

The DNA molecule, which is located in the nucleus of a cell and which stores genetic information, is an incredible databank. If the information coded in DNA were written down, it would make a giant library consisting of an estimated 900 volumes of encyclopedias consisting of 500 pages each.

A very interesting dilemma emerges at this point: DNA can replicate itself only with the help of some specialized proteins (enzymes). However, the synthesis of these enzymes can be realized only by the information coded in DNA. As they both depend on each other, they have to exist at the same time for replication. This brings the scenario that life originated by itself to a deadlock. Prof. Leslie Orgel, an evolutionist of



One of the facts nullifying the theory of evolution is the incredibly complex structure of life. The DNA molecule located in the nucleus of cells of living beings is an example of this. The DNA is a sort of databank formed of the arrangement of four different molecules in different sequences. This databank contains the codes of all the physical traits of that living being. When the human DNA is put into writing, it is calculated that this would result in an encyclopedia made up of 900 volumes. Unquestionably, such extraordinary information definitively refutes the concept of coincidence.

repute from the University of San Diego, California, confesses this fact in the September 1994 issue of the *Scientific American* magazine:

> It is extremely improbable that proteins and nucleic acids, both of which are structurally complex, arose spontaneously in the same place at the same time. Yet it also seems impossible to have one without the other. And so, at first glance, one might have to conclude that life could never, in fact, have originated by chemical means.[98] No doubt, if it is impossible for life to have originated from natural causes, then it has to be accepted that life was "created" in a supernatural way. This fact explicitly invalidates the theory of evolution, whose main purpose is to deny creation.

Imaginary Mechanism of Evolution

The second important point that negates Darwin's theory is that both concepts put forward by the theory as "evolutionary mechanisms" were understood to have, in reality, no evolutionary power.

Darwin based his evolution allegation entirely on the mechanism of "natural selection." The importance he placed on this mechanism was evident in the name of his book: *The Origin of Species, By Means of Natural Selection…*

Natural selection holds that those living things that are stronger and more suited to the natural conditions of their habitats will survive in the struggle for life. For example, in a deer herd under the threat of attack by wild animals, those that can run faster will survive. Therefore, the deer herd will be comprised of faster and stronger individuals. However, unquestionably, this mechanism will not cause deer to evolve and transform themselves into another living species, for instance, horses.

Therefore, the mechanism of natural selection has no evolutionary power. Darwin was also aware of this fact and had to state this in his book *The Origin of Species:*

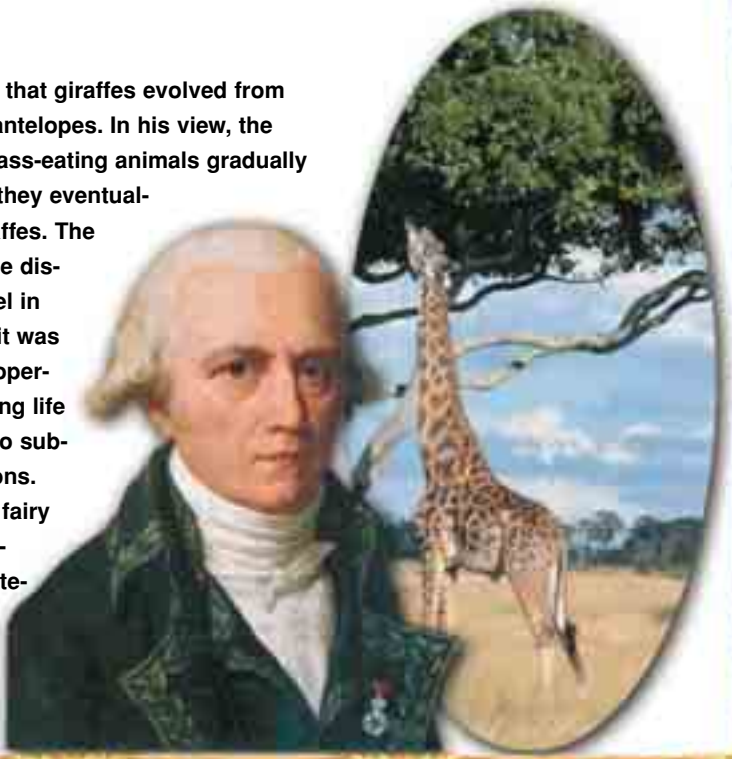
> Natural selection can do nothing until favourable individual differences or variations occur.[99]

Lamarck's Impact

So, how could these "favorable variations" occur? Darwin tried to answer this question from the standpoint of the primitive understanding of science at that time. According to the French biologist Chevalier de Lamarck (1744-1829), who lived before Darwin, living creatures passed on the traits they acquired during their lifetime to the next generation. He asserted that these traits, which accumulated from one generation to another, caused new species to be formed. For instance, he claimed that giraffes evolved from antelopes; as they struggled to eat the leaves of high trees, their necks were extended from generation to generation.

Darwin also gave similar examples. In his book *The Origin of Species*, for instance, he said that some bears going into water to find food transformed themselves into whales over time.[100]

However, the laws of inheritance discovered by Gregor Mendel (1822-84) and verified by the science of genetics, which flourished in the twentieth century, utterly demolished the legend that acquired traits



Lamarck believed that giraffes evolved from such animals as antelopes. In his view, the necks of these grass-eating animals gradually grew longer, and they eventually turned into giraffes. The laws of inheritance discovered by Mendel in 1865 proved that it was impossible for properties acquired during life to be handed on to subsequent generations. Lamarck's giraffe fairy tale was thus consigned to the wastebin of history.

were passed on to subsequent generations. Thus, natural selection fell out of favor as an evolutionary mechanism.

Neo-Darwinism and Mutations

In order to find a solution, Darwinists advanced the "Modern Synthetic Theory," or as it is more commonly known, Neo-Darwinism, at the end of the 1930s. Neo-Darwinism added mutations, which are distortions formed in the genes of living beings due to such external factors as radiation or replication errors, as the "cause of favorable variations" in addition to natural mutation.

Today, the model that stands for evolution in the world is Neo-Darwinism. The theory maintains that millions of living beings formed as a result of a process whereby numerous complex organs of these organisms (e.g., ears, eyes, lungs, and wings) underwent "mutations," that is, genetic disorders. Yet, there is an outright scientific fact that totally undermines this theory: Mutations do not cause living beings to develop; on the contrary, they are always harmful.

The reason for this is very simple: DNA has a very complex structure, and random effects can only harm it. The American geneticist B. G. Ranganathan explains this as follows:

> First, genuine mutations are very rare in nature. Secondly, most mutations are harmful since they are random, rather than orderly changes in the structure of genes; any random change in a highly ordered system will be for the worse, not for the better. For example, if an earthquake were to shake a highly ordered structure such as a building, there would be a random change in the framework of the building which, in all probability, would not be an improvement.[101]

Not surprisingly, no mutation example, which is useful, that is, which is observed to develop the genetic code, has been observed so far. All mutations have proved to be harmful. It was understood that mutation, which is presented as an "evolutionary mechanism," is actually a genetic occurrence that harms living things, and leaves them disabled. (The most common effect of mutation on human beings is cancer.) Of

Accidental mutations develop into defects in humans as well as other living beings. The Chernobyl disaster is an eye-opener for the effects of mutations.

course, a destructive mechanism cannot be an "evolutionary mechanism." Natural selection, on the other hand, "can do nothing by itself," as Darwin also accepted. This fact shows us that there is no "evolutionary mechanism" in nature. Since no evolutionary mechanism exists, no such any imaginary process called "evolution" could have taken place.

The Fossil Record: No Sign of Intermediate Forms

The clearest evidence that the scenario suggested by the theory of evolution did not take place is the fossil record.

According to this theory, every living species has sprung from a predecessor. A previously existing species turned into something else over time and all species have come into being in this way. In other

words, this transformation proceeds gradually over millions of years.

Had this been the case, numerous intermediary species should have existed and lived within this long transformation period.

For instance, some half-fish/half-reptiles should have lived in the past which had acquired some reptilian traits in addition to the fish traits they already had. Or there should have existed some reptile-birds, which acquired some bird traits in addition to the reptilian traits they already had. Since these would be in a transitional phase, they should be disabled, defective, crippled living beings. Evolutionists refer to these imaginary creatures, which they believe to have lived in the past, as "transitional forms."

If such animals ever really existed, there should be millions and even billions of them in number and variety. More importantly, the remains of these strange creatures should be present in the fossil record. In *The Origin of Species*, Darwin explained:

> If my theory be true, numberless intermediate varieties, linking most closely all of the species of the same group together must assuredly have existed... Consequently, evidence of their former existence could be found only amongst fossil remains.[102]

A frog fossil, millions of years old, is no different from the frogs in our day.

Darwin's Hopes Shattered

However, although evolutionists have been making strenuous efforts to find fossils since the middle of the nineteenth century all over the world, no transitional forms have yet been uncovered. All of the fossils, contrary to the evolutionists' expectations, show that life appeared on Earth all of a sudden and fully-formed.

One famous British paleontologist, Derek V. Ager, admits this fact, even though he is an evolutionist:

> The point emerges that if we examine the fossil record in detail, whether at the level of orders or of species, we find – over and over again – not gradual evolution, but the sudden explosion of one group at the expense of another.[103]

This means that in the fossil record, all living species suddenly emerge as fully formed, without any intermediate forms in between. This is just the opposite of Darwin's assumptions. Also, this is very strong evidence that all living things are created. The only explanation of a living species emerging suddenly and complete in every detail without any evolutionary ancestor is that it was created. This fact is admitted also by the widely known evolutionist biologist Douglas Futuyma:

> Creation and evolution, between them, exhaust the possible explanations for the origin of living things. Organisms either appeared on the earth fully developed or they did not. If they did not, they must have developed from pre-existing species by some process of modification. If they did appear in a fully developed state, they must indeed have been created by some omnipotent intelligence.[104]

Fossils show that living beings emerged fully developed and in a perfect state on the Earth. That means that "the origin of species," contrary to Darwin's supposition, is not evolution, but creation.

The Tale of Human Evolution

The subject most often brought up by advocates of the theory of evolution is the subject of the origin of man. The Darwinist claim holds

that modern man evolved from ape-like creatures. During this alleged evolutionary process, which is supposed to have started 4-5 million years ago, some "transitional forms" between modern man and his ancestors are supposed to have existed. According to this completely imaginary scenario, four basic "categories" are listed:

1. *Australopithecus*
2. *Homo habilis*
3. *Homo erectus*
4. *Homo sapiens*

Evolutionists call man's so-called first ape-like ancestors Australopithecus, which means "South African ape." These living beings are actually nothing but an old ape species that has become extinct. Extensive research done on various Australopithecus specimens by two world famous anatomists from England and the USA, namely, Lord Solly Zuckerman and Prof. Charles Oxnard, shows that these apes belonged to an ordinary ape species that became extinct and bore no resemblance to humans.[105]

Evolutionists classify the next stage of human evolution as "homo," that is "man." According to their claim, the living beings in the Homo series are more developed than *Australopithecus*. Evolutionists devise a fanciful evolution scheme by arranging different fossils of these creatures in a particular order. This scheme is imaginary because it has never been proved that there is an evolutionary relation between these different classes. Ernst Mayr, one of the twentieth century's most important evolutionists, contends in his book *One Long Argument* that "particularly historical [puzzles] such as the origin of life or of Homo sapiens, are extremely difficult and may even resist a final, satisfying explanation."[106]

By outlining the link chain as Australopithecus > *Homo habilis* > *Homo erectus* > *Homo sapiens*, evolutionists imply that each of these species is one another's ancestor. However, recent findings of paleoanthropologists have revealed that *Australopithecus*, *Homo habilis*, and *Homo erectus* lived at different parts of the world at the same time.[107]

Moreover, a certain segment of humans classified as *Homo erectus*

have lived up until very modern times. *Homo sapiens neandarthalensis* and *Homo sapiens sapiens* (modern man) co-existed in the same region.[188]

This situation apparently indicates the invalidity of the claim that they are ancestors of one another. Stephen Jay Gould explained this deadlock of the theory of evolution, although he was himself one of the leading advocates of evolution in the twentieth century:

> What has become of our ladder if there are three coexisting lineages of hominids (A. africanus, the robust australopithecines, and H. habilis), none clearly derived from another? Moreover, none of the three display any evolutionary trends during their tenure on earth.[109]

Put briefly, the scenario of human evolution, which is "upheld" with the help of various drawings of some "half ape, half human" creatures appearing in the media and course books, that is, frankly, by means of propaganda, is nothing but a tale with no scientific foundation.

Lord Solly Zuckerman, one of the most famous and respected scientists in the U.K., who carried out research on this subject for years and studied *Australopithecus* fossils for 15 years, finally concluded, despite being an evolutionist himself, that there is, in fact, no such family tree branching out from ape-like creatures to man.

Zuckerman also made an interesting "spectrum of science" ranging from those he considered scientific to those he considered unscientific. According to Zuckerman's spectrum, the most "scientific" – that is, depending on concrete data – fields of science are chemistry and physics. After them come the biological sciences and then the social sciences. At the far end of the spectrum, which is the part considered to be most "unscientific," are "extra-sensory perception" – concepts such as telepathy and sixth sense – and finally "human evolution." Zuckerman explains his reasoning:

> We then move right off the register of objective truth into those fields of presumed biological science, like extrasensory perception or the interpretation of man's fossil history, where to the faithful [evolutionist] anything is possible – and where the ardent believer [in evolution] is sometimes able to believe several contradictory things at the same time.[110]

The tale of human evolution boils down to nothing but the prejudiced interpretations of some fossils unearthed by certain people, who blindly adhere to their theory.

Darwinian Formula!

Besides all the technical evidence we have dealt with so far, let us now for once, examine what kind of a superstition the evolutionists have with an example so simple as to be understood even by children:

The theory of evolution asserts that life is formed by chance. According to this claim, lifeless and unconscious atoms came together to form the cell and then they somehow formed other living things, including man. Let us think about that. When we bring together the elements that are the building-blocks of life such as carbon, phosphorus, nitrogen and potassium, only a heap is formed. No matter what treatments it undergoes, this atomic heap cannot form even a single living being. If you like, let us formulate an "experiment" on this subject and let us examine on the behalf of evolutionists what they really claim without pronouncing loudly under the name "Darwinian formula":

Let evolutionists put plenty of materials present in the composition of living things such as phosphorus, nitrogen, carbon, oxygen, iron, and magnesium into big barrels. Moreover, let them add in these barrels any material that does not exist under normal conditions, but they think as necessary. Let them add in this mixture as many amino acids and as many proteins – a single one of which has a formation probability of 10-950 – as they like. Let them expose these mixtures to as much heat and moisture as they like. Let them stir these with whatever technologically developed device they like. Let them put the foremost scientists beside these barrels. Let these experts wait in turn beside these barrels for billions, and even trillions of years. Let them be free to use all kinds of conditions they believe to be necessary for a human's formation. No matter what they do, they cannot produce from these barrels a human, say a professor that examines his cell structure under the electron microscope. They cannot produce giraffes, lions, bees, canaries, horses, dolphins, ros-

es, orchids, lilies, carnations, bananas, oranges, apples, dates, tomatoes, melons, watermelons, figs, olives, grapes, peaches, peafowls, pheasants, multicoloured butterflies, or millions of other living beings such as these. Indeed, they could not obtain even a single cell of any one of them.

Briefly, unconscious atoms cannot form the cell by coming together. They cannot take a new decision and divide this cell into two, then take other decisions and create the professors who first invent the electron microscope and then examine their own cell structure under that microscope. Matter is an unconscious, lifeless heap, and it comes to life with Allah's superior creation.

The theory of evolution, which claims the opposite, is a total fallacy completely contrary to reason. Thinking even a little bit on the claims of evolutionists discloses this reality, just as in the above example.

Technology in the Eye and the Ear

Another subject that remains unanswered by evolutionary theory is the excellent quality of perception in the eye and the ear.

Before passing on to the subject of the eye, let us briefly answer the question of how we see. Light rays coming from an object fall oppositely on the eye's retina. Here, these light rays are transmitted into electric signals by cells and reach a tiny spot at the back of the brain, the "center of vision." These electric signals are perceived in this center as an image after a series of processes. With this technical background, let us do some thinking.

The brain is insulated from light. That means that its inside is completely dark, and that no light reaches the place where it is located. Thus, the "center of vision" is never touched by light and may even be the darkest place you have ever known. However, you observe a luminous, bright world in this pitch darkness.

The image formed in the eye is so sharp and distinct that even the technology of the twentieth century has not been able to attain it. For instance, look at the book you are reading, your hands with which you are holding it, and then lift your head and look around you. Have you ever

seen such a sharp and distinct image as this one at any other place? Even the most developed television screen produced by the greatest television producer in the world cannot provide such a sharp image for you. This is a three-dimensional, colored, and extremely sharp image. For more than 100 years, thousands of engineers have been trying to achieve this sharpness. Factories, huge premises were established, much research has been done, plans and designs have been made for this purpose. Again, look at a TV screen and the book you hold in your hands. You will see that there is a big difference in sharpness and distinction. Moreover, the TV screen shows you a two-dimensional image, whereas with your eyes, you watch a three-dimensional perspective with depth.

For many years, tens of thousands of engineers have tried to make a three-dimensional TV and achieve the vision quality of the eye. Yes, they have made a three-dimensional television system, but it is not possible to watch it without putting on special 3-D glasses; moreover, it is only an artificial three-dimension. The background is more blurred, the foreground appears like a paper setting. Never has it been possible to produce a sharp and distinct vision like that of the eye. In both the cam-

era and the television, there is a loss of image quality.

Evolutionists claim that the mechanism producing this sharp and distinct image has been formed by chance. Now, if somebody told you that the television in your room was formed as a result of chance, that all of its atoms just happened to come together and make up this device that produces an image, what would you think? How can atoms do what thousands of people cannot?

If a device producing a more primitive image than the eye could not have been formed by chance, then it is very evident that the eye and the image seen by the eye could not have been formed by chance. The same situation applies to the ear. The outer ear picks up the available sounds by the auricle and directs them to the middle ear, the middle ear transmits the sound vibrations by intensifying them, and the inner ear sends these vibrations to the brain by translating them into electric signals. Just as with the eye, the act of hearing finalizes in the center of hearing in the brain.

The situation in the eye is also true for the ear. That is, the brain is insulated from sound just as it is from light. It does not let any sound in. Therefore, no matter how noisy is the outside, the inside of the brain is completely silent. Nevertheless, the sharpest sounds are perceived in the brain. In your completely silent brain, you listen to symphonies, and hear all of the noises in a crowded place. However, were the sound level in your brain measured by a precise device at that moment, complete silence would be found to be prevailing there.

As is the case with imagery, decades of effort have been spent in trying to generate and reproduce sound that is faithful to the original. The results of these efforts are sound recorders, high-fidelity systems, and systems for sensing sound. Despite all of this technology and the thousands of engineers and experts who have been working on this endeavor, no sound has yet been obtained that has the same sharpness and clarity as the sound perceived by the ear. Think of the highest-quality hi-fi systems produced by the largest company in the music industry. Even in these devices, when sound is recorded some of it is lost; or when you

turn on a hi-fi you always hear a hissing sound before the music starts. However, the sounds that are the products of the human body's technology are extremely sharp and clear. A human ear never perceives a sound accompanied by a hissing sound or with atmospherics as does a hi-fi; rather, it perceives sound exactly as it is, sharp and clear. This is the way it has been since the creation of man.

So far, no man-made visual or recording apparatus has been as sensitive and successful in perceiving sensory data as are the eye and the ear. However, as far as seeing and hearing are concerned, a far greater truth lies beyond all this.

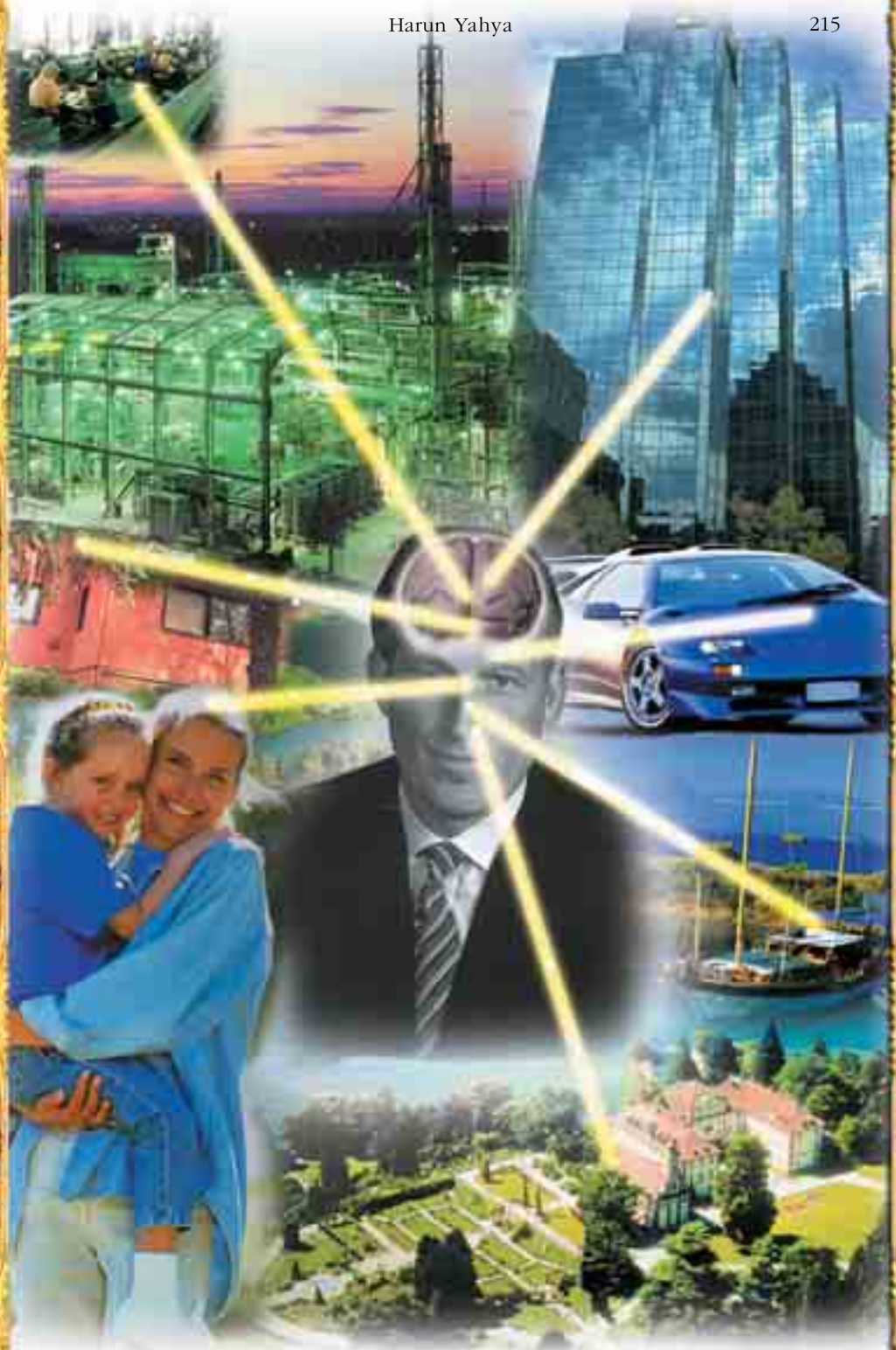
To Whom Does the Consciousness that Sees andHears within the Brain Belong?

Who watches an alluring world in the brain, listens to symphonies and the twittering of birds, and smells the rose?

The stimulations coming from a person's eyes, ears, and nose travel to the brain as electro-chemical nerve impulses. In biology, physiology, and biochemistry books, you can find many details about how this image forms in the brain. However, you will never come across the most important fact: Who perceives these electro-chemical nerve impulses as images, sounds, odors, and sensory events in the brain? There is a consciousness in the brain that perceives all this without feeling any need for an eye, an ear, and a nose. To whom does this consciousness belong? Of course it does not belong to the nerves, the fat layer, and neurons comprising the brain. This is why Darwinist-materialists, who believe that everything is comprised of matter, cannot answer these questions.

For this consciousness is the spirit created by Allah, which needs neither the eye to watch the images nor the ear to hear the sounds. Furthermore, it does not need the brain to think.

Everyone who reads this explicit and scientific fact should ponder on Almighty Allah, and fear and seek refuge in Him, for He squeezes the entire universe in a pitch-dark place of a few cubic centimeters in a three-dimensional, colored, shadowy, and luminous form.



A Materialist Faith

The information we have presented so far shows us that the theory of evolution is incompatible with scientific findings. The theory's claim regarding the origin of life is inconsistent with science, the evolutionary mechanisms it proposes have no evolutionary power, and fossils demonstrate that the required intermediate forms have never existed. So, it certainly follows that the theory of evolution should be pushed aside as an unscientific idea. This is how many ideas, such as the Earth-centered universe model, have been taken out of the agenda of science throughout history.

However, the theory of evolution is kept on the agenda of science. Some people even try to represent criticisms directed against it as an "attack on science." Why?

The reason is that this theory is an indispensable dogmatic belief for some circles. These circles are blindly devoted to materialist philosophy and adopt Darwinism because it is the only materialist explanation that can be put forward to explain the workings of nature.

Interestingly enough, they also confess this fact from time to time. A well-known geneticist and an outspoken evolutionist, Richard C. Lewontin from Harvard University, confesses that he is "first and foremost a materialist and then a scientist":

> It is not that the methods and institutions of science somehow compel us accept a material explanation of the phenomenal world, but, on the contrary, that we are forced by our a priori adherence to material causes to create an apparatus of investigation and a set of concepts that produce material explanations, no matter how counter-intuitive, no matter how mystifying to the uninitiated. Moreover, that materialism is absolute, so we cannot allow a Divine [intervention]...[111]

These are explicit statements that Darwinism is a dogma kept alive just for the sake of adherence to materialism. This dogma maintains that there is no being save matter. Therefore, it argues that inanimate, unconscious matter created life. It insists that millions of different living species (e.g., birds, fish, giraffes, tigers, insects, trees, flowers, whales,

and human beings) originated as a result of the interactions between matter such as pouring rain, lightning flashes, and so on, out of inanimate matter. This is a precept contrary both to reason and science. Yet Darwinists continue to defend it just so as "not to allow a Divine intervention."

Anyone who does not look at the origin of living beings with a materialist prejudice will see this evident truth: All living beings are works of a Creator, Who is All-Powerful, All-Wise, and All-Knowing. This Creator is Allah, Who created the whole universe from non-existence, designed it in the most perfect form, and fashioned all living beings.

The Theory of Evolution: The Most Potent Spell in the World

Anyone free of prejudice and the influence of any particular ideology, who uses only his or her reason and logic, will clearly understand that belief in the theory of evolution, which brings to mind the superstitions of societies with no knowledge of science or civilization, is quite impossible.

As explained above, those who believe in the theory of evolution think that a few atoms and molecules thrown into a huge vat could produce thinking, reasoning professors and university students; such scientists as Einstein and Galileo; such artists as Humphrey Bogart, Frank Sinatra and Luciano Pavarotti; as well as antelopes, lemon trees, and carnations. Moreover, as the scientists and professors who believe in this nonsense are educated people, it is quite justifiable to speak of this theory as "the most potent spell in history." Never before has any other belief or idea so taken away peoples' powers of reason, refused to allow them to think intelligently and logically, and hidden the truth from them as if they had been blindfolded. This is an even worse and unbelievable blindness than the totem worship in some parts of Africa, the people of Saba worshipping the Sun, the tribe of Abraham (pbuh) worshipping idols they had made with their own hands, or the people of Moses

(pbuh) worshipping the Golden Calf.

In fact, Allah has pointed to this lack of reason in the Qur'an. In many verses, He reveals that some peoples' minds will be closed and that they will be powerless to see the truth. Some of these verses are as follows:

> **As for those who do not believe, it makes no difference to them whether you warn them or do not warn them, they will not believe. Allah has sealed up their hearts and hearing and over their eyes is a blindfold. They will have a terrible punishment. (Surat al-Baqara: 6-7)**
>
> **… They have hearts with which they do not understand. They have eyes with which they do not see. They have ears with which they do not hear. Such people are like cattle. No, they are even further astray! They are the unaware. (Surat al-A'raf: 179)**
>
> **Even if We opened up to them a door into heaven, and they spent the day ascending through it, they would only say: "Our eyesight is befuddled! Or rather we have been put under a spell!" (Surat al-Hijr: 14-15)**

Words cannot express just how astonishing it is that this spell should hold such a wide community in thrall, keep people from the truth, and not be broken for 150 years. It is understandable that one or a few people might believe in impossible scenarios and claims full of stupidity and illogicality. However, "magic" is the only possible explanation for people from all over the world believing that unconscious and lifeless atoms suddenly decided to come together and form a universe that functions with a flawless system of organization, discipline, reason, and consciousness; a planet named Earth with all of its features so perfectly suited to life; and living things full of countless complex systems.

In fact, the Qur'an relates the incident of Moses (pbuh) and Pharaoh to show that some people who support atheistic philosophies actually influence others by magic. When Pharaoh was told about the true religion, he told Prophet Moses (pbuh) to meet with his own magicians. When Moses (pbuh) did so, he told them to demonstrate their abilities first. The verses continue:

He said: "You throw." And when they threw, they cast a spell on the people's eyes and caused them to feel great fear of them. They produced an extremely powerful magic. (Surat al-A'raf: 116)

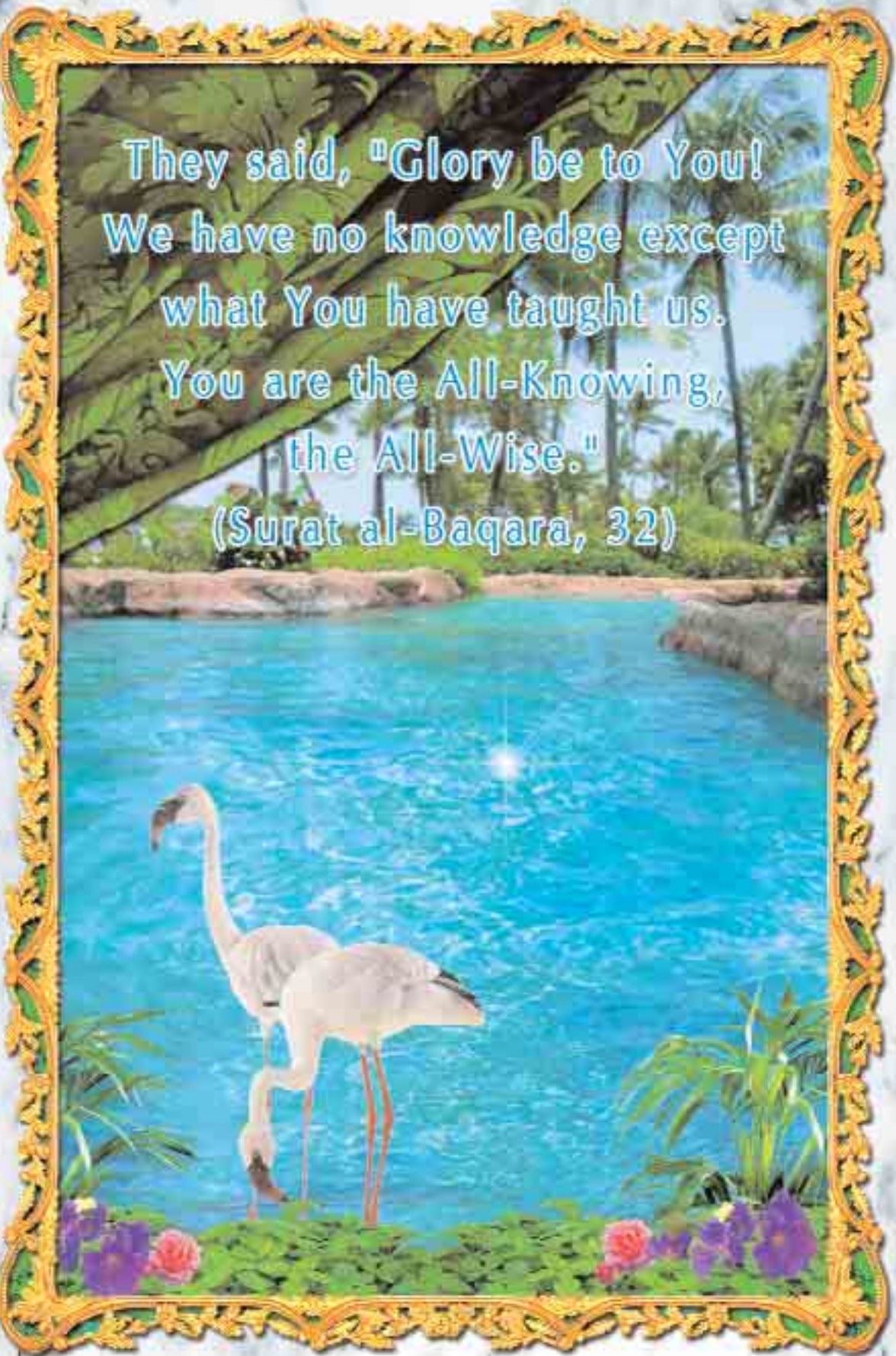
As we have seen, Pharaoh's magicians were able to deceive everyone, apart from Moses (pbuh) and those who believed in him. However, his evidence broke the spell, or "swallowed up what they had forged," as the verse puts it:

We revealed to Moses: "Throw down your staff." And it immediately swallowed up what they had forged. So the Truth took place and what they did was shown to be false. (Surat al-A'raf: 117-118)

As we can see, when people realized that a spell had been cast upon them and that what they saw was just an illusion, Pharaoh's magicians lost all credibility. In the present day too, unless those who, under the influence of a similar spell, believe in these ridiculous claims under their scientific disguise and spend their lives defending them, abandon their superstitious beliefs, they also will be humiliated when the full truth emerges and the spell is broken. In fact, world-renowned British writer and philosopher Malcolm Muggeridge, who was an atheist defending evolution for some 60 years, but who subsequently realized the truth, reveals the position in which the theory of evolution would find itself in the near future in these terms:

> I myself am convinced that the theory of evolution, especially the extent to which it's been applied, will be one of the great jokes in the history books in the future. Posterity will marvel that so very flimsy and dubious an hypothesis could be accepted with the incredible credulity that it has.[112]

That future is not far off: On the contrary, people will soon see that "chance" is not a deity, and will look back on the theory of evolution as the worst deceit and the most terrible spell in the world. That spell is already rapidly beginning to be lifted from the shoulders of people all over the world. Many people who see its true face are wondering with amazement how they could ever have been taken in by it.


They said, "Glory be to You!
We have no knowledge except
what You have taught us.
You are the All-Knowing,
the All-Wise."
(Surat al-Baqara, 32)

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