الله
رسول
محمد

HARUN YAHYA

THE MIRACLE OF MIGRATION IN ANIMALS

Albatrosses fly on month-long journeys without once coming down to land. Swallows fly around the world during their migrations. Swarming locusts can cover a distance of 3,000 kilometers. Newly hatched eels begin a journey of 6,000 kilometers... In migration, many animals cover vast distances with nothing to show the way or any instrument to guide them.

Migration's remarkable aspect lies not just in the length of the distances covered. Some migratory birds, for example, return to their former winter habitat after spending several years in one region. Some of the problems that migrators may encounter include high energy requirements, harsh weather conditions, finding food and avoiding predators. But how do these animals manage to cover these distances in spite of all these difficulties? How do they know when to do so? Who guides them on their journey? How can random coincidences teach them how to store the energy needed for long distance travel, navigate, and judge time?

There is no question of coincidences defining time and having knowledge of navigation, and making these conscious concepts manifest in these creatures. All these questions indicate the presence of a Creator possessing infinite knowledge and intelligence. As a verse of the Qur'an makes known, all living creatures are under the control of God, **"... there is no creature He does not hold by the forelock..."** (Qur'an, 11:56). This book demonstrates the magnificence of God's creation in the remarkable migratory journeys that animals undertake.

ABOUT THE AUTHOR

The author, 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 God, 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 God and His unity, and to live by the values He prescribed for them.


بسم الله الرحمن الرحيم
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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, God'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 God's words and to live by them. All the subjects concerning God'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 God. 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.

THE MIRACLE OF MIGRATION IN ANIMALS

HARUN YAHYA

February, 2006

ABOUT THE AUTHOR

Now writing under the pen-name of HARUN YAHYA, he 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 41 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 people's lack of faith. The Prophet's 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 God 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 godless 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 God 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 God's existence and unity and the Hereafter; and to expose godless 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 God 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 God'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 God, 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 God, 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.

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Abbreviation used:
(pbuh): Peace be upon him (following a reference to the prophets)

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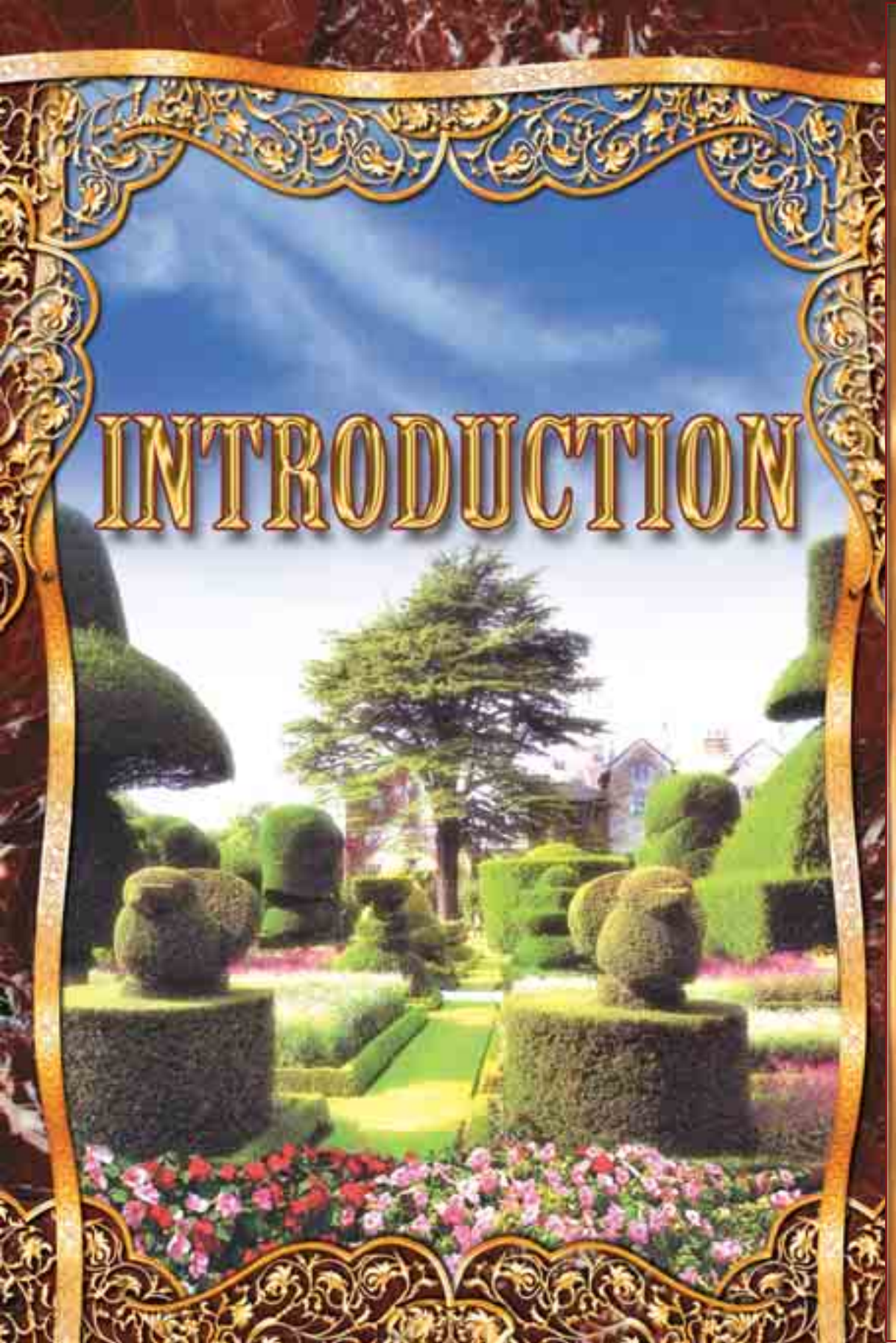

INTRODUCTION

Gaussmeter, Earth's magnetic field, airfoil shape, and *wing tip vortex* may be meaningless terms for many people. They may not know that the Earth consists of a solid inner and a liquid outer core, which move around each other, creating the magnetic field that makes a compass needle point north. Probably no one except aviation engineers or those with a keen interest in the subject would know that fans—and the wings and propellers of aircraft—have an airfoil shape; and that the flow of air around them creates a lift that planes utilize during take-off and flight.

Engineers and experts use such know-how to design new planes, examine the effects of magnetic fields and develop techniques to safeguard against mishaps.

However, it is not only people with special training who make use of this knowledge.

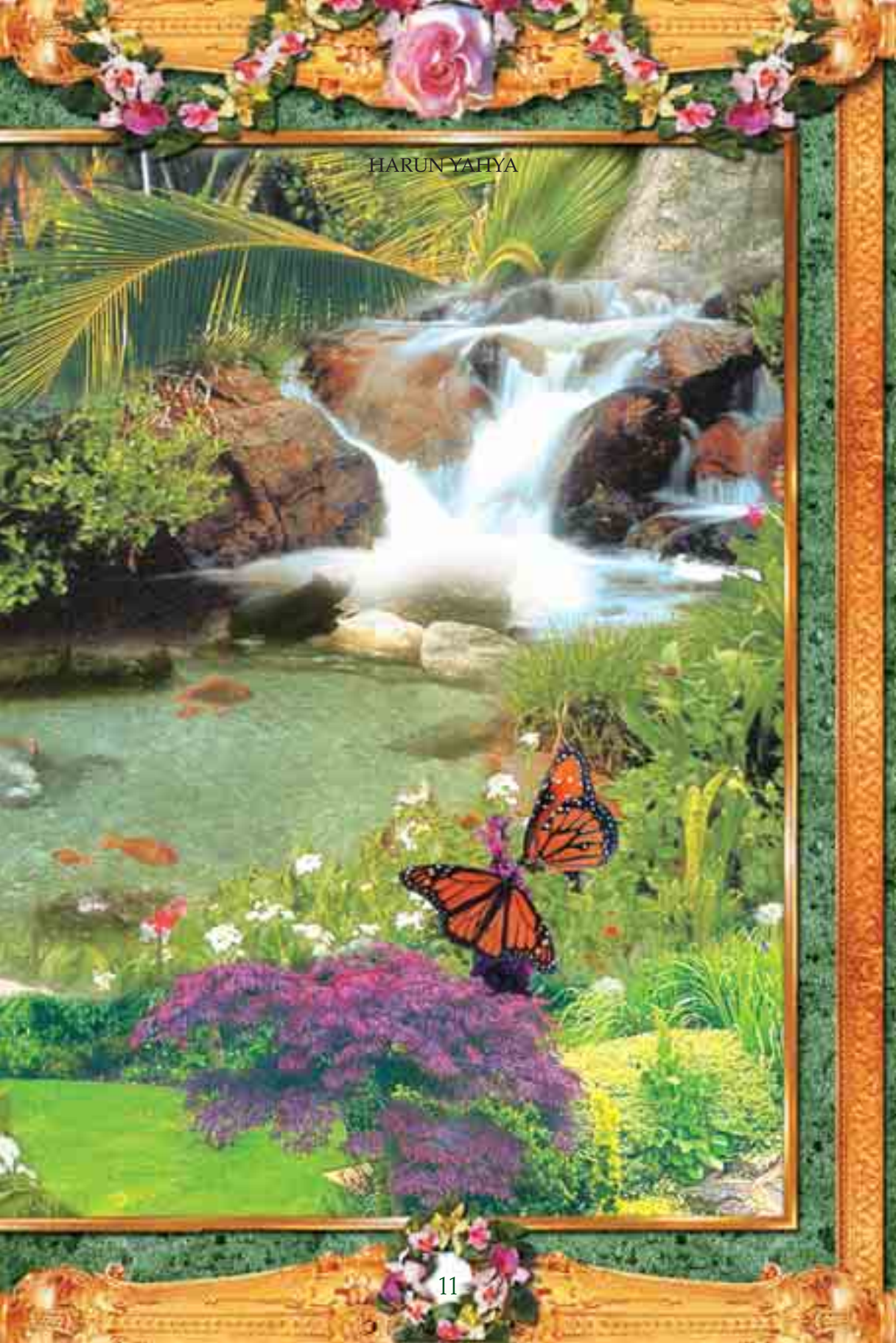
Albatrosses fly on month-long journeys of 15,000 kilometers (9,300 miles) without once coming down to land. Swallows fly around the world during their migrations. Swarming locusts can cover a distance of 3,000 kilometers (1,800 miles). Newly hatched eels begin a journey of 6,000 kilometers (3,700 miles).

Whales and many other living creatures act on the basis of this technical knowledge. Throughout their lives, these

creatures— ranging in weight from 35 to 40 gm (1.2 to 1.4 ounces) in the case of the lightest, up to 130 tons for the heaviest—travel constantly. Many animals set off on journeys of different lengths for different reasons. Sometimes from one garden to another, from one nest to another, or from one continent to another. By air: bats, spiders, butterflies, ducks and geese; by land: elephants, zebras, bison, snakes, frogs and locusts; by sea: lobsters, whales, salmon, sea urchins and starfish. These migrations all create a necessary balance in the animals' lives. The ways in which various species manage to follow their long and arduous migration routes so perfectly have interested scientists for many years and been the subject of many research projects.

In their search for answers on this subject, scientists encounter a serious problem. What impels animals to leave their habitat and use up a great deal of energy and time traveling such distances?

Different species migrate for different reasons. Some set off on their journeys to find food, while others set off to reach their breeding grounds. Others abandon the environment where they were born when living conditions change. However diverse the reasons behind animal migration, there is one common factor: In each and every animal species from great to small, and in each kind of migration, great order and skill is evident.

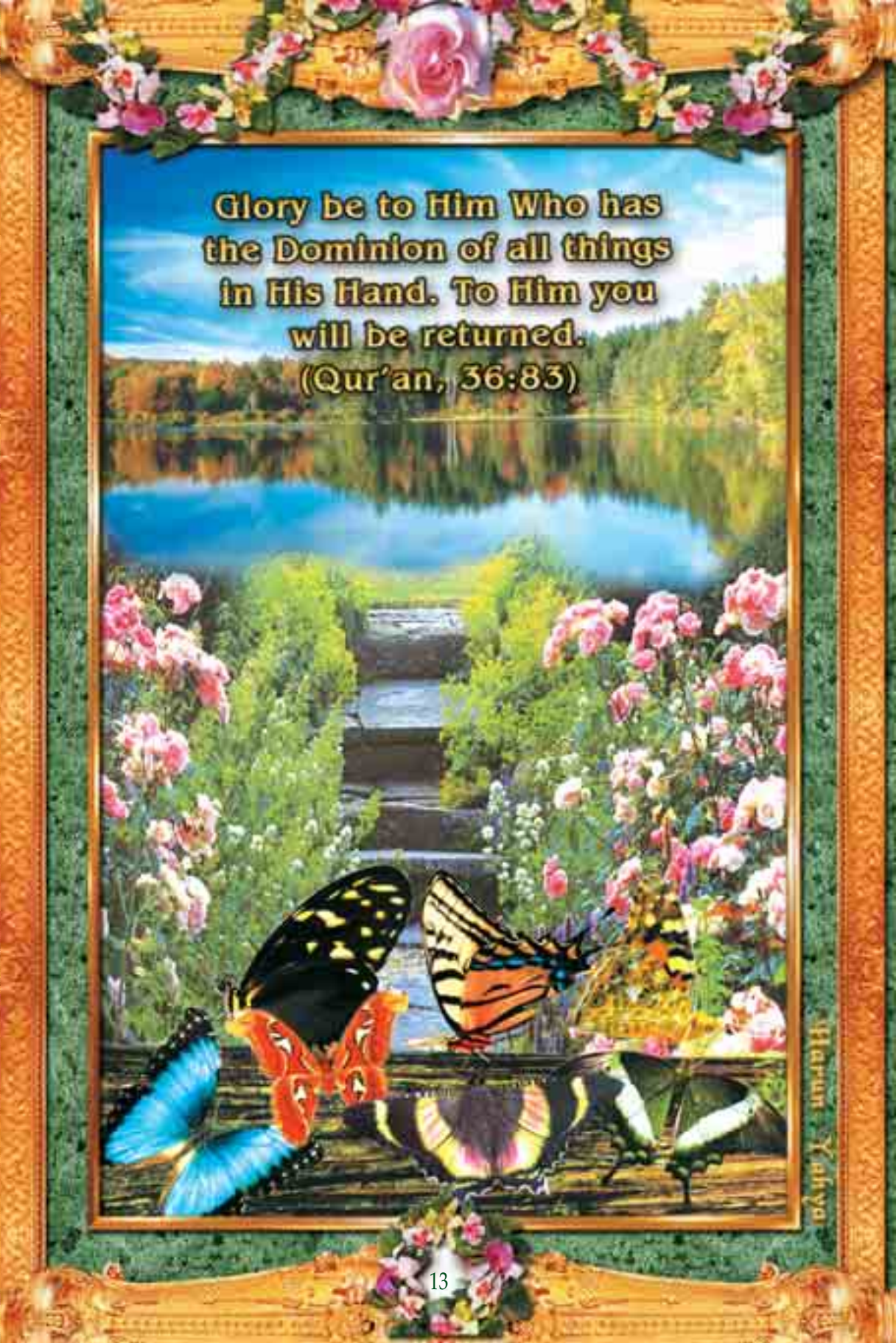


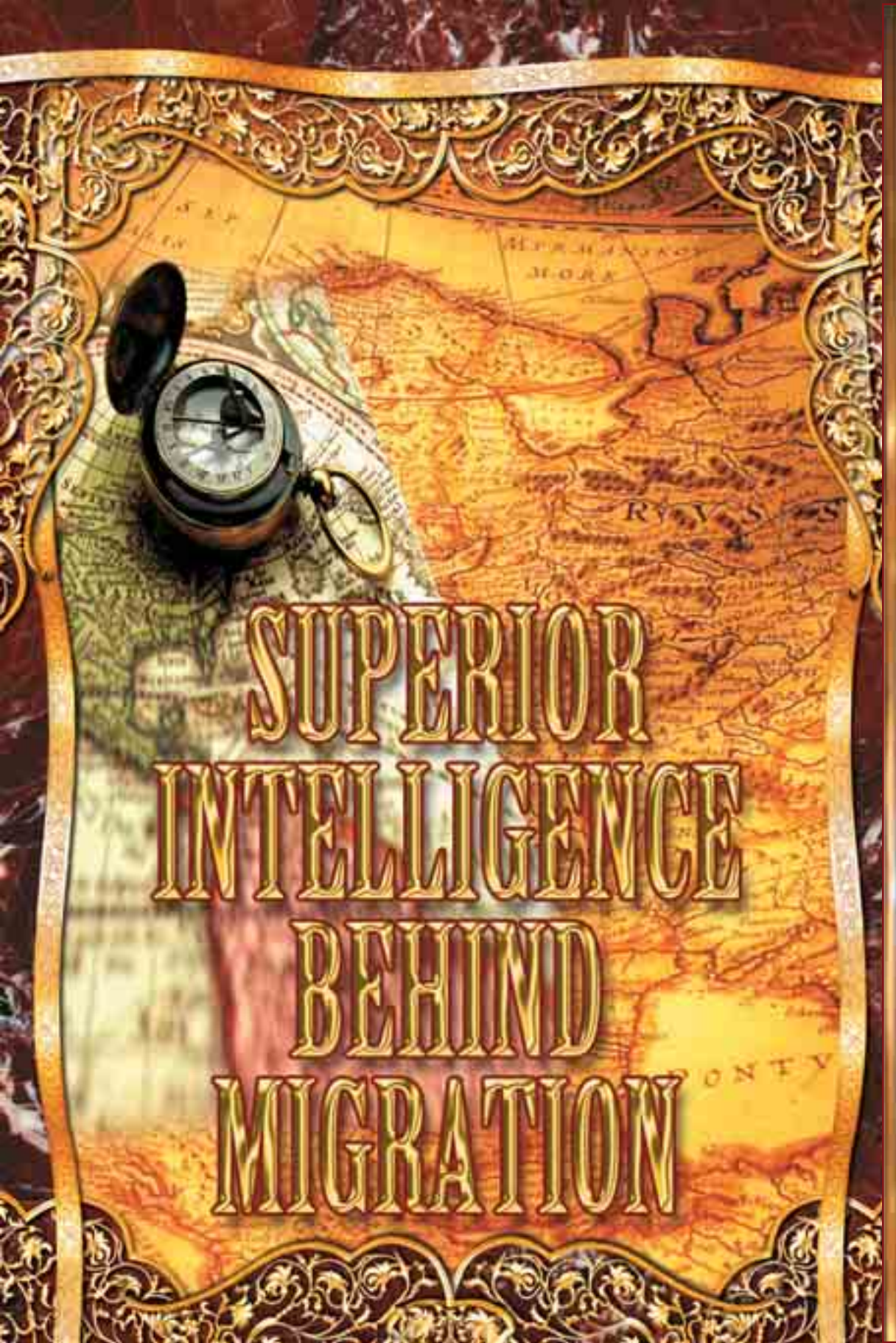
First, in order to go from one place to another, a creature must know three things: its current location, its destination or target, and the route that it must follow to get there. In addition, migrating animals need to have sound knowledge of their current habitat's location, since they must use this information on their return. They must also know what conditions will be awaiting them when they reach the end of migration, sometimes tens of thousands of kilometers (hundreds of miles) away.

Historically, human explorers and seafarers have used the Sun and the stars to establish their location. In our day, fine measurements can be made using satellite-based technology. Migrating animals have been created to possess this technology from the moment they enter the world. They successfully complete long journeys using the special systems created for them by God, and with His inspiration.

This book will demonstrate the magnificence of God's creation in the remarkable migratory journeys that animals undertake. Once again, we can witness the endless power of our Lord. As it is revealed in the Qur'an:

> **We will show them Our signs on the horizon and within themselves until it is clear to them that it is the truth. Is it not enough for your Lord that He is a witness of everything? What! Are they in doubt about the meeting with their Lord? What! Does He not encompass all things? (Qur'an, 41:53-54)**


Glory be to Him Who has
the Dominion of all things
in His Hand. To Him you
will be returned.
(Qur'an, 36:83)


SUPERIOR
INTELLIGENCE
BEHIND
MIGRATION

Animals leave their current habitat for suitable environments at the most suitable times. Each of the hundreds of species of migrating animals all over the world, from smallest to the largest, change their habitats in accord with the most hospitable times and locations. It is a clear miracle that animals always get to the right place without getting confused or going astray.

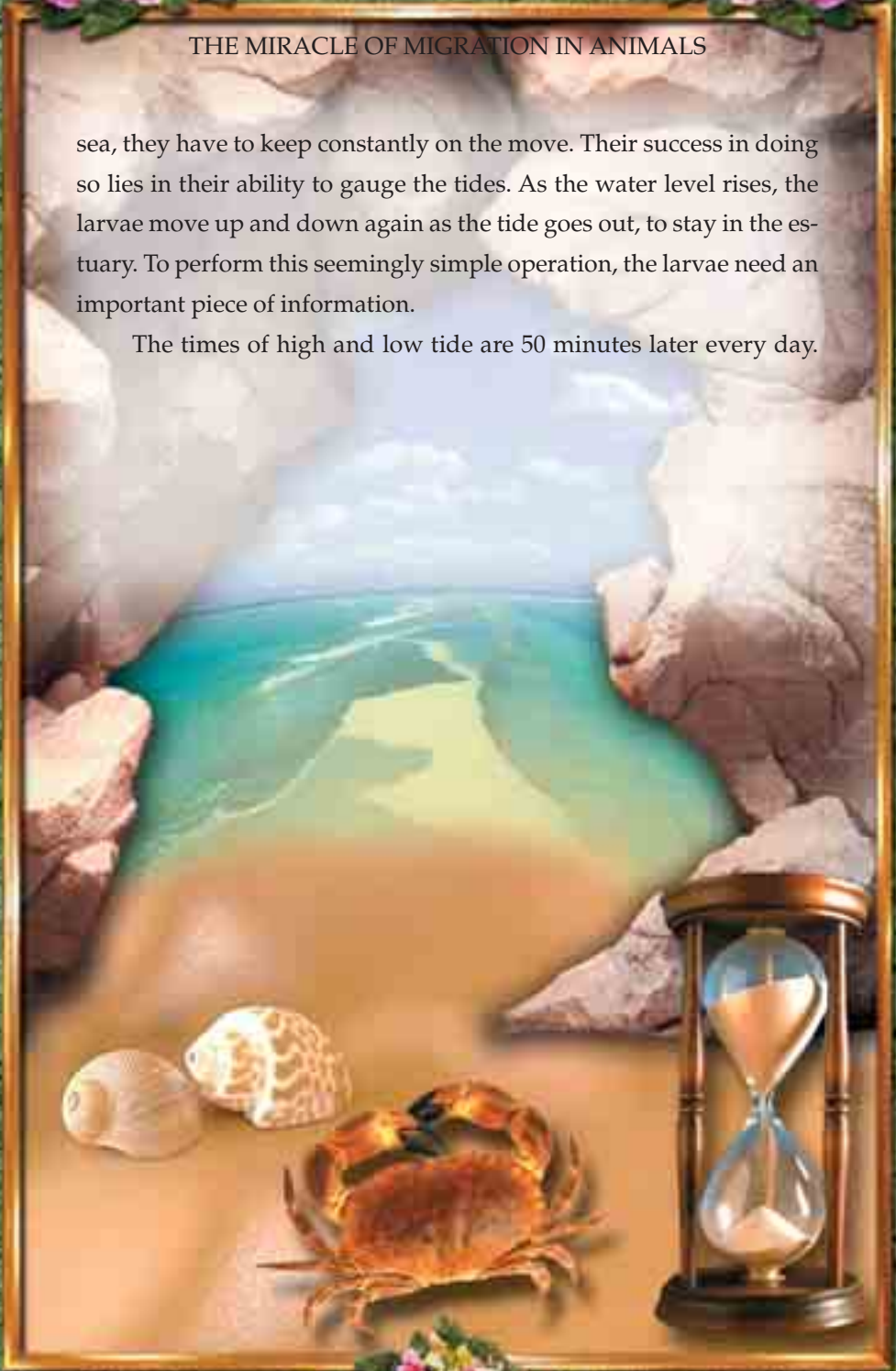
Perfect Timing

First, a migrating creature must decide to set off to reach the right place. Next, it has to establish the most advantageous time to do this. Animals' perfect timing varies according to the kind of journey they undertake. Moving to a new environment with no intention of returning is called one-way migration, of which the best example is the honeybee. When the bees in a colony become so numerous that the hive is overcrowded, they decide to divide the colony—usually at the end of spring or the beginning of summer. It is remarkable that these little animals can decide whether the environment they live in is no longer suitable, that they need to establish a new hive and then determine out the best season to do this in. Another miraculous aspect is that sometimes, tens of thousands of bees manage to decide without any confusion which of their members should leave the hive.

For the floating larvae of many kinds of crabs and shrimps, it is problematic to form colonies in their new habitat. These little creatures live in the estuaries of bays and so, to avoid being carried out to

sea, they have to keep constantly on the move. Their success in doing so lies in their ability to gauge the tides. As the water level rises, the larvae move up and down again as the tide goes out, to stay in the estuary. To perform this seemingly simple operation, the larvae need an important piece of information.

The times of high and low tide are 50 minutes later every day.



Although you might think that the larvae would not be able to calculate the continuously changing times for the tides, they have no difficulty in doing so. The tiny larvae, whose development is not yet complete, calculate this rhythm with great expertise.

These are only two examples of migrating animals' timing ability. It's of course hard to believe that these creatures owe these talents to their own knowledge and experience. Who determines when and where they will move? Who gives them this skill?

Some scientists have determined that this timing is due to an internal clock, but they are overlooking an important point. How is it that such a dependable clock, which never stops or breaks down, has developed in animals with the ability to migrate, and manages to operate in even the smallest member of each species? Who bestowed such an ability on all these creatures? Evolutionary scientists claim that this perfect mechanism has developed over time, that is to say, living creatures have developed this skill through blind coincidence, which they refer to as the so-called evolutionary process. This claim is undoubtedly ridiculous. Naturally this skill, whose importance will be shown through various examples in this book, cannot be the product of coincidence. It is not possible for blind chance to produce any skill based on such fine calculations, and that indicates the presence of a great consciousness. It is Almighty God that creates this skill and bestows it on the creatures of His choice. God is the master of all things, from the heavens to the Earth:

Everything in the heavens and everything in the Earth belongs to God. All matters return to God. (Qur'an, 3:109)

Perfect Orientation

Compared with most animals, humans seem to have a rather poor sense of direction. We can again take the honeybee to make a comparison. When foraging bees return to the hive, they explain to the other bees with "body language" exactly where they found the food. Following their directions, the other bees find their way to the new site as easily as if they had already been there.

It is not so easy for humans to find a place they do not know, however well it is described to them. They always risk going the wrong way or getting lost. To reduce this risk, road signs are erected to show the way, streets and avenues are legibly named, and detailed maps are printed. But no migrating creature has such advantages, nor indeed has any need of them. For most migrating creatures there are no signs to show the way, there is not even another creature to give directions to the destination.

Creatures Programmed to Find Their Way

When an animal sets off on its journey, factors different from the ones that guide humans come into play. Each migrating species has a different method of finding and following a route. Broadly speaking, however, birds make use of the Sun, the stars and the Earth's magnetic field; and fish make use of chemical scents in the water coming from rivers. Naturally, they require expertise to evaluate the available data and arrive at a conclusion. Getting to the right destination using only the

stars, or traces of river chemicals are tasks that few people could manage. This brings to mind a series of questions that need to be answered:

- How do these animals know in which direction from their current location lie suitable habitats, breeding and feeding grounds?

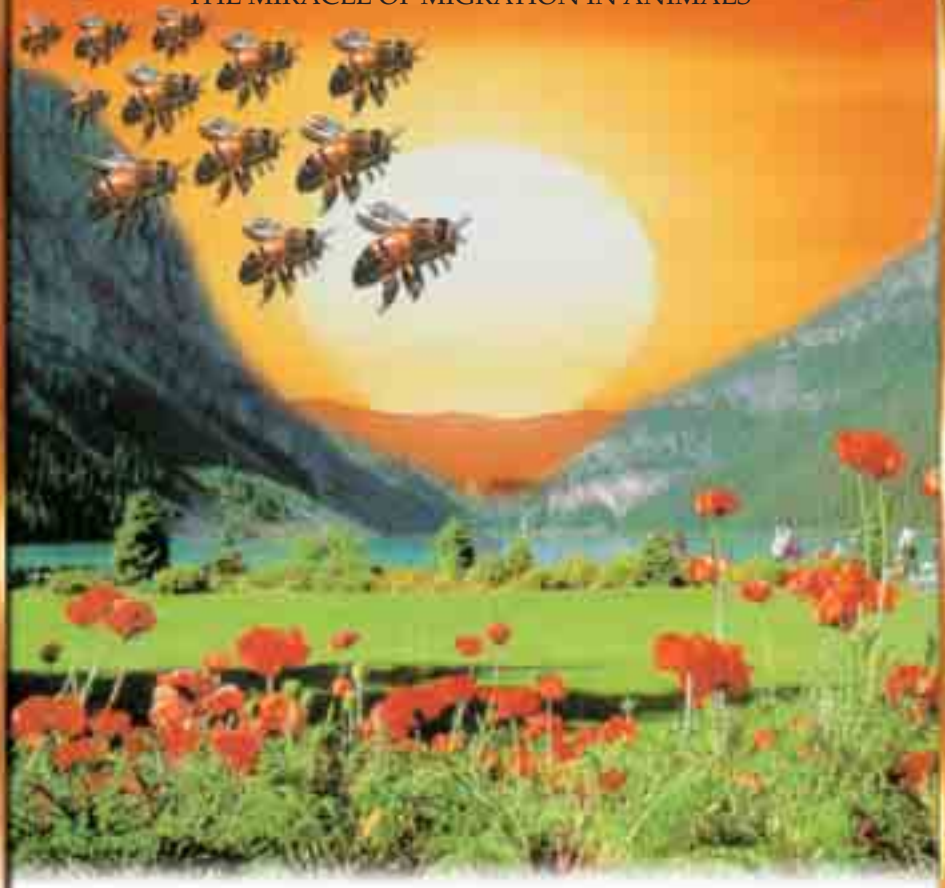
- The moment an animal comes into the world, how can it decide that a far-off place it has never seen is a suitable environment?

- How have animals discovered that they can use the stars and the Sun to find their way?

- Who teaches them how to do so, from the time they enter the world?

The common answer to these questions is that animals are not capable of any of these feats on the strength of their own intelligence and knowledge. The information they possess to undertake such a journey is given them before they are born. They are programmed. In that case, who is their programmer? It is God, of course, Who knows all. Their Creator and the Creator of all things inspires these skills in them. Any efforts to explain this by the imaginary evolutionary theory are eternally doomed to failure.

Ants that use the Sun as a reference can find their way without getting lost, due to the abilities they have been given. However, the Sun moves at an angle of approximately 15 degrees an hour, which makes using it as a reference point more difficult. But on their way home, these little insects establish their current location by taking into consideration how long they've been outside and the angle by which the Sun's position has changed, to find their way back to the nest without going astray. Honeybees, too, are able to know the movements of the Sun and make estimates accordingly. If these bees have found a food source in a south-easterly direction by the end of the day, in the morning before setting off again, they calculate how much the Sun has changed position and move in the correct direction



toward the food source. From the moment they emerge from pupation, they need the knowledge of how to be guided by the Sun and make calculations based on the position of that moving heavenly body. Without such knowledge, they could not survive, and their species would die out.

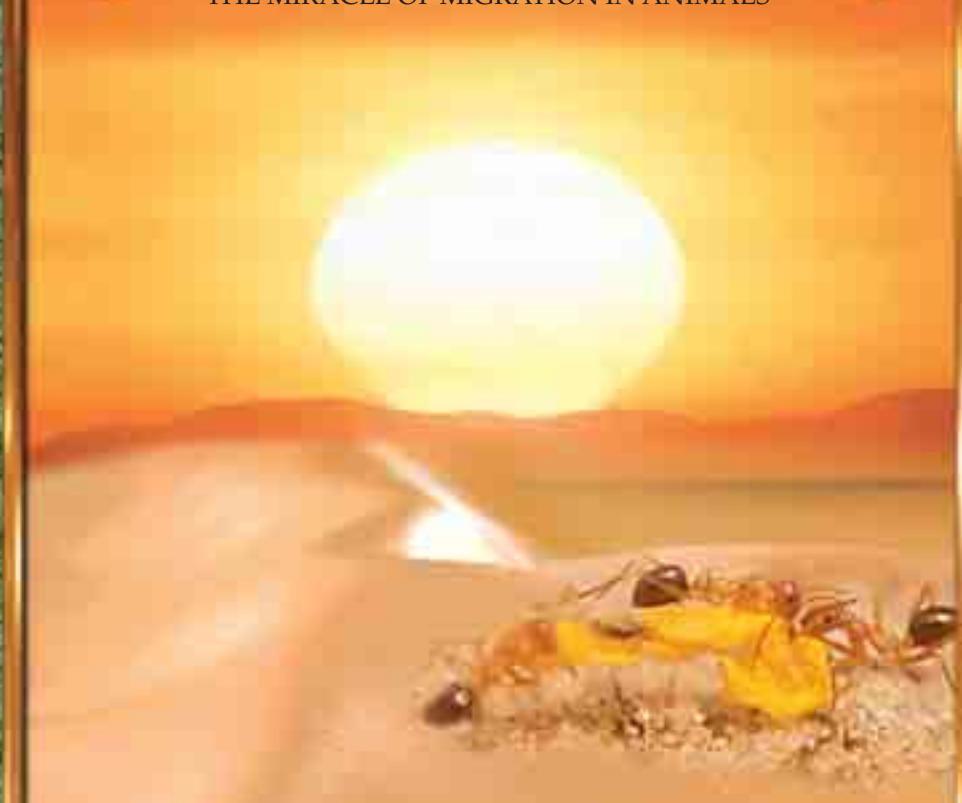
Deserts feature vast tracts of sand with no distinguishing features. The surface is so hot and dry that in most places it is impossible for weeds or scrub to grow. Consequently there are no tracks or signs for finding the way. Any rare footprints that may exist on the sand can be erased in minutes due to the wind. Scent trails are scorched

and all trace of aroma evaporated from the sand by the burning heat. This difficult desert terrain is home to the desert ants *(Cataglyphis)*, whose underground nest protects them from the lizards and birds that feed on insects. In the morning hours, when these hunters are active, the ants stay in their nests. But at noon, it grows so hot that lizards and birds retreat into the shade. This one- to two-hour period is the only time the *Cataglyphis* ants can safely come out to forage for food. Suddenly hundreds of them emerge from a little hole in the sand and busy themselves looking for insects that are affected by the Sun.

Each one traces a zigzag as it runs. Every second or so it stops, raises its head, makes a half turn on one leg and starts running again. As soon as it finds food, it must return to the nest before the Sun affects it.

On the return journey, this ant that has been tracing a zigzag path while hunting, takes a course as straight as a ruler. It runs fast to its nest's entrance, which can lie up to 140 meters (150 yards) away.[1] This behavior is remarkable, for to be able to do so, the ant must have somehow measured and memorized each stage of its outward journey. This means that each time it raises its head and turns, it is recording its new position relative to the position of the Sun. This means that with the information it has gathered during its journey of roughly 15 minutes, it has established the exact distance and direction back to the nest.

Of course this method of using the Sun to determine direction and calculate a return journey isn't something these tiny



insects have invented and applied on their own. With God's inspiration, every member of this species, without exception, manages to perform successfully a task that many people, given the same conditions, would find impossible.

The creatures in question cannot have learned these skills over time, for many species of animal can travel unerringly towards the most suitable habitat as soon as they are born. It is remarkable, for instance, that newly-hatched sea turtles, know the way to the ocean and move towards it. The hatchlings emerge from their underground nests at night and head directly for the water to reach their feeding grounds. Not even one of them loses its way on the shore and goes in the wrong direction, because the stars and Moon make the sea more

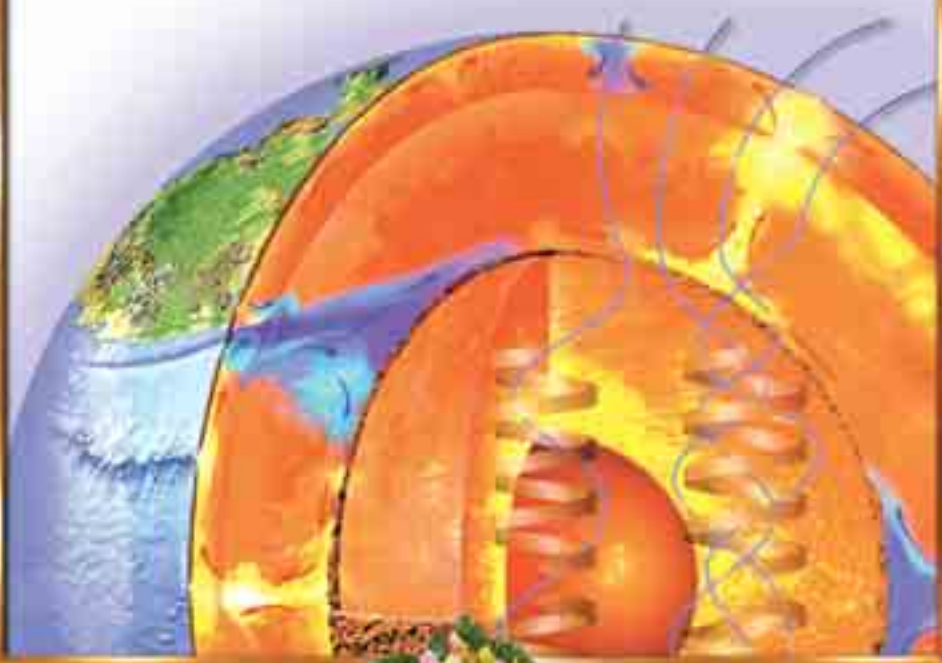
luminous than the land. Turtles are programmed to head for the brightness from birth. At the time they hatch, they have no one to teach them which way to go. Nevertheless, their highly conscious behavior clearly shows that they have been taught to do this even before birth. This is clear evidence of the Creator Who has given this talent to these newly hatched turtles.

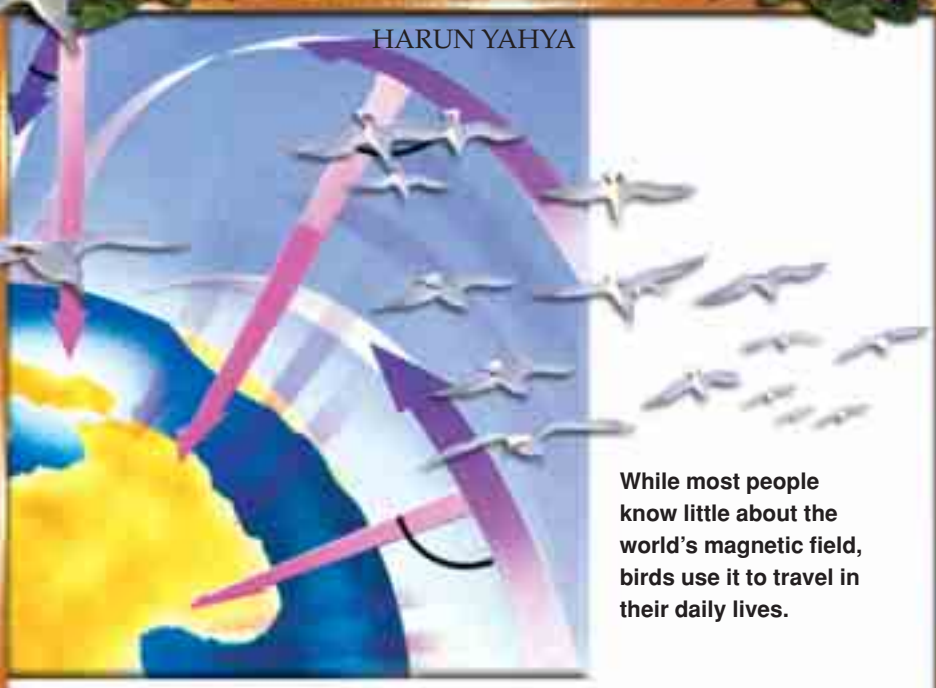
Creatures with knowledge of the world's magnetic field

Birds

Just as ants use the angle of the Sun to find their way, some larger animals migrate by using the Earth's magnetic field. Movement of the molten iron in the Earth's core is responsible for creating its magnetic field, which extends in elliptical flow lines from the core of the terrestrial globe, passing through the oceans and the atmosphere from one pole to another. These lines converge towards poles, and the force of the field also increases.

During migrations, certain animals orient themselves by determining this force and angle of inclination. For instance, to prove that birds determine the migration route by making use of the Earth's magnetic field, scientists fit a group of migrating birds with slender





While most people know little about the world's magnetic field, birds use it to travel in their daily lives.

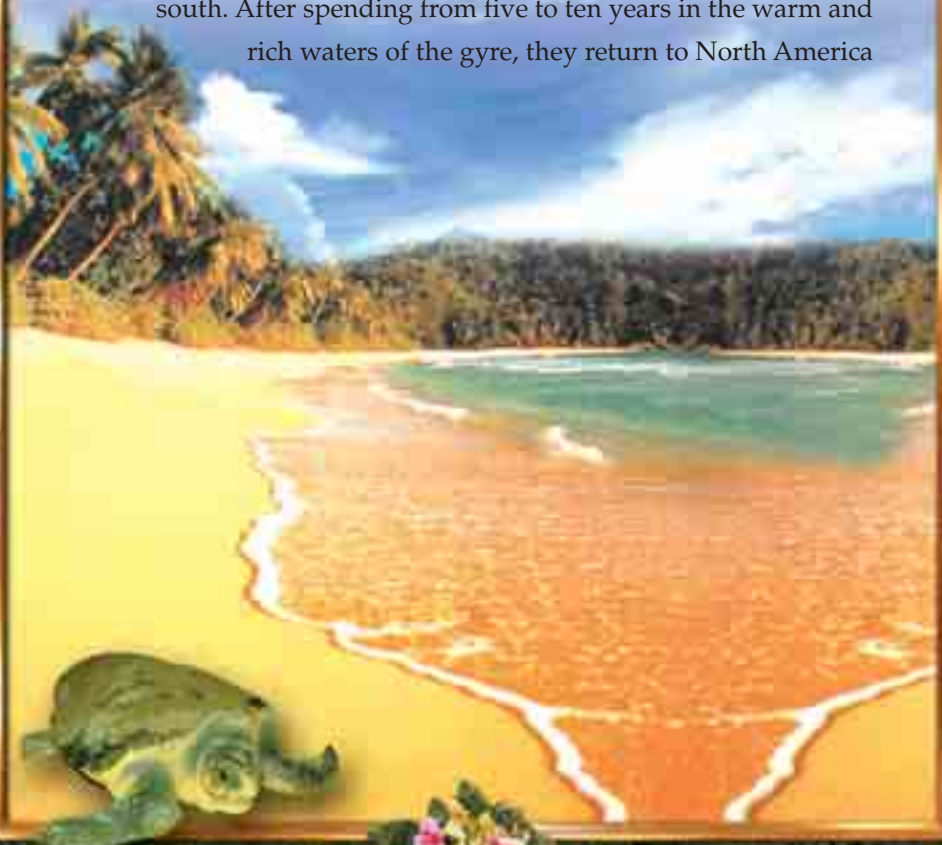
rods of iron. But some of the rods were magnetized, to obscure the Earth's magnetism. During the course of their journey, the birds carrying the magnetized rods got lost while those birds with unmagnetized bars found their way with their usual ease.[2] This experiment is of great importance for understanding the exceptional abilities of migrating birds.

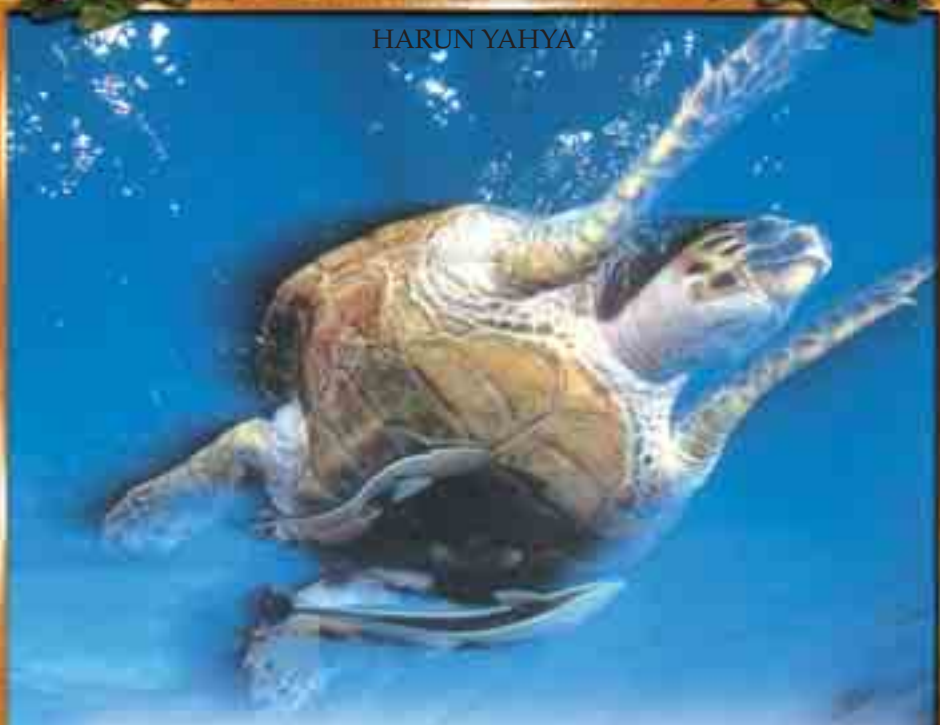
In order to calculate direction by the world's magnetic field, birds would need to know the formula known in physics as the Lenz's Law, or they should possess a gaussmeter, a device for calculating the world's magnetic field. Many humans do not even know what these terms mean and birds, of course, cannot know anything about devices or formulas for calculating a magnetic field. Their knowledge is all brought about with the inspiration of God.

Turtles

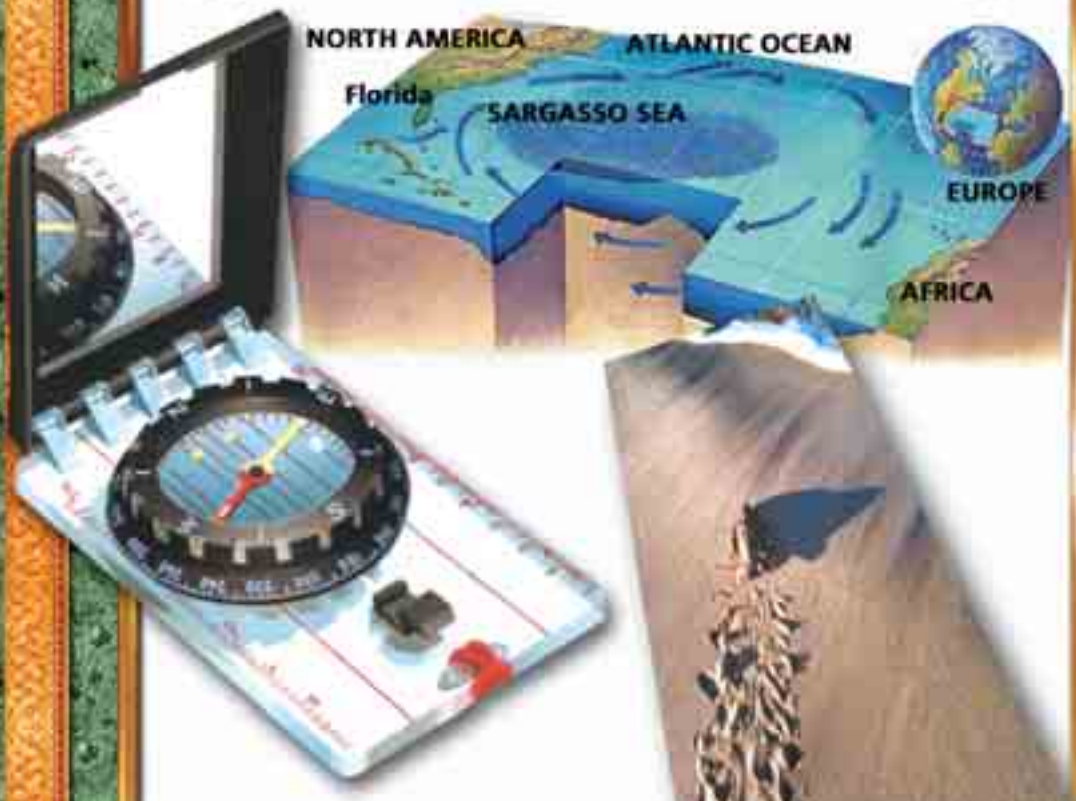
Experiments have also proved that migrating loggerhead turtles *(Caretta caretta)* make use of the world's magnetic field. These creatures act as though they have prior knowledge of the intensity of the magnetic field in different parts of the world, and when they set off in the ocean they determine their direction of travel accordingly.

Kenneth J. Lohmann and his team from the University of North Carolina have studied the migratory movements of these turtles. As soon as they hatch on the eastern coast of Florida, these reptiles head for the ocean and swim straight to a large current known as the North Atlantic gyre that circles the Sargasso Sea. Turtles head to the northeast of this gyre, which tends towards Europe and then south. After spending from five to ten years in the warm and rich waters of the gyre, they return to North America





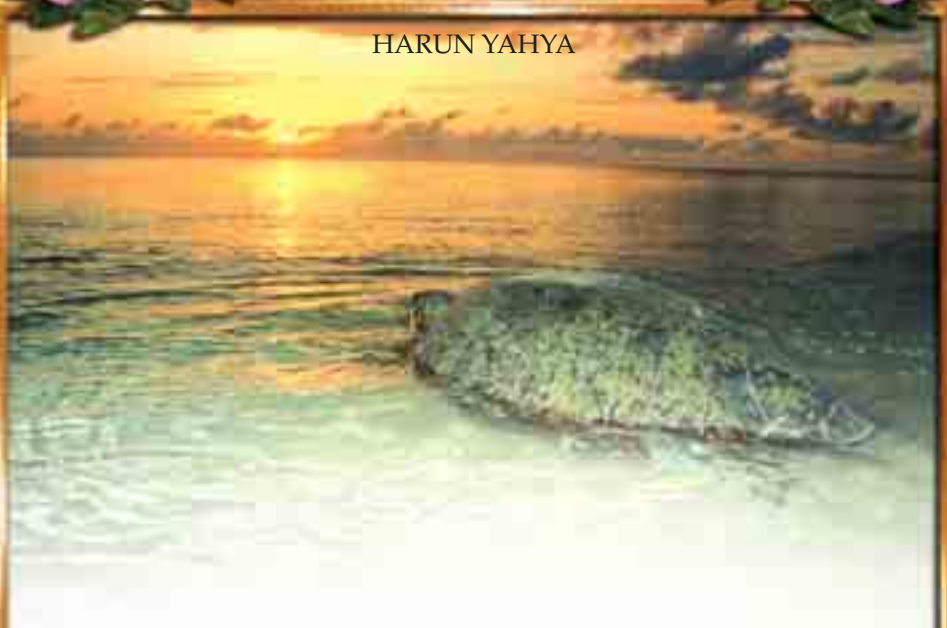
to lay their eggs. Lohmann and his team wanted to observe whether or not the turtles made use of regional magnetic fields to find their migration routes, and set up their study to this end. They placed electric coils on the outside of a lab tank to create magnetic fields. 79 newly hatched turtles were fitted with bathing suits, connected to a computerized tracking system and put in the tank. The hatchlings were presented with the magnetic fields with values equivalent to the critical points of their migratory route—those in the northern Florida, off the coast of Portugal, and in the North Atlantic gyre's southernmost edge. In each magnetic field, the turtles began to swim in the direction of their migratory path. For example, when the magnetic field of the northeastern gyre was simulated in the tank, the hatchlings headed to the south. In the real ocean, this would keep them on the right track and away from fatally cold water.[3]



How could hatchlings that have never migrated before develop this skill? How are they able to follow the route with nothing to guide them to warm waters? How can they gauge and evaluate the magnetic fields? Who teaches them which direction is the right one to follow?

In *Supernature: The Unseen Powers of Animals*, John Downer gives the following explanation of how newly hatched turtles find their way:

> The world is a giant magnet and, like a child's bar magnet, it has a north and a south pole. This is a godsend for human navigators because, following the laws of magnetic attraction, the magnetized needle



> of a compass always points to the Earth's magnetic north pole. Migrating animals need to be equally certain about their direction and to keep themselves on course, they too refer to the Earth's magnetic field as well. But, despite intense research over many decades, the kind of compass these navigators use has proved elusive. Only now are we beginning to uncover some of the mysteries involved… Turtles use these in-built miniature compasses to chart the series of migrations that make up their itinerant lives.[4]

But this explanation begs several questions: Where in animals are their compasses located? How do they work? Who has inserted them into each and every animal?

These questions clearly expose the truth of the matter: These creatures are all equipped with these superior characteristics from the moment of their creation. There is no question of a so-called evolutionary process explained by blind coincidences. The remarkable characteristics that differentiate animals from one another show that they are created in accordance with an intricate plan, in balance and harmony with their habitat.

Organization in Migration

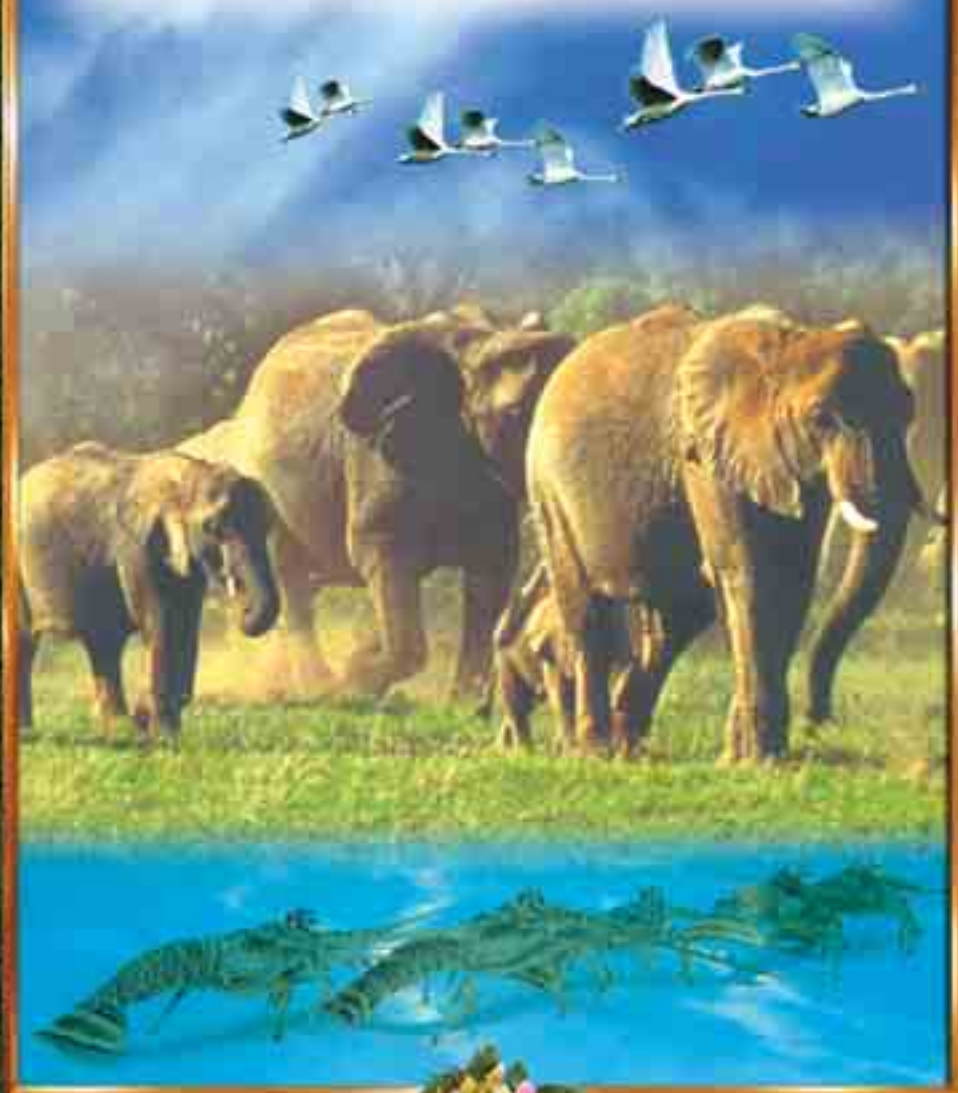
Congregating in groups for migration provides animals with great advantages. In a group movement, the amount of energy each individual requires is significantly reduced, as compared to a solo effort. In this way, groups of animals can travel greater distances using less energy. There is no disorder in the course of this common migration, as each creature carries out its function in the most appropriate way. As later examples will show, these creatures continue their journeys in total harmony, providing mutual assistance and making sacrifices for one another if need arises.

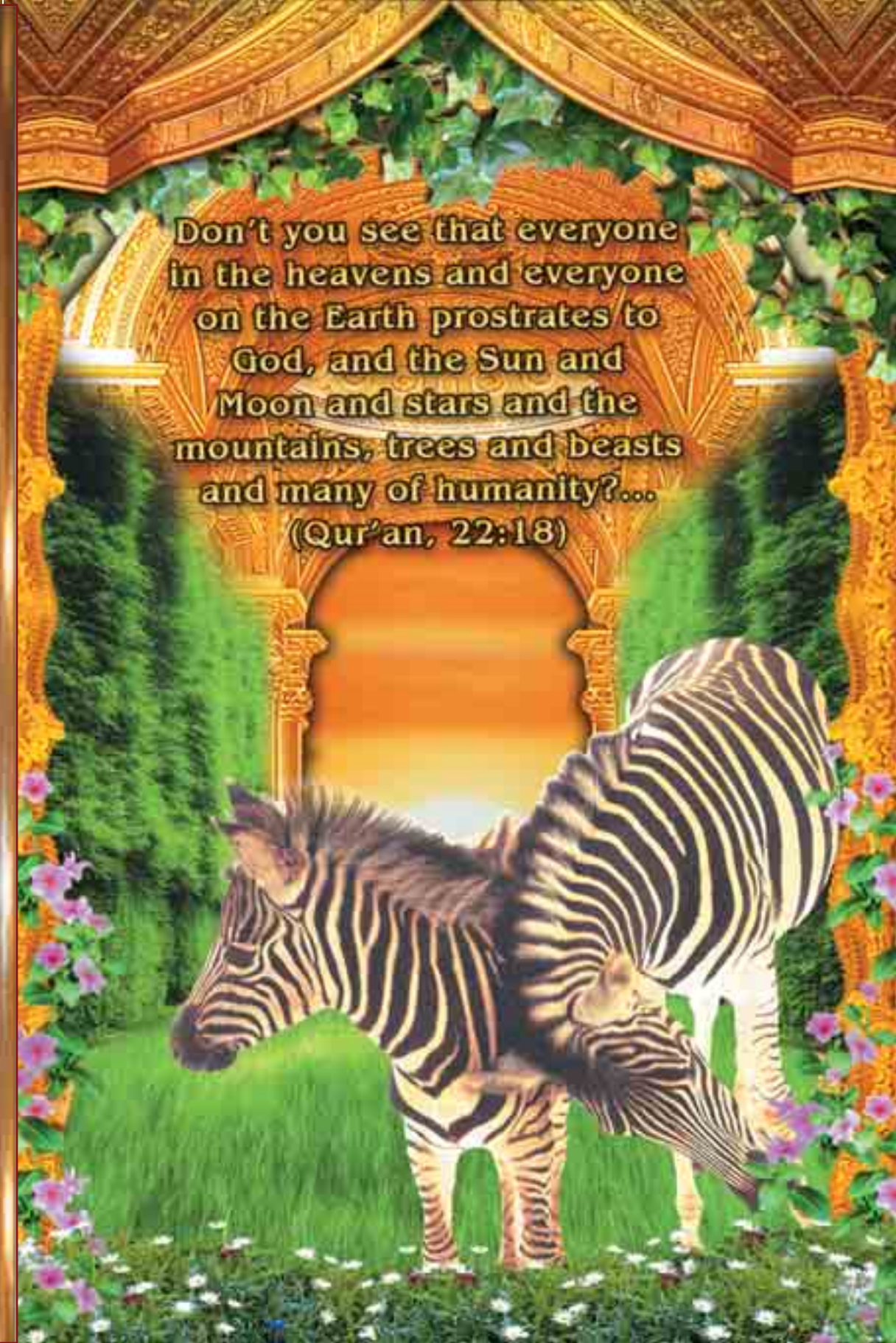
Human beings are the only beings on Earth with rational intelligence, but their interactions do not always display such harmony. In almost every community, there are people who object to the duties allotted to them, and when required to make sacrifices, express dissatisfaction and a rebellious attitude. For this reason, human communities enact various rules and laws to prevent disorder, and protect the social order.

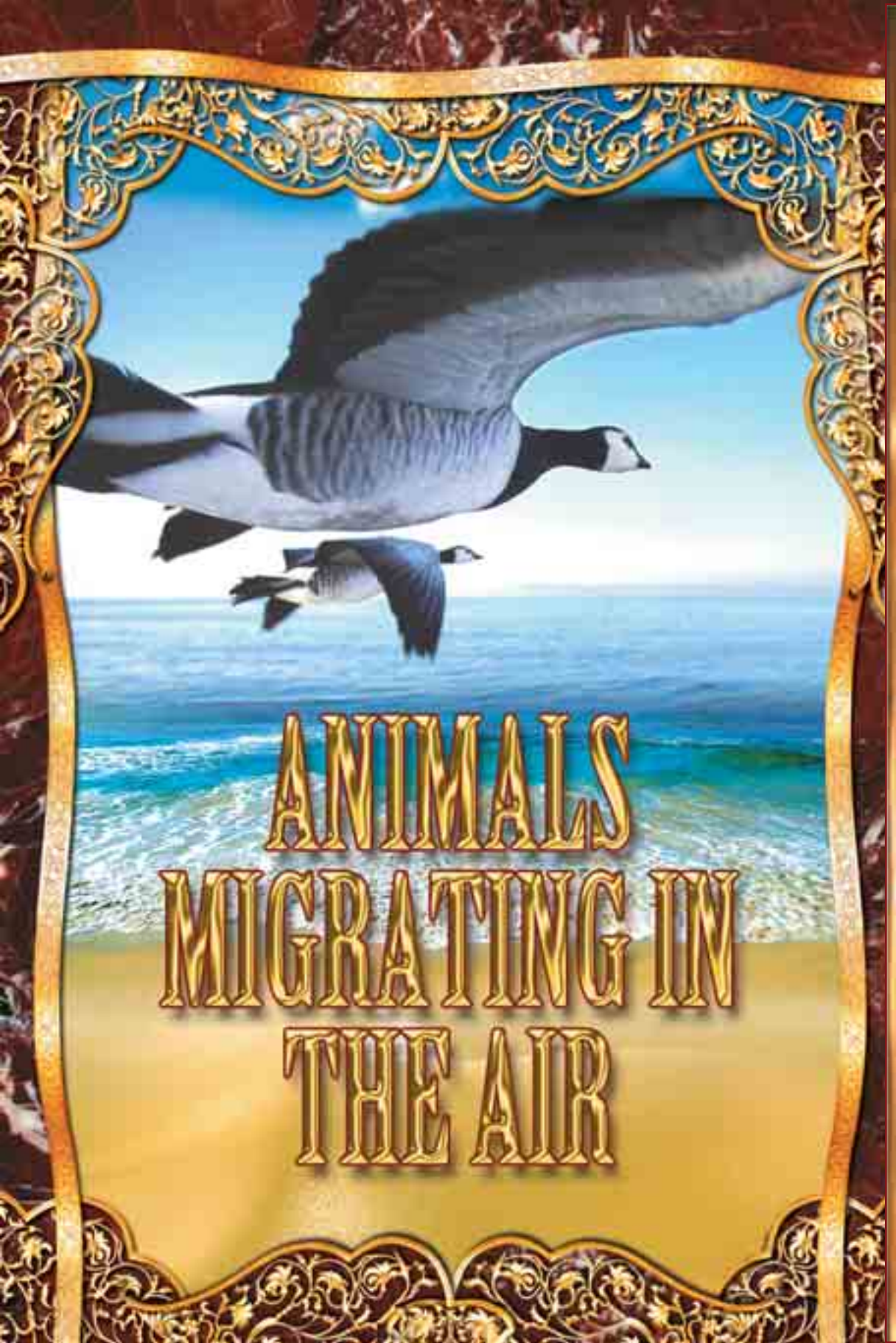
However, the animals in question have no defined rules or penalties or sanctions, yet nevertheless, they carry on with their lives, abiding in constant harmony. This is evidence that they are created to conform to collective actions and that each is inspired to act in the same way.

These are all part of the evidence of creation that God has given—in the sky, on Earth and in the sea; in short, in the whole universe. People of intelligence and conscience recognize this, and their faith in God grows. The reflection of the faithful on the verses of God and their praise of God are stated in the Qur'an:

Those who remember God, 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." (Qur'an, 3:191)




Don't you see that everyone
in the heavens and everyone
on the Earth prostrates to
God, and the Sun and
Moon and stars and the
mountains, trees and beasts
and many of humanity?...
(Qur'an, 22:18)


ANIMALS
MIGRATING IN
THE AIR

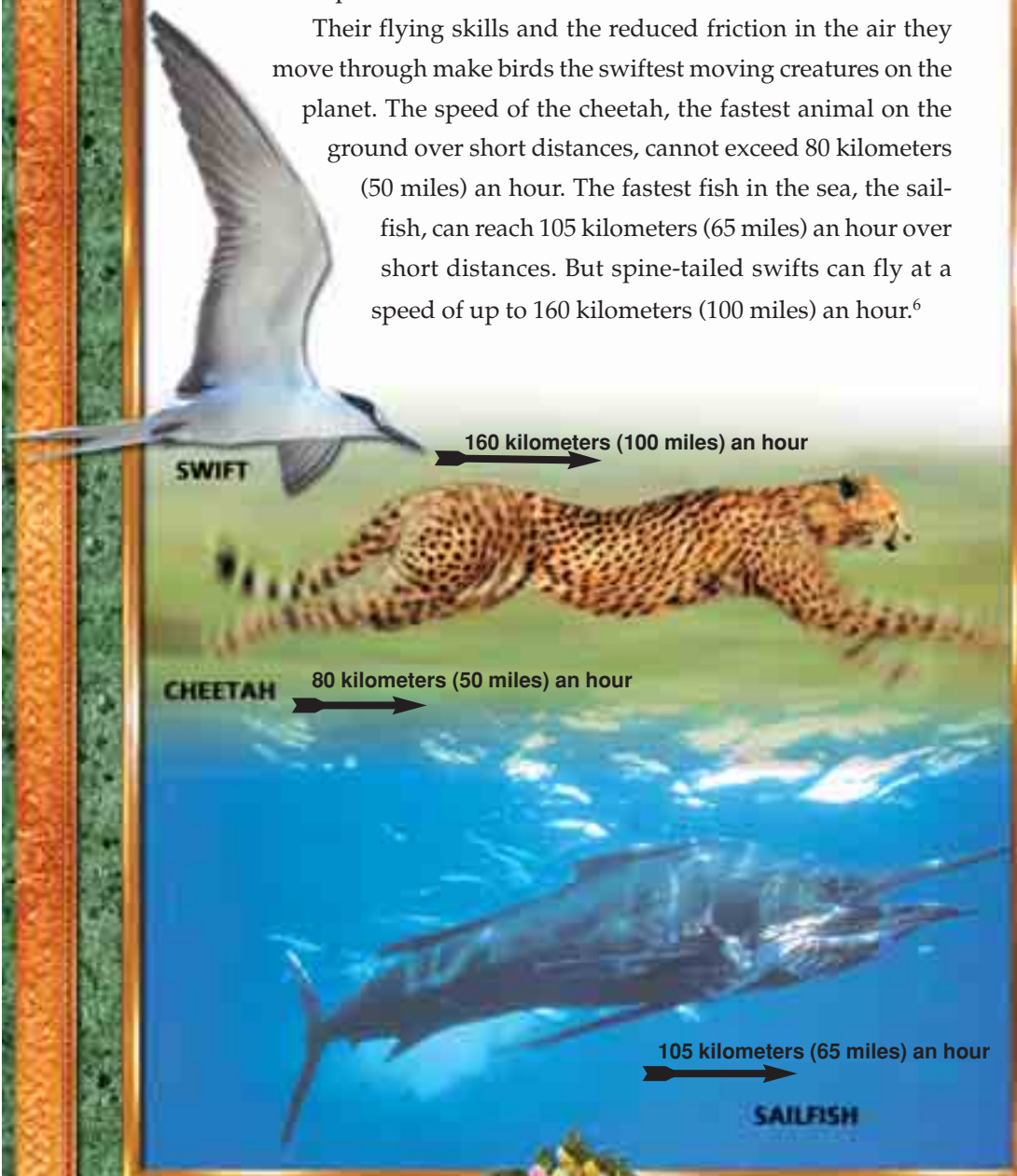
A variety of fish, mammals and even insects make remarkable migratory journeys. As a group, however, the most active creatures in the world are birds. Even up-to-date transportation vehicles are unable to match birds in their movements.

Long Distance Travelers

In a single feeding trip, which usually takes a month, an albatross can fly 15,000 kilometers (9,300 miles) without coming down to rest. It glides smoothly over the ocean, hardly beating its wings, using the air currents created by the waves. And in terms of straight distance, no one can compete with Arctic terns, which complete a journey each year from the North Pole to Antarctica and back—a

straight-line distance of about 15,000 kilometers (9,321 miles). The complete migratory round trip is almost 40,000 kilometers (24,856 miles), equivalent to the circumference of the Earth.[5]

Their flying skills and the reduced friction in the air they move through make birds the swiftest moving creatures on the planet. The speed of the cheetah, the fastest animal on the ground over short distances, cannot exceed 80 kilometers (50 miles) an hour. The fastest fish in the sea, the sailfish, can reach 105 kilometers (65 miles) an hour over short distances. But spine-tailed swifts can fly at a speed of up to 160 kilometers (100 miles) an hour.[6]



You might think that such speeds would be exhausting for migrating creatures over long distances, but this is not generally the case. Coming from a very long journey overland or sea, birds sometimes show signs of fatigue, of course, but they do not experience serious problems unless they have faced adverse winds. Even small landbirds are so little affected by their journey after crossing the Gulf of Mexico at its widest point, they continue flying inland without stopping.[7]

How and why do birds migrate? For many years, researchers have been trying to answer those questions. Although a great deal of progress has been made in this respect, the most important points are still shrouded in mystery.

Wood warbler

With birds as with other animals, some members of the same species migrate while others lead a settled existence. For this reason, evolutionary scientists are not able to explain the roots of migration. For instance, various kinds of wood warblers and flycatchers are wholly migratory, most woodpeckers are permanent residents, but Blue Jays are partial migrant. If, as the evolutionists claim, these creatures have developed such a mechanism to survive, and their bodies have developed appropriate systems through various coincidences, why don't all members of the same species exhibit the same behavior? How can the residential individuals ensure the survival of the species?

From the perspective of the evolutionists, this situation defies explana-

tion. And so there is only one true explanation: God has created this characteristic in migrating creatures.

Animals in the wild are evidence of God's power, and that He is the Almighty, Who creates incomparably. Those who persist in ignoring this evidence and who look for a creator other than God are clearly misguided. In a verse of the Qur'an, God tells of such people:

> **Say: "He is the All-Merciful. We believe in Him and trust in Him. You will soon know who is clearly misguided." (Qur'an, 67:29)**

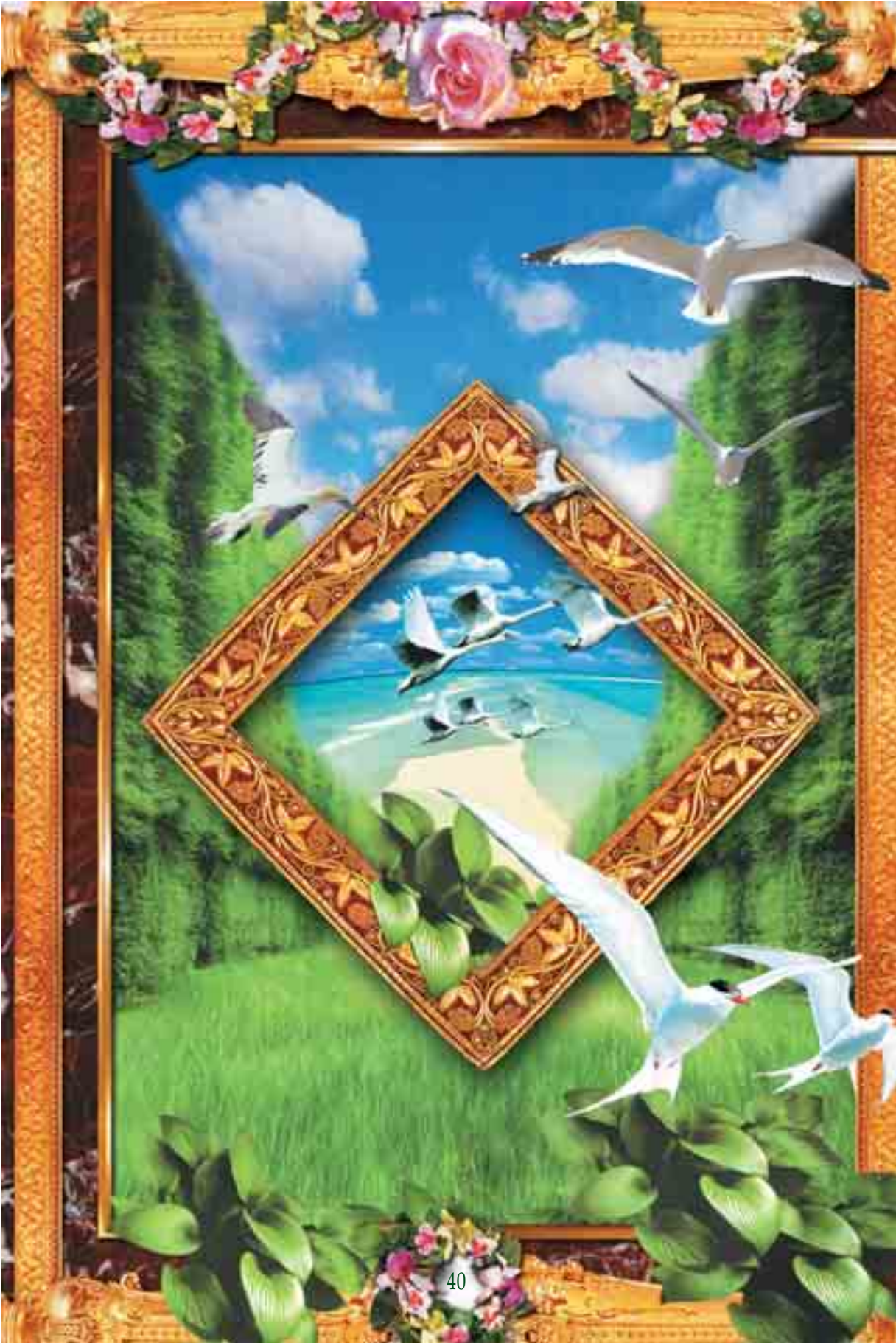
How Do Birds Decide to Migrate?

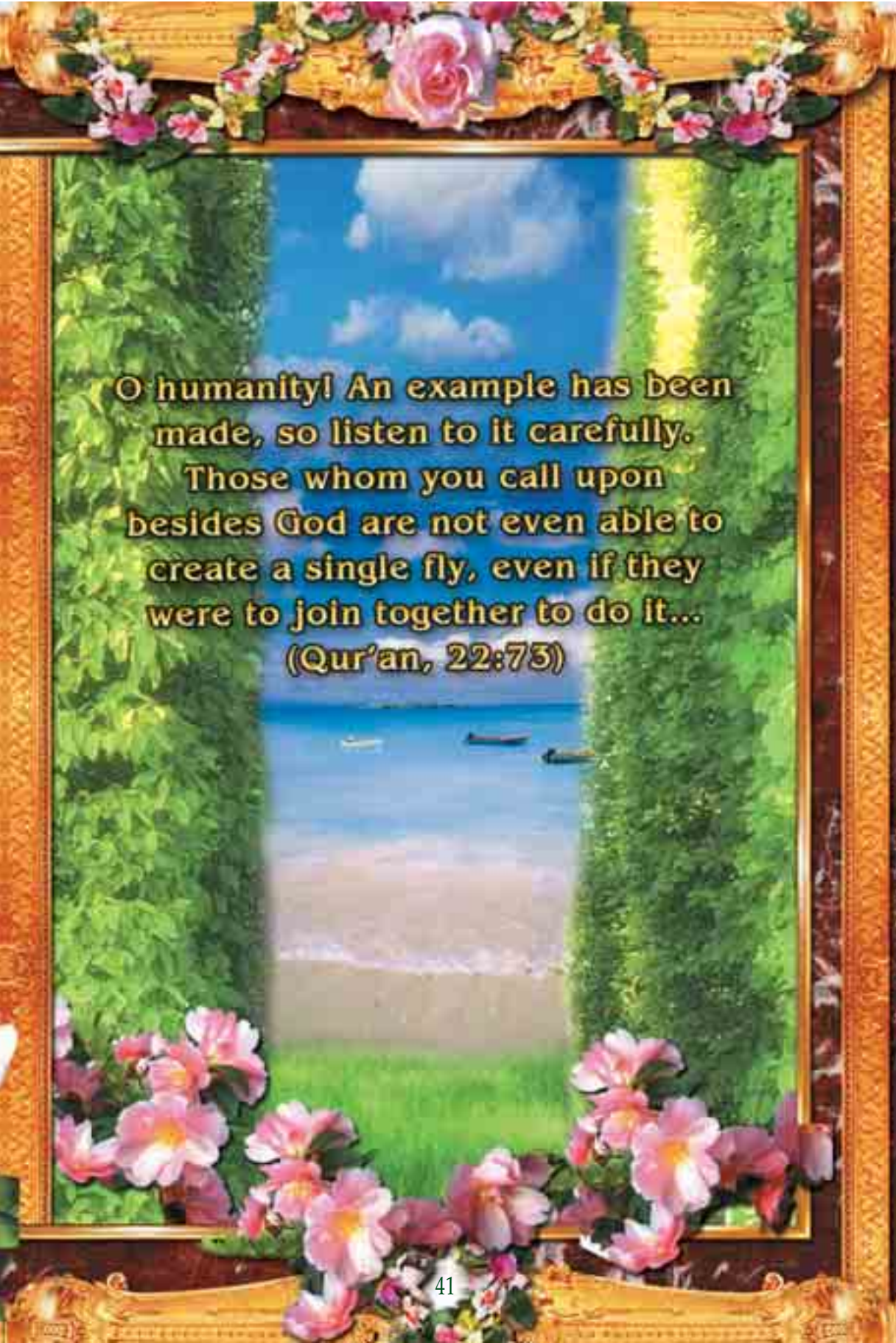
Several factors prompt birds' migrations. When one or a few of these prevail, the migration marathon begins. One of these factors is the gradual shortening of the days, since change in the length of daylight has an effect on birds' hormonal system.

Experiments have shown that the lengthening of the day stimulates animals in different ways. Light primarily affects the hypothalamus, the nerve center in the brain that controls hunger and satiety. At the same time the neighboring areas of the brain are stimulated, triggering secretion of prolactin in particular, and corticosterone and sex hormones from the adrenal glands. These hormonal changes cause an extreme increase in birds' appetite, and they begin to feed intensively to build up the fat deposits necessary for migration, eating 40% more than at other times of the year. The fats they accumulate are stored as large deposits under the skin, in flight muscles, and in the abdominal cavity. When the birds are not migrating, their body weight consists of 3 to 5% fat, but at the time of migration, the rate increases to 15% in birds flying short to medium distances, and 30 to 50% in those flying long distances. These fat deposits fuel the flying muscles and also ensure the least fatigue on long distance flights.[8]

Proper timing is very important for the commencement of migration. In spring, if a bird postponed its preparations for migration and waited until food in the breeding ground was easily obtainable, it wouldn't have enough time to migrate, mate, incubate the eggs and feed its young when the food supply did become plentiful. The timing of birds' yearly migration concurs with the season when the parents will have access to the most abundant food supply for their nestlings. Similarly, if birds delay their departure from the breeding ground until chilly autumn weather drives them out, there won't be enough time for the necessary physiological changes (such as storing energy by weight gain). This would mean extinction for the species. However, there are no mishaps, and birds somehow "choose" the right time to migrate with perfect accuracy.

Piecing together all these facts—that all these mechanisms that birds possess work perfectly; that they make the necessary preparations for migration; and that mechanisms as yet not fully understood let them find their way during migration—a finely created system clearly emerges. It is ridiculous to imagine that such a delicately planned system, so perfectly suited to the bodies of birds, could have developed as a result of coincidental mutations. Birds' migration system points to the existence of a Creator, showing that they are created by God.




O humanity! An example has been
made, so listen to it carefully.
Those whom you call upon
besides God are not even able to
create a single fly, even if they
were to join together to do it...
(Qur'an, 22:73)

Birds' Expertise in Estimating Altitude and Weather Forecast

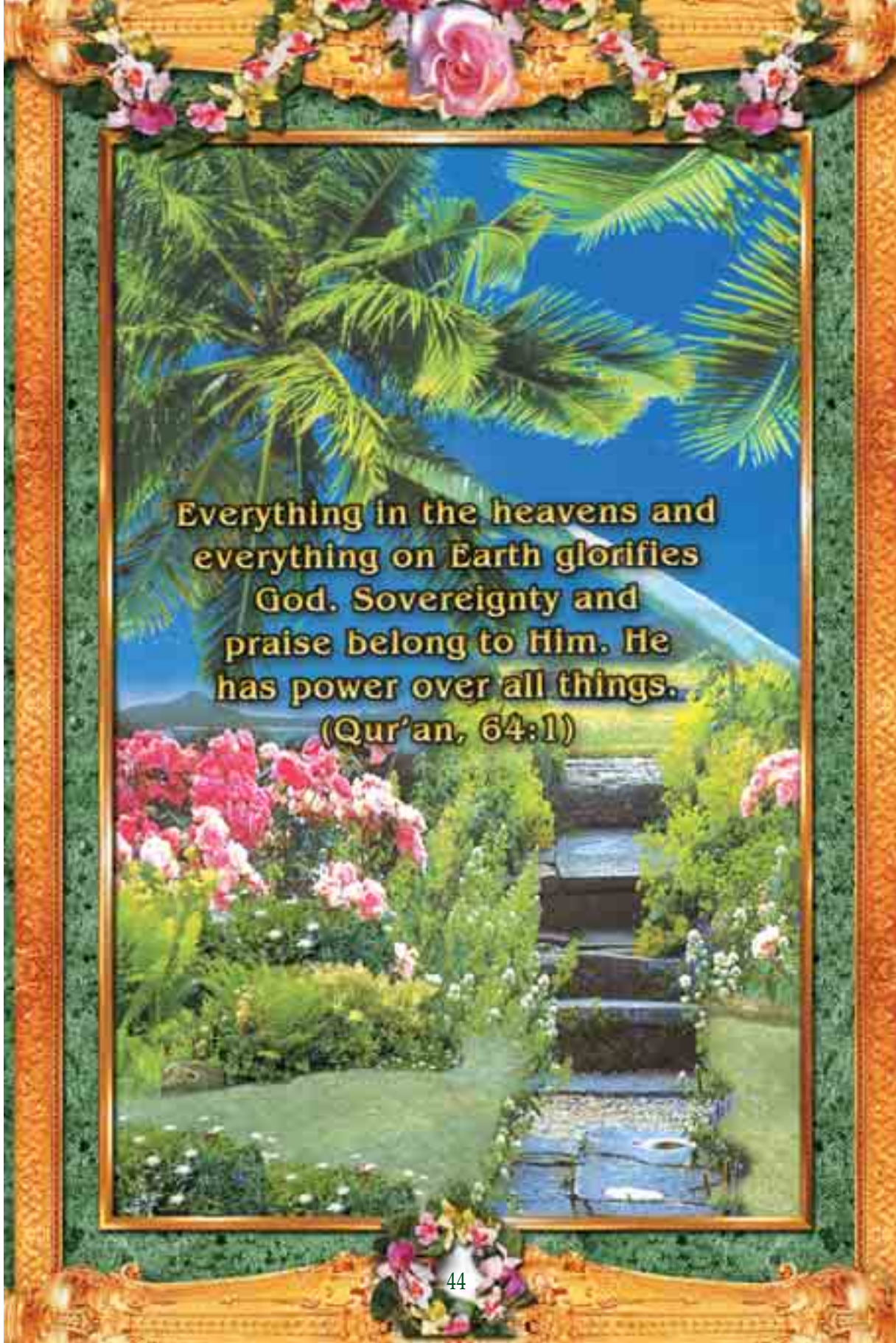
Migrating animals must accurately predict the atmospheric conditions in the lands through which they pass. Australia's bogong moth is a good example of the meteorological expertise that this requires. These moths make a journey of hundreds of kilometers to the cool Australian Alps to escape the humidity of the plains they inhabit as caterpillars.

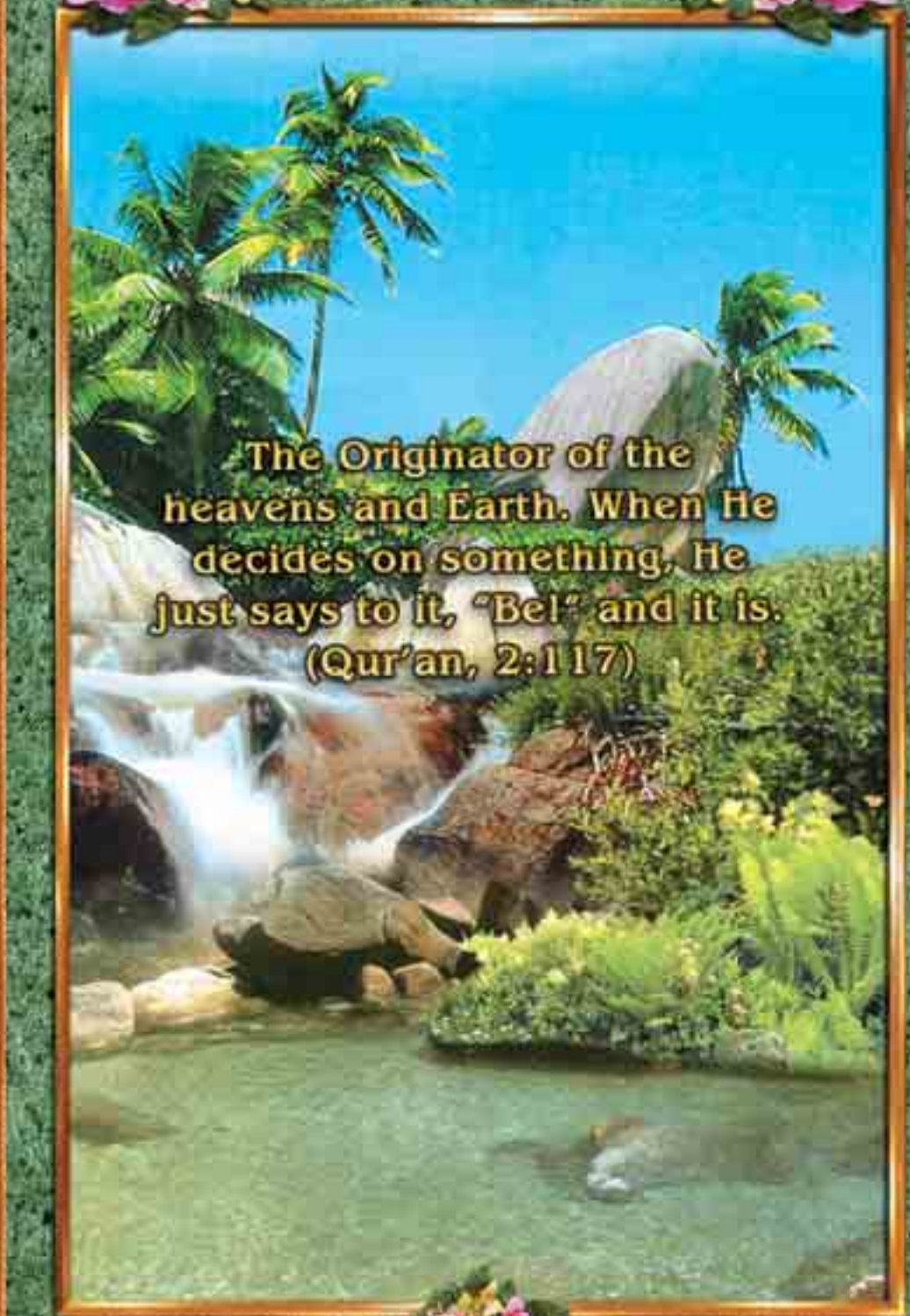
In spring, the bogong caterpillars feed in the grassy pastures of Queensland and New South Wales. When the weather grows warmer in summer, they pupate and emerge as little grayish-black moths. Instead of bearing the scorching summer heat, they start out on a long journey for the Australian Alps, where millions of these long-distance travelers spend the summer, congregating in rock crevices and caves and flying out only in the evening. Once they reach the mountains, they spend the summer there in a state of suspended animation, making use of the fat reserves they accumulated when they were caterpillars to stay alive.[9]

To reach the peaks of the Alps, these little creatures must be able to predict the arrival of cold fronts, moving in a southeasterly direction, that will help carry them to their summer resting ground. Scientists believe that these insects' ability to detect changes in barometric pressure or air ions enables them to make accurate predictions.

A similar barometric sense also exists in the ears of birds. When migrating, birds are so sensitive to even the slightest change in altitude that they can continue flying within a narrow air corridor 17 meters (56 feet) high, even if their vision of the ground is obscured by clouds. If we humans had the sensitivity of a pigeon or a duck, we could tell what floor of a building we were on by the change in air pressure.

Just as a bird uses its pressure sense for predicting altitude, it is also helpful in forecasting the weather. A sudden fall in atmospheric pressure occurs just before most winter storms, and birds perceiving this pressure drop prepare for the difficult journey ahead. A wrong guess can prove fatal for migrants. When spring comes to the Northern Hemisphere, birds get ready to migrate only when the temperature rises, the pressure falls and a southerly wind is blowing.[10]


Everything in the heavens and
everything on Earth glorifies
God. Sovereignty and
praise belong to Him. He
has power over all things.
(Qur'an, 64:1)


The Originator of the
heavens and Earth. When He
decides on something, He
just says to it, "Be!" and it is.
(Qur'an, 2:117)

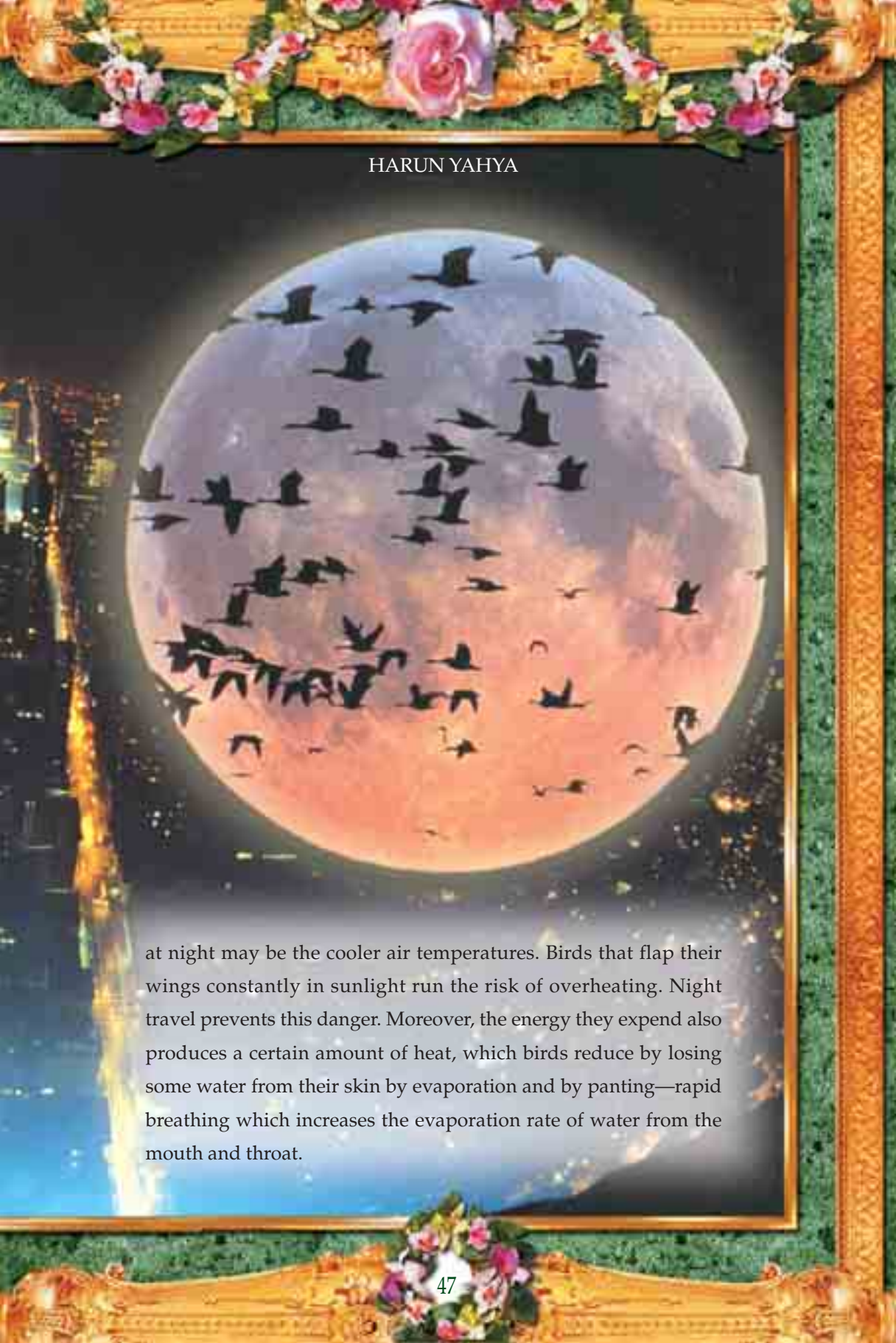
Why Do Most Birds Migrate at Night?

Birds conduct most of their activities during the day, but choose to make long journeys at night. Shorebirds and small birds like flycatchers, golden orioles, most kinds of sparrow, warblers and fieldfares are classic night migrators. At night, there is a surprising lot of activity in the sky. A telescope aimed at the sky during a full Moon observed an estimated 9,000 birds per hour passing by. These night migrations begin one hour after sunset, peak just before midnight, and fall off towards daybreak.

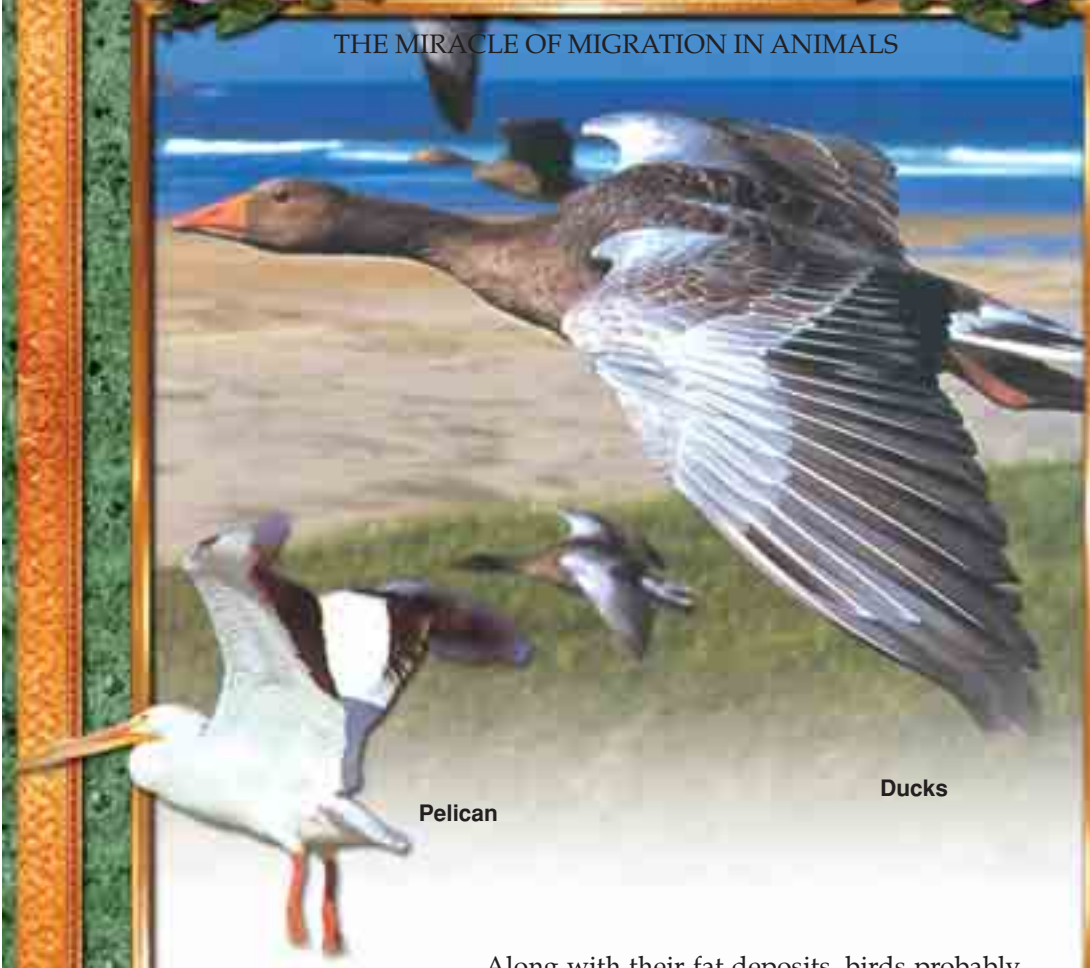
Birds' nocturnal migration is advantageous in a number of ways. Most importantly, in this way they can evade their enemies like hawks and falcons. A large number of migrating species are small and have weak flying capacity, so it is safer for these birds to fly in the dark. But night migration is not just for safety alone, for some coastal birds—powerful fliers that can go over the ocean nonstop for 3,200 kilometers (2,000 miles)—also migrate at night.

Another reason why birds choose night for travel is that birds feeding during the day usually have a very rapid digestion. Consequently, they have to eat at short intervals, and these calories must be deposited in their body in the form of fat. Were small migrators to make long flights during the day, they would be exhausted on arriving at their destination, and since they cannot forage at night, they would have to wait until the next morning. As a result of being unable to obtain energy, many would probably be unable to survive in a cold environment. For this reason, these creatures act in a very programmed fashion, feeding by day and migrating at night, resting at sunrise and continuing on in this cycle.

Although this has not been proven, one advantage of traveling

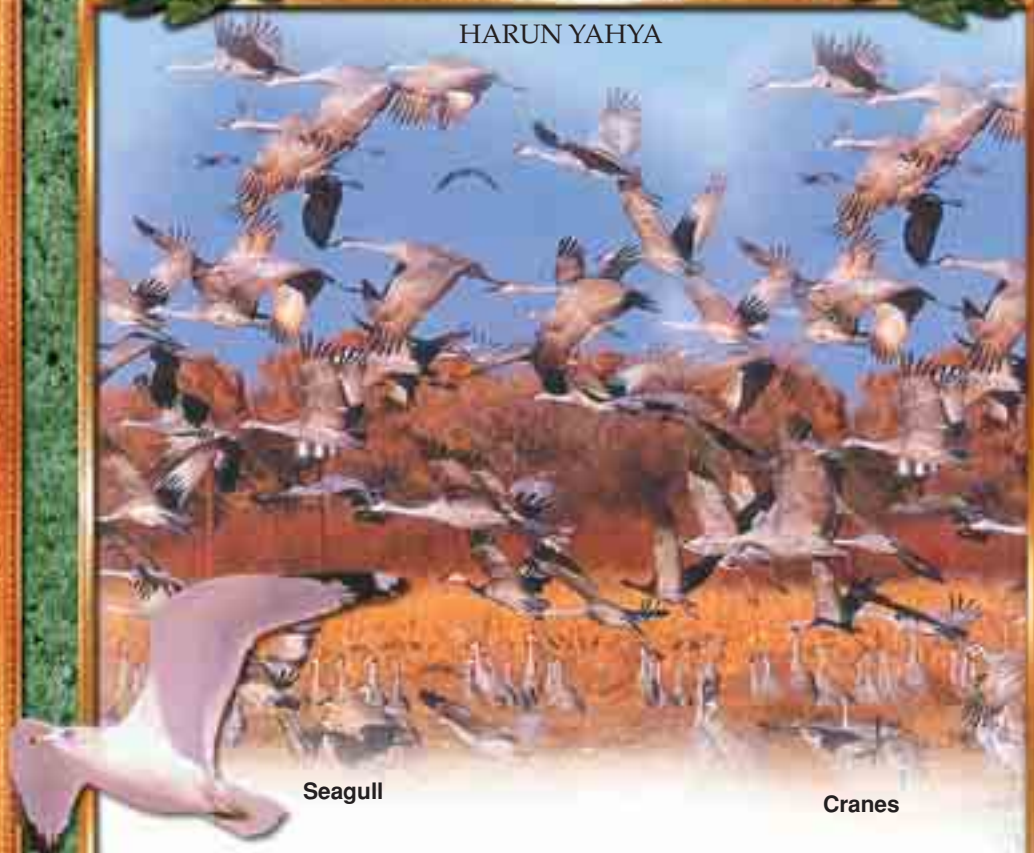


at night may be the cooler air temperatures. Birds that flap their wings constantly in sunlight run the risk of overheating. Night travel prevents this danger. Moreover, the energy they expend also produces a certain amount of heat, which birds reduce by losing some water from their skin by evaporation and by panting—rapid breathing which increases the evaporation rate of water from the mouth and throat.



Along with their fat deposits, birds probably lose body water while flying non-stop. Accordingly, on night migrations they can take advantage of the cooler air to lower their body temperature and reduce water loss to a minimum, which affords them increased flying distance.

Besides the species created with a suitable body structure for night migration, there are also birds suited to daytime migration, such as ducks, cranes, seagulls, pelicans, hawks and swallows. Storks and condors that glide can fly by day only, because they depend on rising heat currents or winds up the slope of mountains or hills to help them stay aloft.



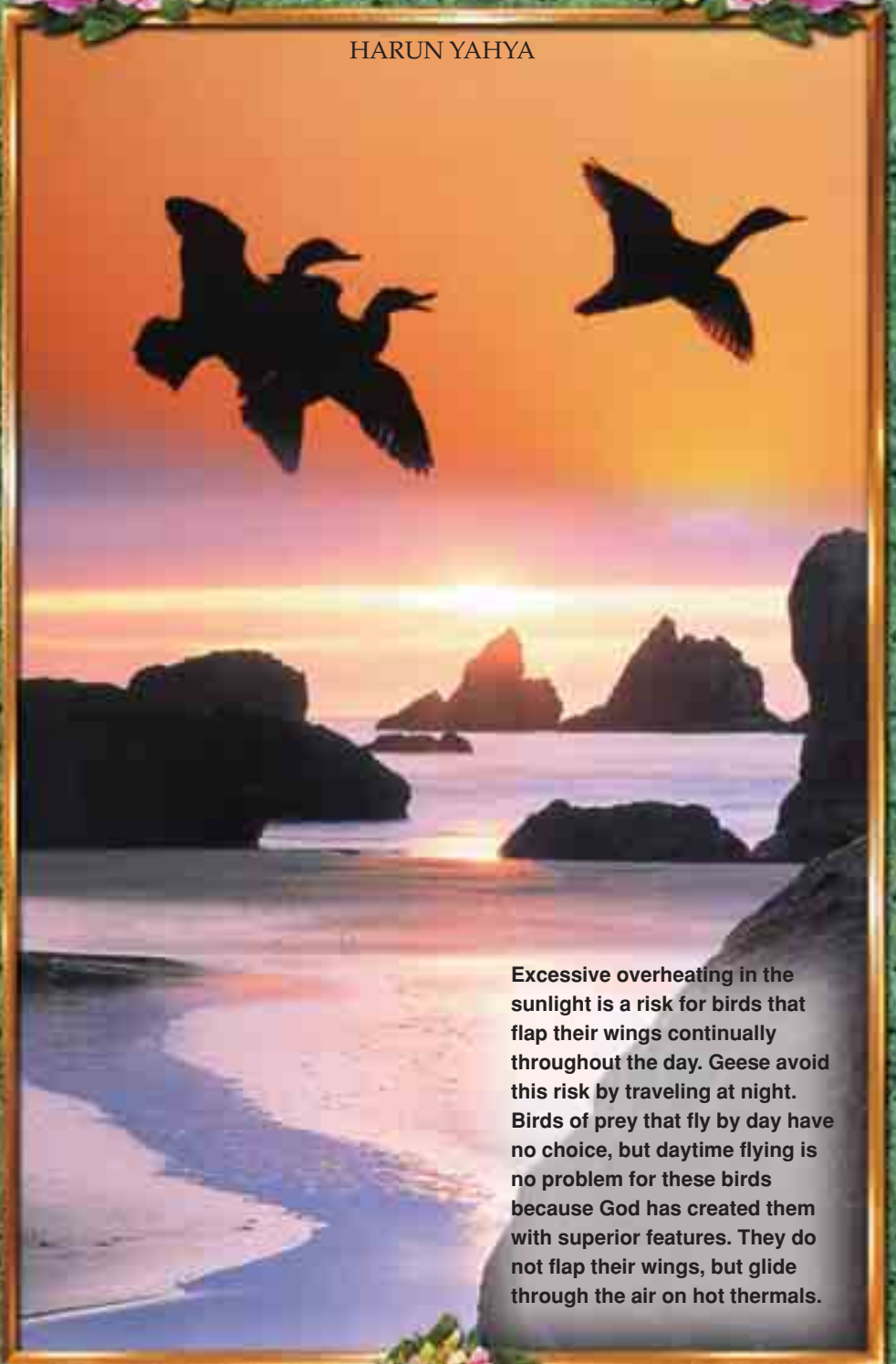
Seagull

Cranes

Migrating birds do so as their body structures and lifestyles permit. God created these creatures equipped with the necessary skills. All the feats they accomplish are evidence of God's existence and might, and each one of their tasks serves to exalt God, as He makes known in a verse of the Qur'an:

> **Don't you see that everyone in the heavens and Earth glorifies God, as do the birds with their outspread wings? Each one knows its prayer and glorification. God knows what they do. (Qur'an, 24:41)**

Some diving birds, including ducks that submerge when in danger, often travel over water by day and over land at night. Strong flyers like snow geese make the entire trip from James Bay, Canada to their wintering grounds on Louisiana Gulf coast in one continuous flight. The birds left James Bay on October 17 and arrived on the Gulf coast 60 hours later after a continuous flight of over 2,800 kilometers (1,700 miles) at an average speed of 45 kilometers (28 miles) per hour. (http://www.npwrc.usgs.gov/resource/othrdata/migratio/when.htm)



Excessive overheating in the sunlight is a risk for birds that flap their wings continually throughout the day. Geese avoid this risk by traveling at night. Birds of prey that fly by day have no choice, but daytime flying is no problem for these birds because God has created them with superior features. They do not flap their wings, but glide through the air on hot thermals.

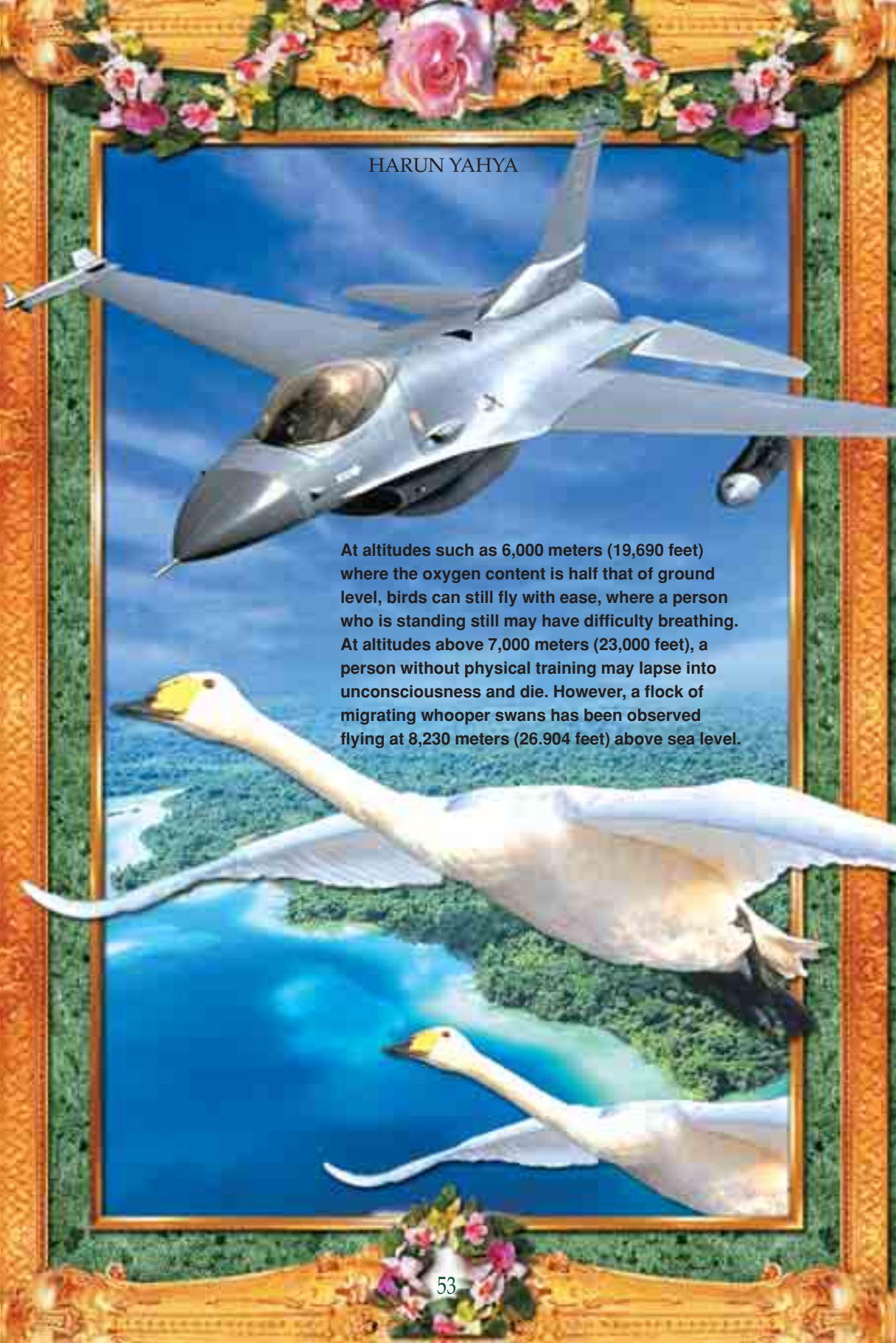
Advantages of High-Altitude Flight

Some birds migrate at seemingly impossible altitudes. For instance, dunlin, knot and certain other small migrating birds fly at a level of 7,000 m (23,000 feet), the same altitude used by aircraft. Whooper swans have been seen flying at 8,200 m (27,000 feet). Some birds even reach the stratosphere, the layer of thin atmosphere, at an altitude of between 8 and 40 kilometers (5 and 25 miles).[11] Bar-headed geese cross the Himalayas at an altitude of 9,000 meters (29,529 feet), close to where the stratosphere begins.[12]

It is not known exactly how birds determine the altitude at which they fly, but high flying does give a number of advantages. It may let them locate familiar landmarks, fly over fog or clouds, and surmount physical barriers like mountain ranges. At very high altitudes, the air is cooler and this means reducing water loss for the birds.[13]

Although birds gain advantages from flying high, there could be certain disadvantages. For example, concentrations of oxygen at this altitude are less than a third of what they are at sea level. However, birds do experience no difficulty because their systems are created to cope with breathing at high altitudes. Geese and other birds have very efficient forms of oxygen-carrying molecule hemoglobin in their blood to deal with this low level of oxygen and in addition, there is a high density of capillaries to transport this oxygen to their flight muscles. The "avian lung" structure unique to birds moves the air in their lungs in a single direction, meaning that the bird constantly breathes in clean air and thus can use oxygen in the atmosphere in the most efficient way.

How migrating birds manage to tolerate the cold is still unknown. At high altitudes, the temperature can fall below -50°C

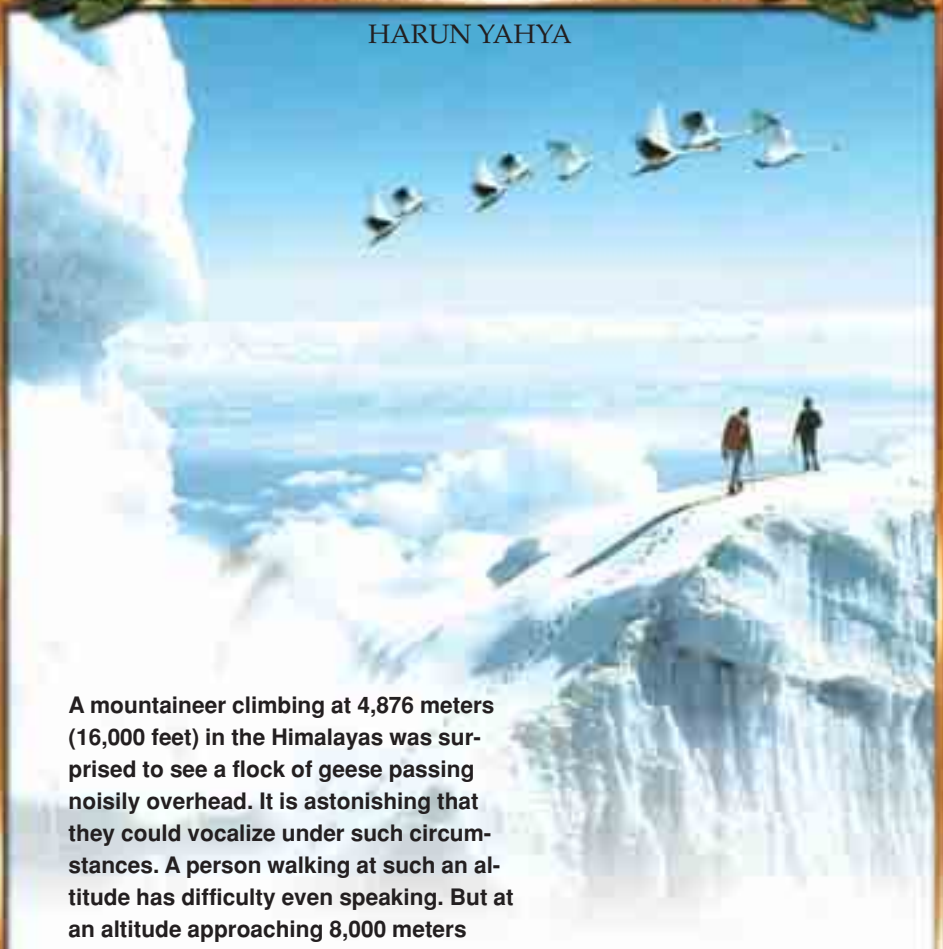


At altitudes such as 6,000 meters (19,690 feet) where the oxygen content is half that of ground level, birds can still fly with ease, where a person who is standing still may have difficulty breathing. At altitudes above 7,000 meters (23,000 feet), a person without physical training may lapse into unconsciousness and die. However, a flock of migrating whooper swans has been observed flying at 8,230 meters (26.904 feet) above sea level.

At a temperature of -40°C (-40°F) at dizzying heights, a bird's feathers provide it with thermal insulation. Also, their hollow bones compensate for changes in air pressure at high altitudes.

(-58°F), and migrating birds may have to endure these freezing conditions for a number of days.[14]

Every living creature is created to have enough strength to deal with the difficulties it may encounter throughout its life. Geese can fly at an altitude where there is little oxygen and sometimes at freezing temperatures thanks to the special structure of their bodies. This structure is not the product of unconscious coincidences—in short,



A mountaineer climbing at 4,876 meters (16,000 feet) in the Himalayas was surprised to see a flock of geese passing noisily overhead. It is astonishing that they could vocalize under such circumstances. A person walking at such an altitude has difficulty even speaking. But at an altitude approaching 8,000 meters (26,250 feet), these birds were able to honk on the wing.

evolution—but of God, Supreme Lord of the heavens and the Earth, Who has created them with perfect features. God knows the beginning and end of everything and has created all creatures with perfect characteristics in every respect:

> **The Originator of the heavens and Earth. When He decides on something, He just says to it, "Be!" and it is. (Qur'an, 2:117)**

Advantages of Flying with Fat Reserves

Before migrating, as already pointed out, birds consume as much food as possible and convert these reserves into fat, which is the most ideal fuel. Metabolizing one gram of fat releases twice as much energy as the same quantity of protein and carbohydrate. In the course of migration, birds use up this accumulated fat, but the weight of fuel they carry presents certain difficulties. For example, the red-necked stint carries a burden of fat exceeding 90% of its normal body weight. The bird burns up this fat gradually on its non-stop migration journey.

Red-necked stint

To be able to carry this excess load to a given altitude, a bird burns up a significant amount of fuel. When it reaches the necessary altitude, the bird's most efficient method is to continue its journey without stopping until all its fat reserve is used up. If it lands before using this supportive energy, it may encounter serious risks. For example, it may come down some place where it can't refuel quickly enough to continue. For this reason, it is always more advantageous to store reserve energy to complete the flight.[15]

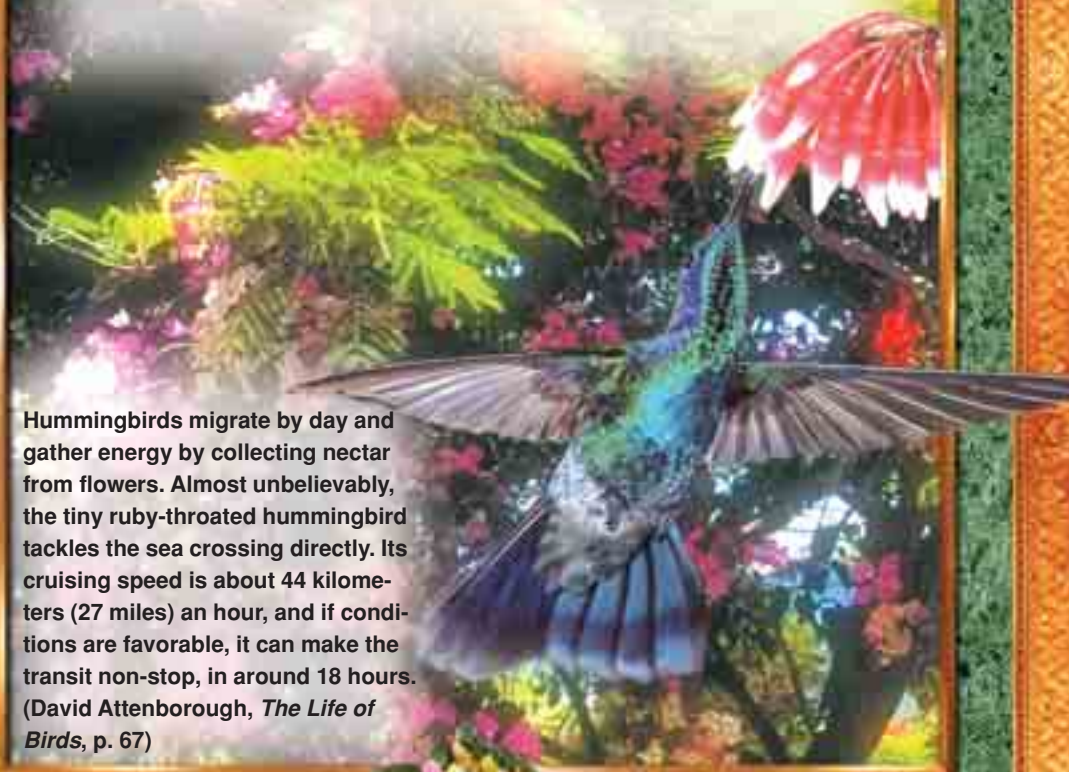
Every year, migrating shorebirds set off on a flight of 12,000 kilometers (7,450 miles). Over the course of their lives, the total distance they cover on these journeys is equivalent to the distance to the Moon and back.

As the month of March approaches, shorebirds begin their preparations for migrating to their breeding grounds in Siberia. First, they start to consume extra amounts of food. In one day, a shorebird only the size of a glass of water can consume about 40,000 invertebrates. Night and day, it alternates between eight hours of eating and four hours of rest, and accumulates between 50 and 100% of its body weight in fat.[16] Migration begins in April and May. The birds fly non-stop for three days and nights, covering a distance of some 1,500 kilometers (932 miles) per day. At the end of this three-day flight, having used up their entire store of fat, they stop along their migration route in specific regions of countries like Japan, China and Russia to replenish their lost reserves. In the course of migration, shorebirds gain and lose weight a few times; and

after flying an enormous distance of some 12,000 kilometers (7,450 miles), they arrive in Siberia at the beginning of June.

American golden plovers follow an ocean route of 3,840 kilometers (2,400 miles) from Nova Scotia to South America, flying for about 48 hours without stopping. In spite of the difficult journey, each bird uses up only four grams of body fat. The ruby-throated hummingbird weighs about four grams and uses up less than one gram of fat in its single 800 kilometers (500 miles) flight across the Gulf of Mexico.[17]

On close examination, these little birds reveal themselves as a miracle of creation. They make perfect journeys under conditions that no human could ever cope with. God has created birds with all these characteristics, proof of His unbounded intelligence and knowledge.



Hummingbirds migrate by day and gather energy by collecting nectar from flowers. Almost unbelievably, the tiny ruby-throated hummingbird tackles the sea crossing directly. Its cruising speed is about 44 kilometers (27 miles) an hour, and if conditions are favorable, it can make the transit non-stop, in around 18 hours. (David Attenborough, *The Life of Birds*, p. 67)

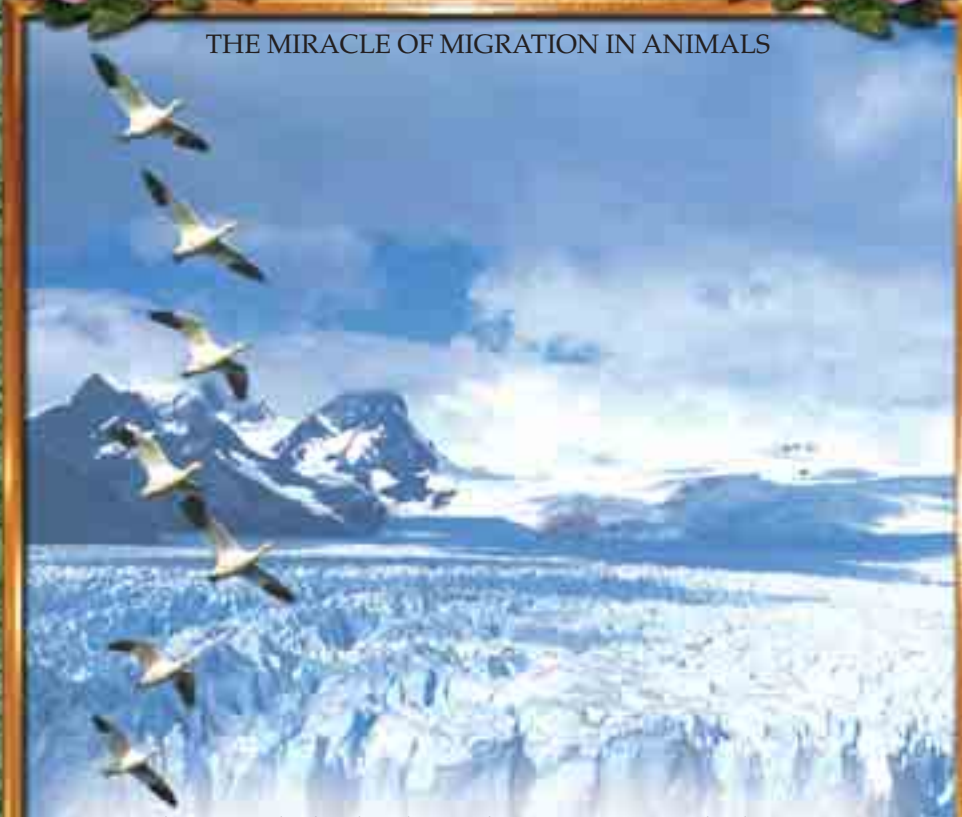
In a single flight, most migrating shorebirds cannot cover the great distance between their breeding grounds and the regions where they spend the winter. Smaller species, which store less fat than the largest ones need to stop to gather more food. Small birds can fly up to 2,000 kilometers (1,250 miles) with the spare fuel. Since there are few suitable islands where they can stop off, they trace a zigzag route along the South Asian coast. But they know where they can stop and travel in the right direction. On the other hand, larger shore birds can carry enough fat for a 5,000-kilometer (3,100-mile) journey, and so can follow a more direct course.

Finding the Shortest Migration Route

As well as a sense of direction, birds also possess navigation ability. While "sense of direction" can be defined as guessing in which direction home lies, navigation in seamanship means accurately defining one's position on a map, to bring a ship from one place to another. As already pointed out, experiments have proven birds' excellent navigational ability. In one such experiment, a manx shearwater (*Puffinus puffinus*) taken from its habitat on the coast of Wales and released from Boston 5,000 kilometers (3,100 miles) across the ocean, returned home in 12 days.[18]

Depending on circumstances, birds use various clues in navigation. Missing one of these clues, they orient themselves by another. Birds can generally read landmarks such as coastlines, rivers and mountains. In addition, experiments have produced ample evidence of their making use of the Sun and stars. To illustrate how complex it can be to conceptualize birds' direction-finding skill, consider the black-winged stilt.

With the arrival of spring in their winter habitat of West Africa, these birds leave for Siberia. They fly non-stop along the East Atlantic shore for a total distance of 4,300 kilometers (2,600 miles) until they reach the Dutch Wadden Sea.



The route the birds take on this journey is marked as A-B-C in the illustration on the opposite page. Without doubt, a superior characteristic enables them to find their way to such distant regions. But when we look at the route the birds follow, a much more remarkable ability is revealed.

Between A and C in the drawing, two routes are indicated. You can see that the unbroken line showing the A-B-C path is shorter than the dotted line. The A-B-C line in fact shows the *shortest* route between A and C. We can compare this line to a line connecting two points on an orange.

The route shown by the dotted line would be followed to get from A to C using a magnetic compass. In other words, a pilot flies from town A according to the angle that the airplane's compass shows for town C. If he keeps on without changing course, even-

Every spring, millions of shorebirds leave their wintering grounds in West Africa and fly non-stop to Europe's East Atlantic coast—their first stop. (B) From there, they head for their breeding grounds in Siberia. (C) In the course of this flight, they follow the shortest route between two points on a sphere, known as the orthodrome.

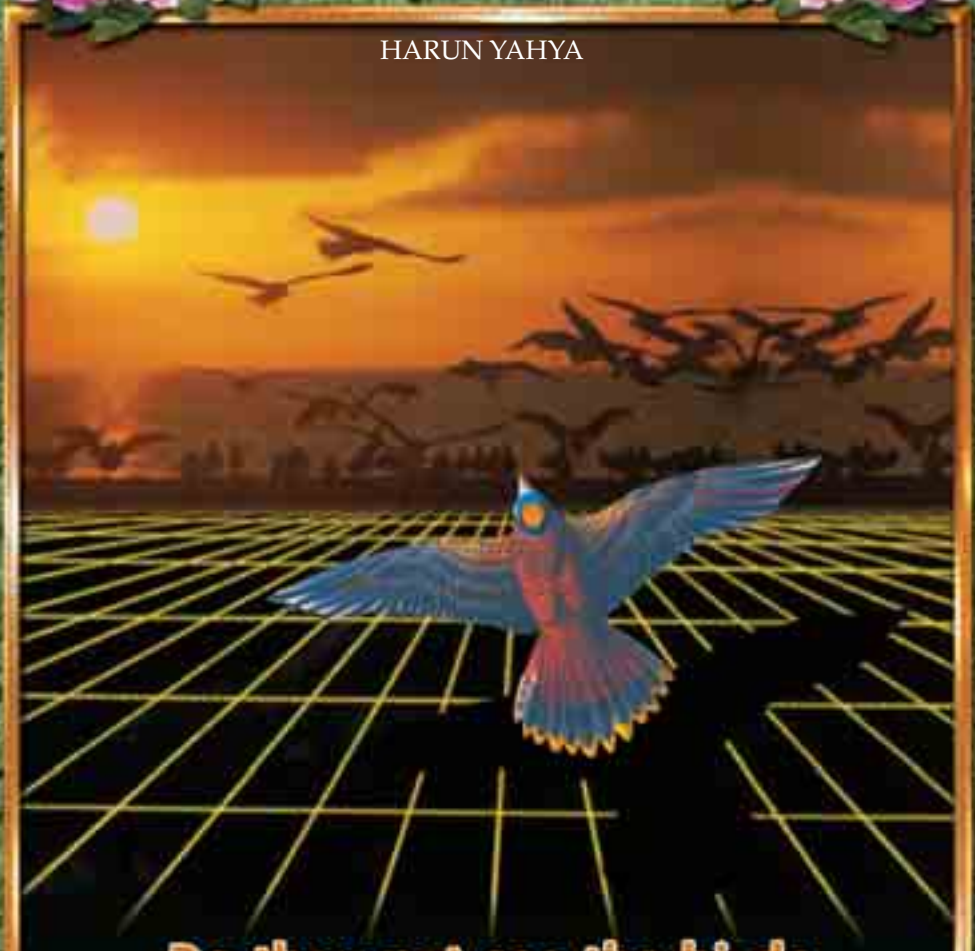
tually he will arrive at town C. In fact, these two different routes correspond to concepts long known in seafaring. The shortest distance between two points on a sphere like Earth, as shown above, is termed "orthodrome." The journey from one point to another using a compass follows a different route, and this is termed "loxodrome." A loxodrome cuts each meridian with the same angle, and the meridians join at the poles. That is, they are not straight lines. A journey following a loxodrome is more oblique than the "straight" road and therefore takes longer.

Pedro Nunes first drew a loxodrome in 1550 and believed it was the shortest distance between two points on the Earth's surface. In other words, a loxodrome and an orthodrome were

thought to be one and the same thing, and this assumption persisted for a long time. After many years, the difference was acknowledged. Only in the nineteenth century did it become possible for ships to follow orthodrome rather than loxodrome-based routes.[19]

To the astonishment of scientists, however, when black-winged stilts migrate, they do not follow the loxodrome route that one using a compass would normally expect. They follow an orthodromic route, which is shorter and more efficient—but very difficult to determine, since it is possible to trace the shortest distance between two points on a spherical shape only when the whole of the sphere is visible. For example, while it is simple enough for us to join two points on the surface of an orange, we can't possibly know the shortest route from where we are presently to Sydney, Australia. Similarly, however high up a bird may fly at point A, it cannot visually determine the shortest route to point C, thousands of kilometers away.

But birds are more successful than a pilot equipped with a compass at finding the shortest (i.e. orthodrome) route to place where they have never been. According to researchers, birds achieve this thanks to a "sun compass." At every meridian they pass when flying east, birds have to adjust their route by a 1° angle of deviation. It is estimated that birds use the Sun's constantly changing position in the sky. Thanks to this complex navigational ability, they can reduce traveling risks and the amount of energy they use to a minimum. Finding the shortest route, as birds have been shown to do by using the Sun, is something we humans can do only after solving complex equations:



Do they not see the birds suspended in mid-air up in the sky? Nothing holds them there except God. There are certainly signs in that for people who believe.
(Qur'an, 16:79)

The shortest path between two points on a sphere, also known as an orthodrome, is a segment of a great circle. To find the great circle (geodesic) distance between two points located at latitude δ and longitude λ of (δ_1, λ_1) and (δ_2, λ_2) on a sphere of radius a, convert spherical coordinates to Cartesian coordinates using

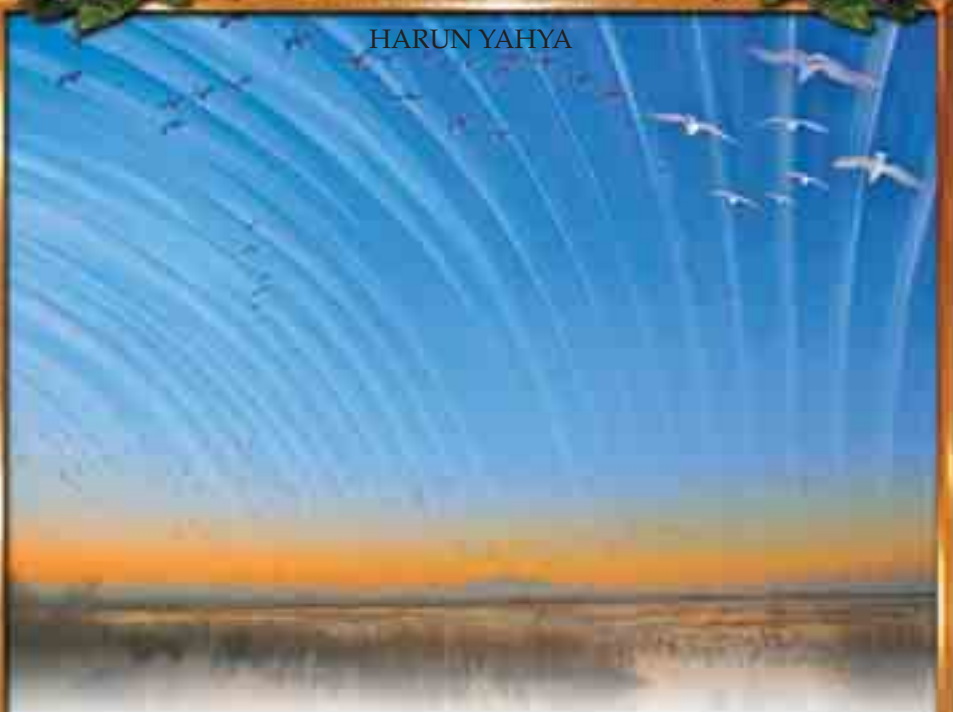
$$\mathbf{r}_i = a \begin{bmatrix} \cos\lambda_i \cos\delta_i \\ \sin\lambda_i \cos\delta_i \\ \sin\delta_i \end{bmatrix}.$$

(Note that the latitude δ is related to the colatitude ϕ of spherical coordinates by $\delta = 90^\circ - \phi$, so the conversion to Cartesian coordinates replaces $\sin\phi$ and $\cos\phi$ by $\cos\delta$ and $\sin\delta$, respectively.) Now find the angle α between $\mathbf{r}_1$ and $\mathbf{r}_2$.

$$\begin{aligned} \cos\alpha &= \hat{\mathbf{r}}_1 \cdot \hat{\mathbf{r}}_2 \\ &= \cos\delta_1 \cos\delta_2 (\sin\lambda_1 \sin\lambda_2 + \cos\lambda_1 \cos\lambda_2) + \sin\delta_1 \sin\delta_2 \\ &= \cos\delta_1 \cos\delta_2 \cos(\lambda_1 - \lambda_2) + \sin\delta_1 \sin\delta_2. \end{aligned}$$

The great circle distance is then

$$d = a \cos^{-1}[\cos\delta_1 \cos\delta_2 \cos(\lambda_1 - \lambda_2) + \sin\delta_1 \sin\delta_2].$$



The equation for finding the shortest distance between two points on a spherical surface—that is, the orthodrome route—appears on the opposite page.[20]

For most people, these complex mathematical formulae have no meaning. But the black-winged stilt can fly without losing its way, due to its ability to determine the route arrived at through similar calculations.

Undoubtedly it is not a result of coincidence that a bird is programmed to fly on such a calculated route. Possession of this extremely complex knowledge points not to coincidence, but to creation. In a verse of the Qur'an, God says this of those who try to prove the contrary:

> **[Hud said:]"... Do you argue with me regarding names which you and your forefathers invented and for which God has sent down no authority? Wait, then; I am waiting with you." (Qur'an, 7:71)**

Benefits of Forming a Flock

Radar has shown that daytime migrators have more of a tendency to fly as a flock than do night migrants. This reinforces the idea that flock formation is to discourage enemies. It also shows that there is certain cooperation and communication between birds. In a verse of the Qur'an, God tells us that birds as well as people form "communities:"

> **There is no creature crawling on the Earth or flying creature, flying on its wings, who are not communities just like yourselves—We have not omitted anything from the Book—then they will be gathered to their Lord. (Qur'an, 6:38)**

In species that form flocks, a special calibration that enables the

younger fledglings to fly at the same time as the adults. The chicks do not have the capacity and strength to migrate as soon as they are hatched, but must soon be able to keep up with the flock. For this reason, while the young are growing, the parents molt and lose their wing feathers and thus are also unable to fly. While the young are reaching the stage where they can fly, the adults' feathers gradually grow back. This miraculous coordination allows both parents and young to migrate at the same time.[21] The perfect synchronization in physical changes in two separate generations cannot be pure coincidence. This is an example of how God the Omniscient creates a perfect harmony in living beings.

Don't you see how He created seven heavens in layers, and placed the Moon as a light in them and made the Sun a blazing lamp? (Qur'an, 71:15-16)

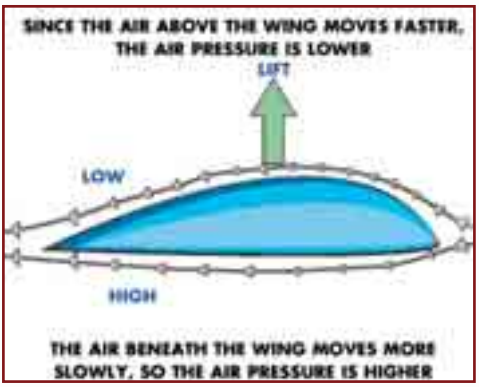
Why Birds Fly in V Formations

The leading birds in a "V-shaped" flock reduce the amount of air resistance for the birds behind them. In this way, birds flying as a flock save energy and can usually fly at greater speed than birds flying alone.

When migrating birds fly in a staggered pattern, each is subjected to the same amount of air friction as its neighbor. The advantage of this method of flight stems from what pilots call the "wingtip vortex."

An airplane's wings provide the majority of the lift, but also cause drag. Air flowing over the top of a wing also tends to flow inward toward the fuselage, while air flowing underneath the wing tends to flow outward. Along the trailing edge of the wing, these two airflows meet and form a rotating column of air extending out from the wingtips. On humid days, cold, moist mornings or when flying through mist, this so-called wingtip vortex is visible to passengers sitting next to the wing.[22] There are vortices on both sides of the wing. Higher air pressure below the wing and the lower pressure above cause this rotating column of air. The air's natural tendency to flow from high pressure to low pressure creates airlift around the edge of the wing, and birds utilize this flow on their journeys.

The "wingtip vortex" created by airflow over a bird's wings when it takes off can be re-created under laboratory conditions.



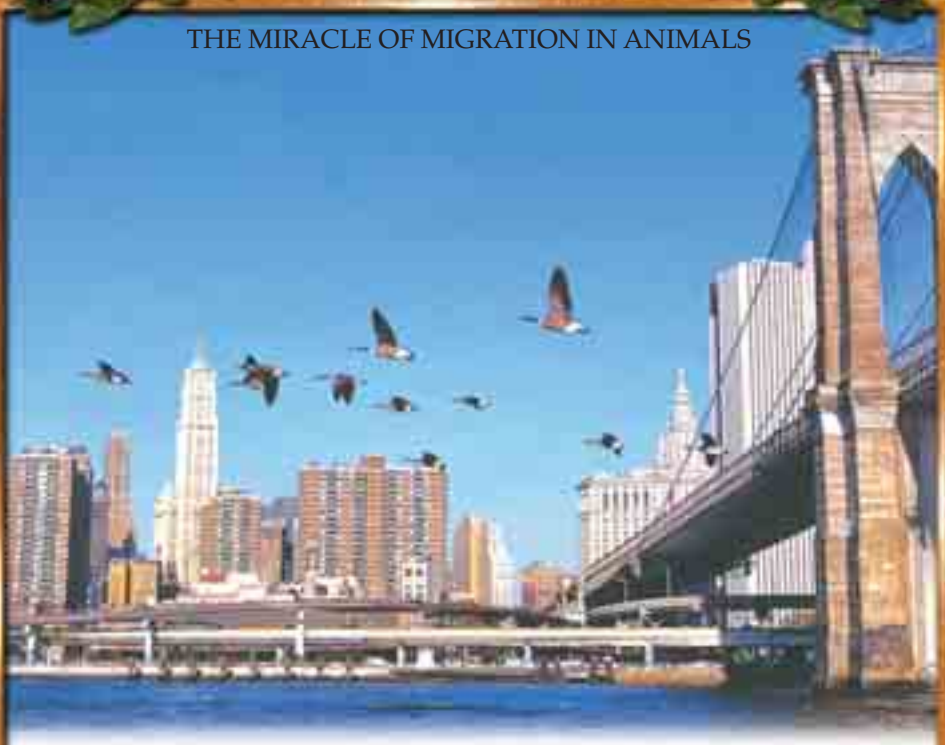
A similar effect to the air currents behind a bird's wings in flight has been created in the laboratory (above). Birds migrating in a V formation are not affected by these air currents.

As in human bicycle races, a bird that finds itself at the rear must struggle continuously against a downward current. In flying, this is the equivalent of climbing a hill. Provided that their wings do not touch, it is more advantageous for a bird to fly by positioning itself right next to another bird. This way, the bird can benefit from the maximum lift—but only with one wing. For this reason it has to keep the wing in line, close to the wing of the other bird.

Each of the birds flies in the upwash of its neighbors. This is an effect similar to flying in an upcurrent, using less lifting power.

If this is so, then why do birds fly in a V formation, rather than side by side line abreast?

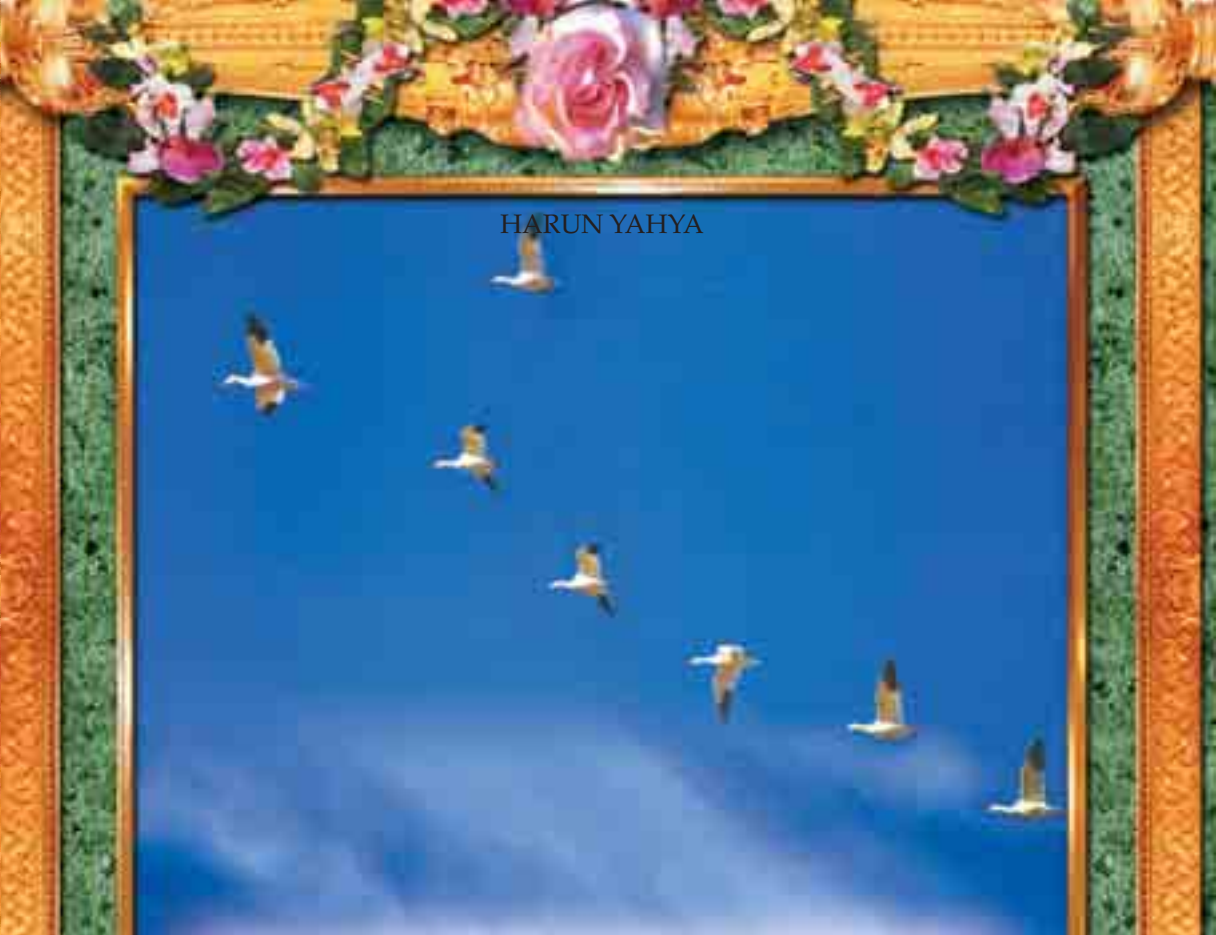
The answer lies in the sacrifice any migrating bird makes for the sake of the others. Flying in a line abreast formation would not ensure an equal energy saving for each bird, since the birds in the center of the line would have twice the advantage of the birds at the tips, since they would be flying in an upwash field created by the birds on both



In a V formation, each bird flapping its wings creates an airflow that lifts the bird following behind. A group of geese in this formation can increase their flight range by up to 70%, using the airflow created by the flapping of their wings. Thus they can travel almost twice as far as a group than they could fly individually.

sides. The V formation restores the balance. In a regular V formation, each bird expends the same amount of energy. If one member moves ahead of the V line, it must use more power to keep up with the flight and its speed falls until it is back in line. In this way, the formation is self-stabilizing. Even young birds new to flight adjust immediately to it.

The energy saved as a result is quite significant. According to scientific reports, a flight of 25 birds can have a 70% range increase over a solo bird using the same amount of energy.[23] As we have seen,



every detail in nature reveals remarkable intelligence and planning. This is a sign of God's absolute supremacy over nature:

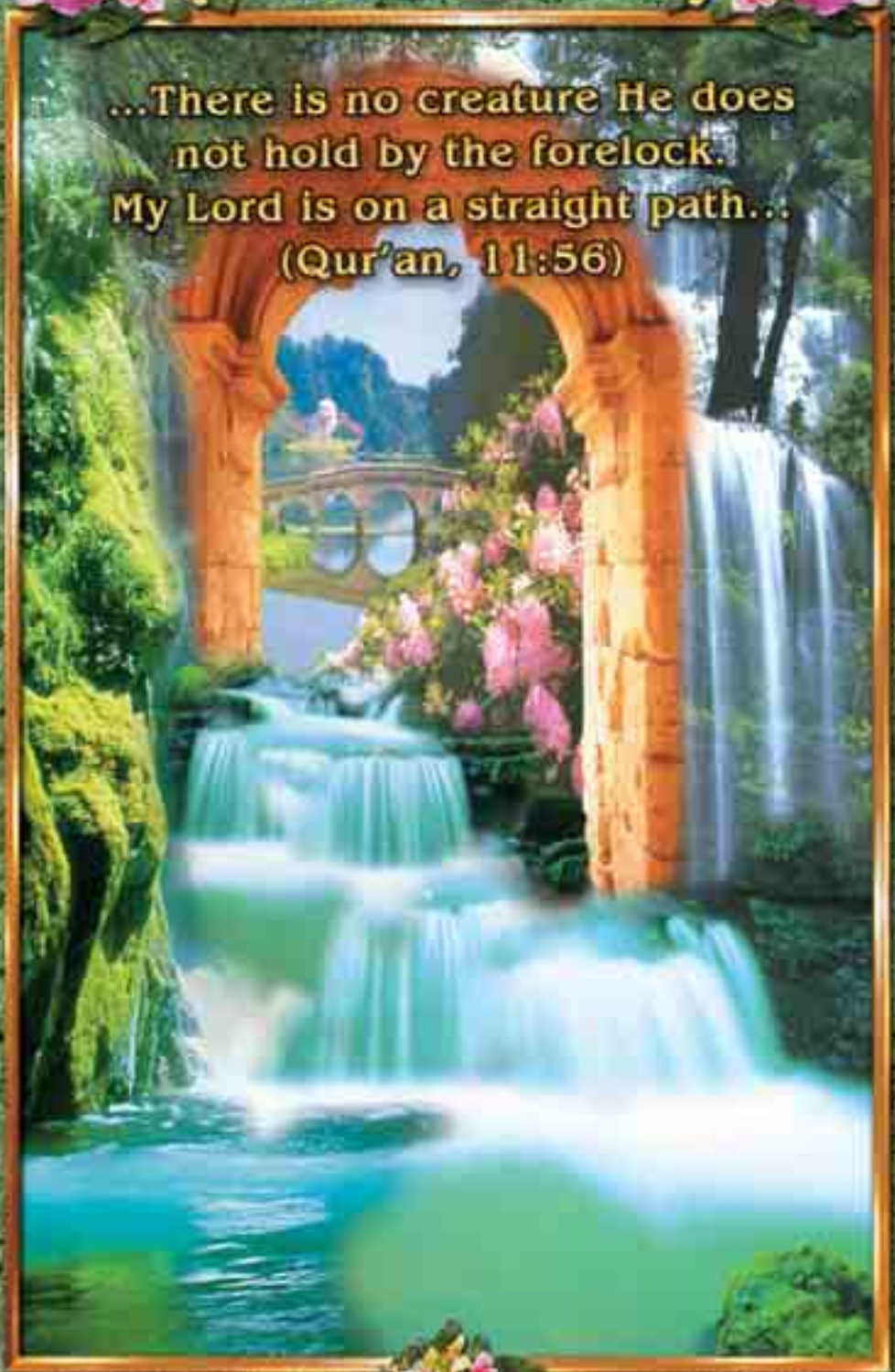
> **It is God Who created the seven heavens and of the Earth the same number, the Command descending down through all of them, so that you might know that God has power over all things and that God encompasses all things in His knowledge. (Qur'an, 65:12)**

Birds flying in V formation make things much easier for one another. By not placing handicapped or weak birds at the fore—the only place in the V that is not advantageous—they help them get strength. The efforts of one creature to benefit another provides a clear answer to the evolutionists, who claim that animals are selfish and only interested in what benefits them as individuals. God, Creator of every an-

imate or inanimate form of existence on Earth, has created the migratory birds and knows their every need. Birds that move with God's inspiration show the falsehood of evolutionary claims and provide evidence of the truth of His creation.

Why do birds, while flying on difficult journeys for thousands of kilometers, enable others to save energy? Why does each bird take its turn leading? Why doesn't one ever create any problems or disturb the order of the flock?

Going by the evolutionists' claims, each creature should only act to its own advantage, but this is not the case. Birds complete extremely arduous journeys with ease by helping one another. God inspires in each creature the tasks it will undertake, and it complies perfectly by submitting willingly to God's greatness.


...There is no creature He does
not hold by the forelock.
My Lord is on a straight path...
(Qur'an, 11:56)

JET FLEETS AND MIGRATORY BIRDS

Jet fleets fly in V formation.

There is a very important reason for this. Flying in formation, each plane causes a vortex diagonal to its wings. This means that the plane behind is subjected to less air drag and needs to use less power, resulting in a 20% saving of fuel.

Surprisingly, migrating birds also have this knowledge. Geese, ducks and swans also use this V formation in flight.

Each bird benefits from the field caused by the bird in front. Flying in leading position is tiring, and the birds take turns at this duty.

And here is the big secret: Flight in V formation uses less fuel, a fact discovered by aerodynamic engineers.

But how do migratory birds know this scientific calculation?

How do they organize themselves in a disciplined fashion?

How does each bird know its place in the course of flight?

Why do birds make sacrifices for each other by taking turns in leading position?

These questions lead us back once more to the truth of creation.

God creates all species with perfect bodies and inspires them to use their features in the best way.

PERFECT ENERGY CONSUMPTION IN BIRDS

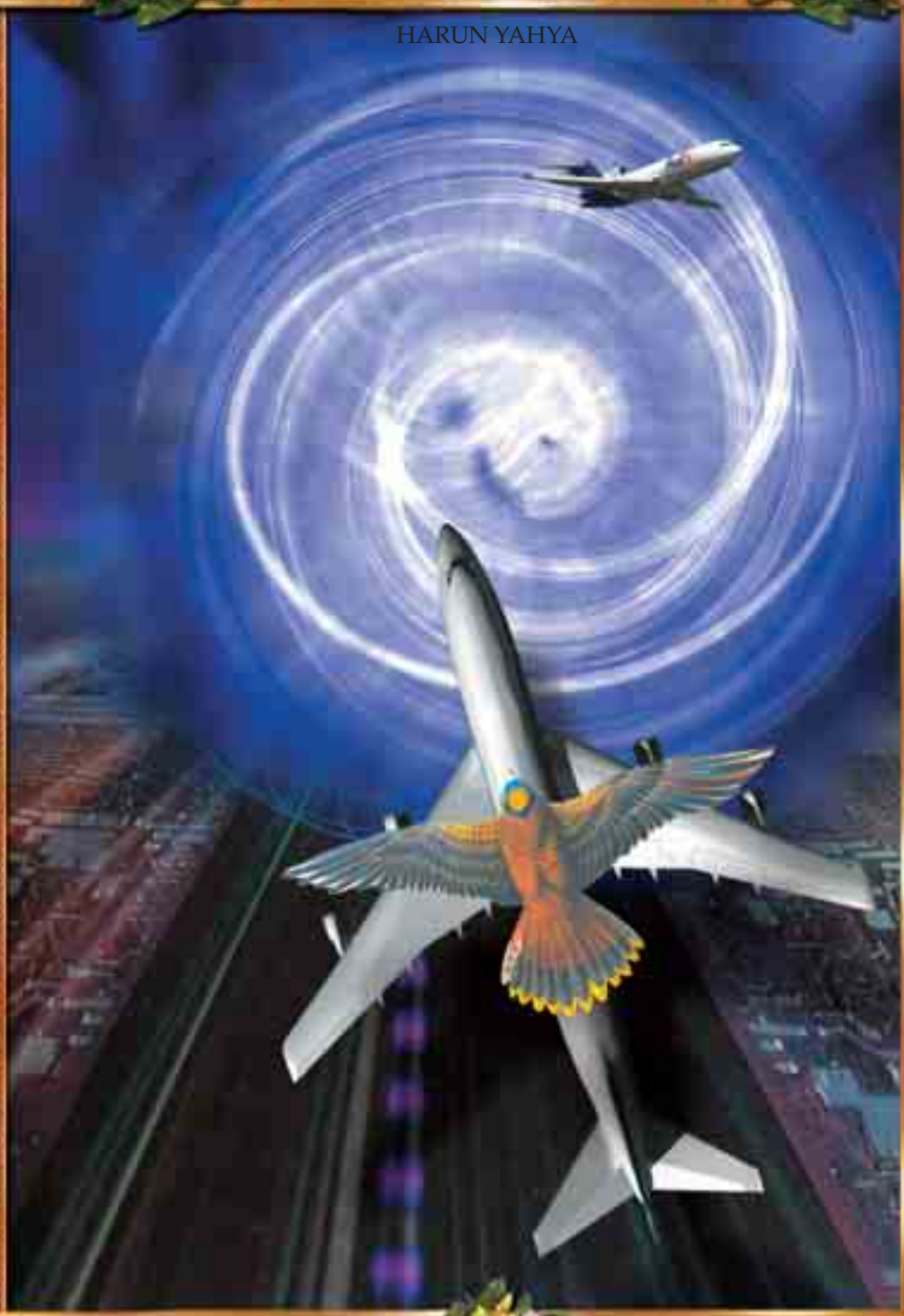
NASA established a joint team of Boeing Co. and UCLA engineers to find a way of reducing drag and saving energy in flight by mimicking the way birds have been doing so for millions of years.

If this project (Autonomous Formation Flight-AFF) succeeds, its savings will be significant. In California Edward NASA's Gerard Schkolnik, director of the Dryden Flight Research Center project, emphasized the subject's importance, saying that the transcontinental commercial airlines could save as much as 500,000 dollars per plane annually.[1]

The AFF's principle is to reduce fuel consumption by using the energy advantage created by the lead bird. The trailing bird—or aircraft—flies in a position that uses the vortex created by the lead, and uses less energy by maintaining this position.

For years, scientists have known that birds flying in V formation expend less energy than birds flying solo; and thought that this formation that reduces drag could also be used successfully with aircraft. To this end a project with two F/A-18 aircraft is underway to reduce fuel consumption of the trailing aircraft by 10%, imitating the formation of migrating birds.[2]

1-"Technology Emerging to Save Billions in Air-Fuel Costs," David Greenberg, *Los Angeles Business Journal*, May 28, 2001.
2- Beth Hagenauer, "F/A-18s map wingtip vortex effects for AFF;" http://www.dfrc.nasa.gov/Newsroom/X-Press/stories/092801/res_aff.html



Why Migrating Birds Have Long Wings

Species of birds that migrate have longer wings than non-migratory ones. This reduces wing-tip drag and creates a more effective lift as well as a more efficient wing area to body weight ratio. In addition, the outer primary feathers (that, together with the inner feathers, effectively thrust the bird forward in flapping flight) tend to be longer in migrating birds, lending the wings a pointed rather than a rounded shape.

This shape can be observed in a number of migrating birds. For example, the black-naped oriole, which travels between Siberia and India, has pointed wings in common with the albatross, the falcon, the swift, various species of shorebird and tern, and other long-distance travelers.[24]

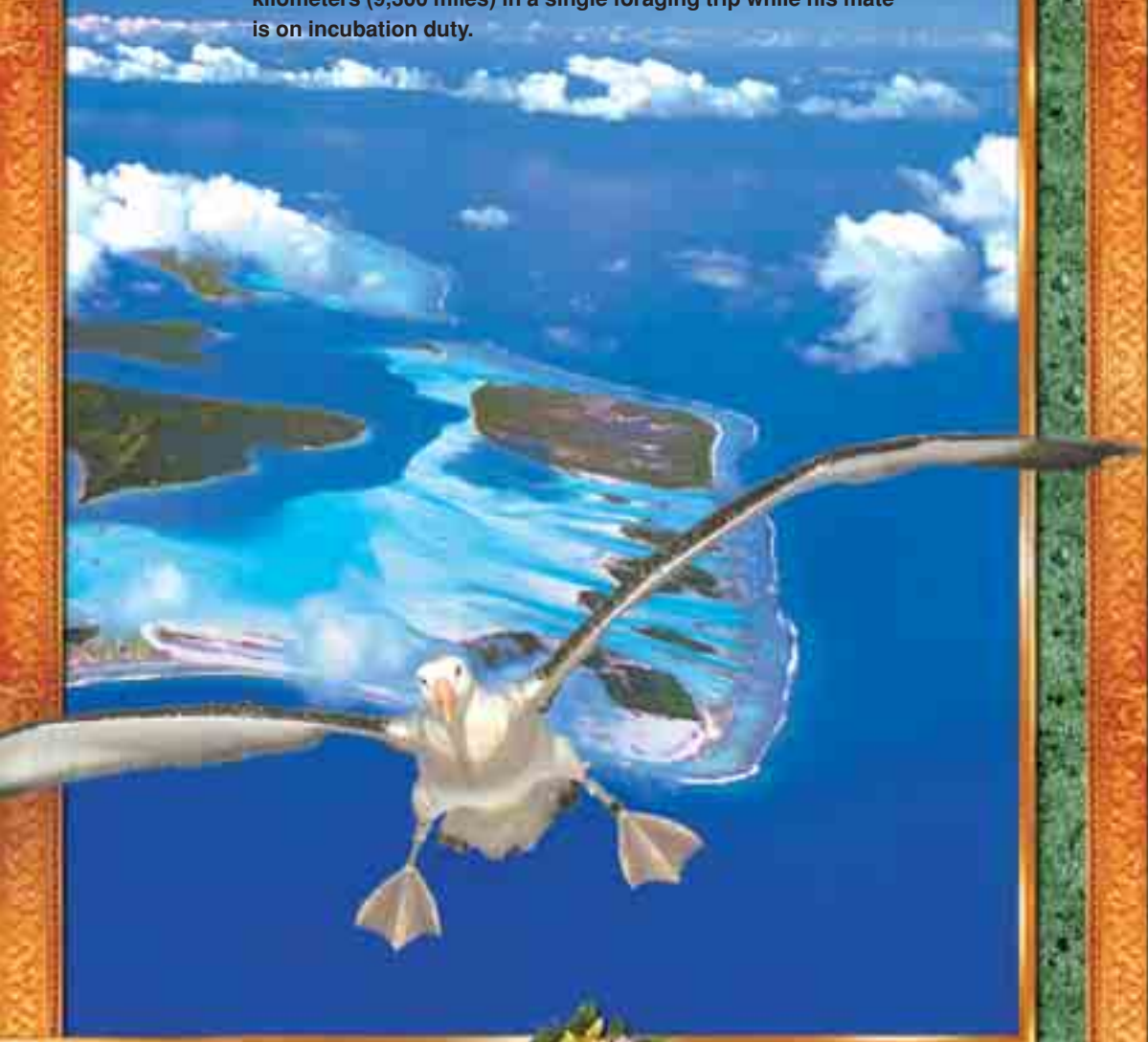
Aerodynamic Advantages of Curved Wings

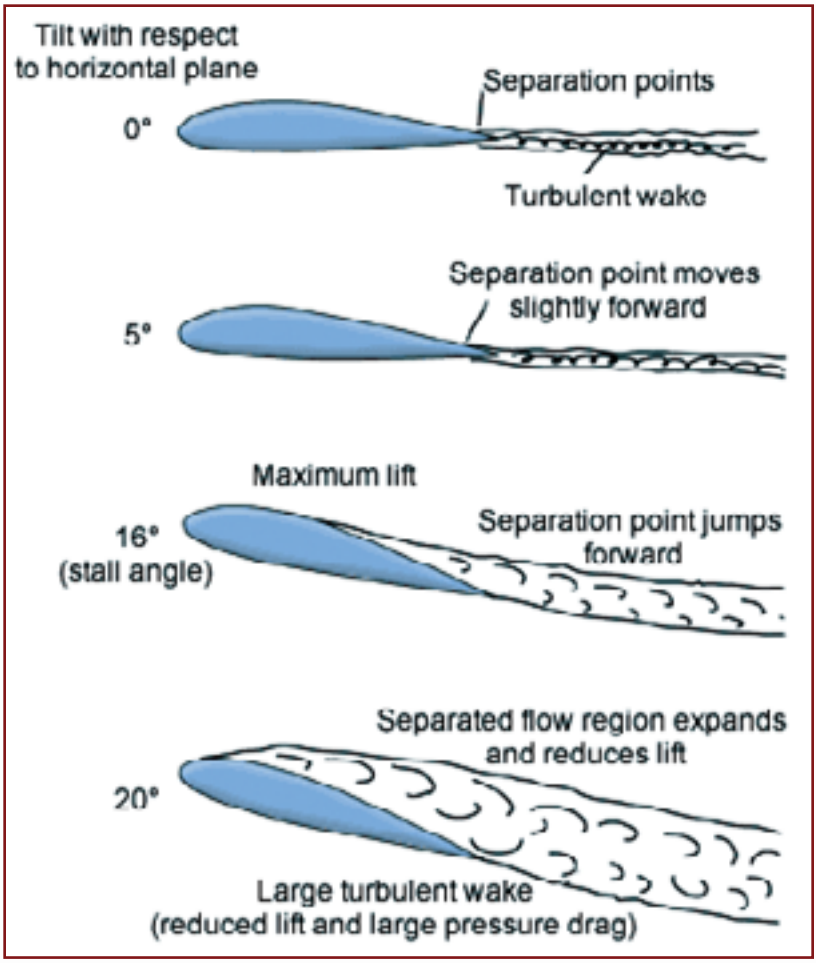
There is an important reason for curvature in birds' wings. Close observation reveals that the wings of aircraft have this same curvature. An aircraft's wing is designed for flight and has a special shape known as an airfoil, also found in fans and propellers. Airfoils create a lifting force when subject to airflow. An airfoil has a thicker, rounded leading edge and a very fine trailing edge. Between the leading edge and the trailing edge, both the upper and lower surfaces of the wing are curved. The upper surface usually has a greater curve than the lower and, in aviation terminology, this humped surface is known as "camber."

Airfoils make use of the Bernoulli's principle, according to which an increase in the velocity of a stream of fluid results in a de-

An individual swift is known to have lived for as long as eighteen years. In its lifetime, it must have flown some four million miles. That is the equivalent of flying to the moon and back eight times. (David Attenborough, *The Life of Birds,* p. 70)

The albatross (*Diomedea exulans*), one of the birds with the greatest wing span, makes a round trip of more than 15,000 kilometers (9,300 miles) in a single foraging trip while his mate is on incubation duty.





The special curved shape of birds' wings is imitated in the design of aircraft wings. Airfoil shape creates an airlift effect due to the airflow around the wings—a great supportive force during take-off for both birds and aircraft.

crease in pressure. As the upper surface of the wing has greater camber than the lower, the air flows faster over the wing than under it. This lowers the air pressure above the wings, and the difference in pressure between the upper and lower surfaces causes lift.[25]

Utilizing the Wind in Flight

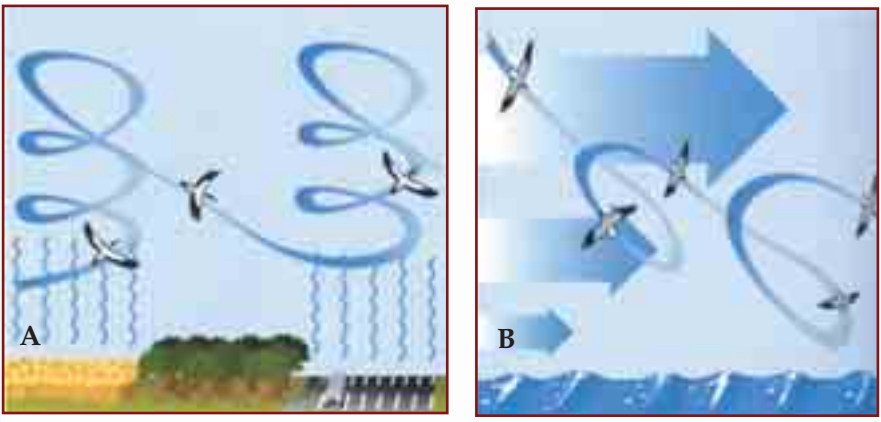
Radar research conducted during both spring and autumn migrations has shown that the weather and in particular, heat, plays an important part in a bird's decision as to when to start migrating. Wind is one important factor influencing the start of flight. In spring, they are the winds blowing from the south and from the north in autumn. Clear weather conditions that let birds easily determine their route from the sky is a second important factor.

For gliders like the falcon, the osprey, the eagle and the vulture, proper wind conditions are essential. For falcons that migrate along the mountains in the eastern United States, the second day after the passing of a cold front is ideal, since steady northwesterly-west winds lift the gliding birds above the mountain ridges that run north

Birds that are heavy in relation to their wing span (such as swans and ducks) must flap their wings constantly, using five times more energy than gliding birds.

This technique used by large birds such as cranes and birds of prey lets them switch over at the peak from flapping their wings to gliding.

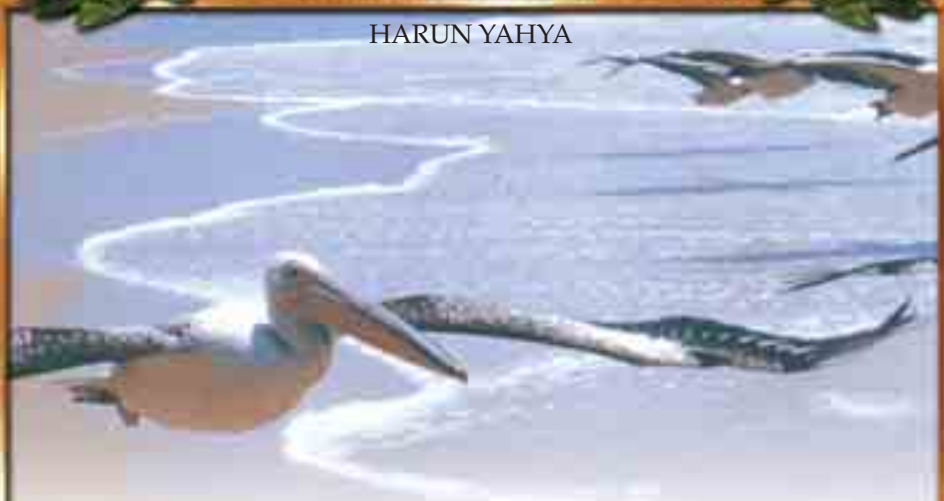
Small birds like wood warblers and fieldfares fly by alternating between flapping their wings and holding them in. This lets them cover distances by dropping down and then rising again.



Birds can cover long distances using less energy by using the currents of air created when the ground surface heats up. Large birds like storks and eagles give themselves up to the warm air spirals rising from the earth and glider.(A) Seabirds like the albatross and storm petrel gain speed and then let themselves go with the air currents.(B)

to south. At the same time, the migrating birds can also glide in the thermals that rise from different parts of the Earth's surface. It is estimated that if a broad-winged falcon were to flap its wings in flight, it would use up its accumulated 100 grams (3.5 ounces) of pre-migratory fat in just five days. But by using a thermal's upwardly spiraling air currents to gain altitude before gliding to the next thermal, that same fat deposit can last 20 days—enough to provide the energy needed for the journey of approximately 5,000 kilometers (3,000 miles) the birds make from the Neotropics.

Using the thermals that form when the ground heats up, some migrating birds travel to very distant places. Spiraling in these invisible elevators, storks, cranes and pelicans can gain enough altitude to glide hundreds of meters, hardly flapping their wings at all. Since they can usually find another thermal at the end of their glide, they can fly between continents while expending a minimum of energy.



Pelicans migrate using rising columns of warm air known as thermals. They find these invisible elevators by the low-frequency sounds emitted by the vortices of rising air.

Heated air gives off a low-frequency sound that can be perceived by migrating birds from a distance of 3 kilometers (2 miles). Although not all migrating birds make use of thermal heat, these low-frequency sounds help them in other ways, too. For example, the rhythmic sound of ocean waves can be heard even at great distances from the shore. But at a distance where all high-frequency sounds are absorbed, it becomes a low roar. At an even greater distance, these sounds become completely inaudible. If our sense of hearing were as strong as that of birds, we would be able to hear sounds from even hundreds of kilometers away. While this is impossible for us, it's possible for birds thanks to the fact that they can hear extreme infrasound, as low as one cycle every ten seconds. At these frequencies, sound can travel almost unhindered. As well as the infrasound of the ocean, birds can perceive other distant sounds such as wind on mountain slopes and shifting desert sands. Migrating birds may be able to listen to the changing patterns of these distant sounds and use them as acoustic signposts.[26]

Tactics on the Return Journey

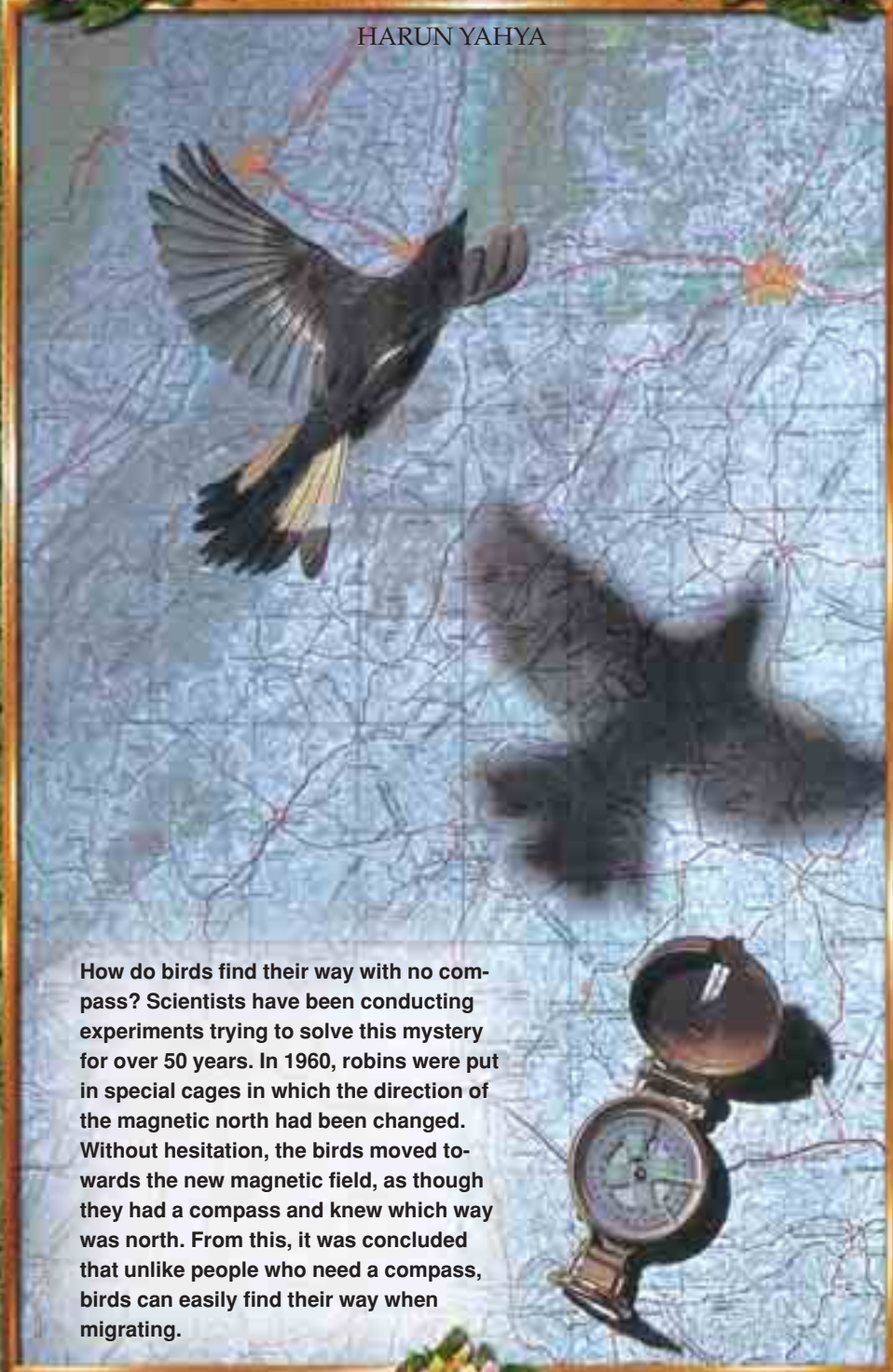
Several species of migrating birds make their return journeys in the spring, but rather than using the route they followed in the autumn, this time they trace more of an ellipse. Some researchers on migration think that food supply is the basic factor for the difference between these routes. A related study found that birds unable to find nourishment when returning by the same route are unable to breed or even complete their journey.

How Do Birds Find Their Way?

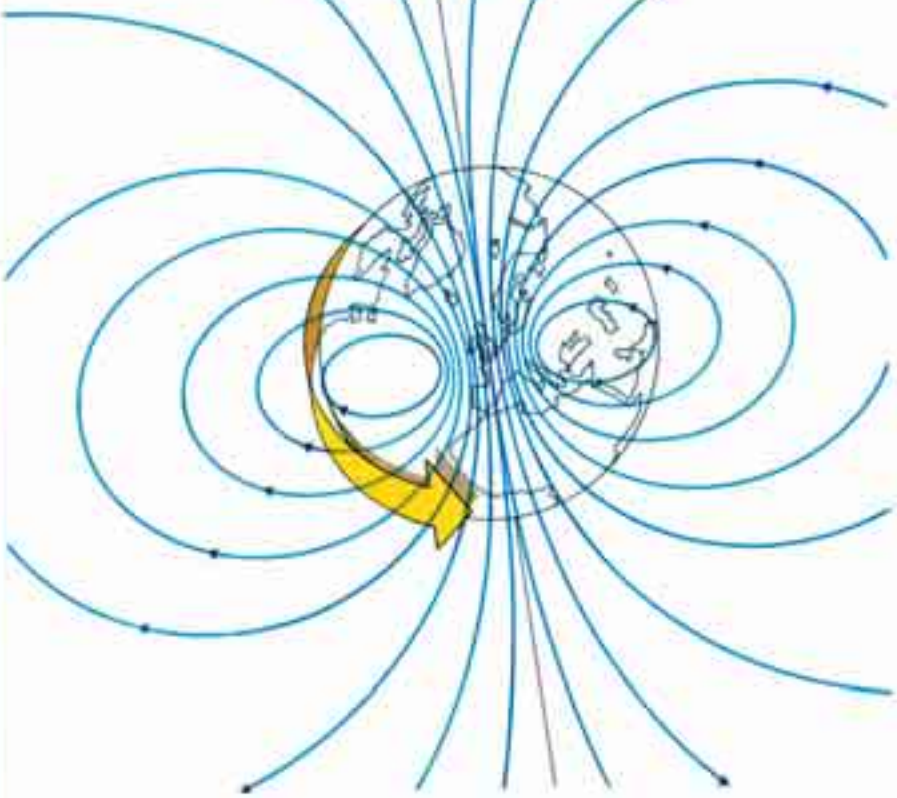
Migrating birds seem to know the weather conditions at the place where they're headed and act accordingly. In so doing, they must take a number of points into account, such as the distance to their destination, how fast they will have to fly to arrive at the appropriate time, and what route to follow.

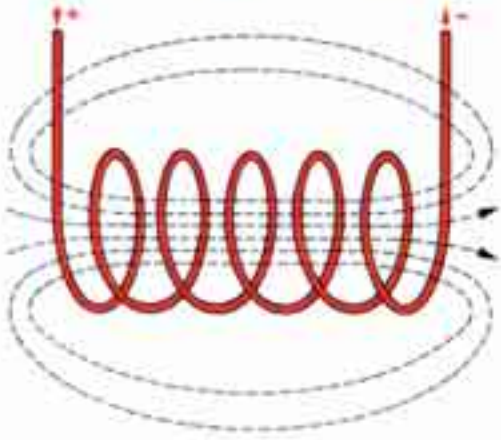
It's not yet known what clues birds use to find the location of their target at the end of migration, thousands of kilometers away, although the research conducted has come up with some guesses. Birds are thought to use environmental clues, changes in the Earth's magnetic field, the position of the Sun and the stars, and strong winds, as well as certain smells.

However, recent radar studies have revealed that birds fly far above the clouds. From that altitude, it's not possible to see the ground and therefore, it's not very likely that migrating birds can judge which way to go by landmarks. Consequently, birds are thought to have some structure enabling them to react to changes in the Earth's magnetic field, which they use to find their way. Certain cells in a bird's brain contain magnetite, a naturally magnetic mineral. In various experiments, birds fitted with small magnets showed



How do birds find their way with no compass? Scientists have been conducting experiments trying to solve this mystery for over 50 years. In 1960, robins were put in special cages in which the direction of the magnetic north had been changed. Without hesitation, the birds moved towards the new magnetic field, as though they had a compass and knew which way was north. From this, it was concluded that unlike people who need a compass, birds can easily find their way when migrating.





Left: **The structure of the magnetic field resembles that of a coil. Its effect is strongest at the poles and weakens towards the equator. Some birds have been found to sense this field, whose existence people have discovered only recently. But birds have perceived this effect for millions of years and can easily determine which way to go when migrating.**

marked loss of navigational ability, and it was understood that they were confused by the artificially created magnetic field. It is doubtless no coincidence that the brain cells contain magnetite, but an indication of a purposeful creation.

One other explanation is sense of smell. In reality birds have a less developed sense of smell than other animals. However, research in recent years has shown that some species have a more developed sense of smell, and for this reason the idea has been put forward that migrating birds find their way to their destination with the help of certain smells.

Of all possibilities, the Earth's magnetic field is seen as the most reliable guide. Never obscured by clouds, it is ever-present at night and does not change place. Experiments reinforce the idea that the magnetic field is used in animal migration—as, for example, one conducted with pigeons.

The rock dove, the wild form of the homing pigeon, is not a great traveler and conducts its life within a small territory. However, when taken far away from home and left in a completely unknown location, these birds can find their way home.

Homing pigeons, before leaving their territory, have been observed circling above their home one final time, probably to take another look at the region's geographical features. In an experimental trial the birds' forward vision was restricted to one or two meters (a few yards) by the application of opaque contact lenses, yet they still managed to find their way home. For a while, it was assumed that the birds used the position of the Sun to find their way, but when released on a completely overcast winter's day, they were still able to return home. However, when magnets were attached to their heads powerful enough to drown the world's magnetic signals, they lost their way. From this, it was deduced that the birds were guided by the Earth's magnetism, but it is still not fully understood how birds can perceive it. In recent years, very small particles of magnetic material have been discovered in the pigeons' skull and neck muscles.[27]

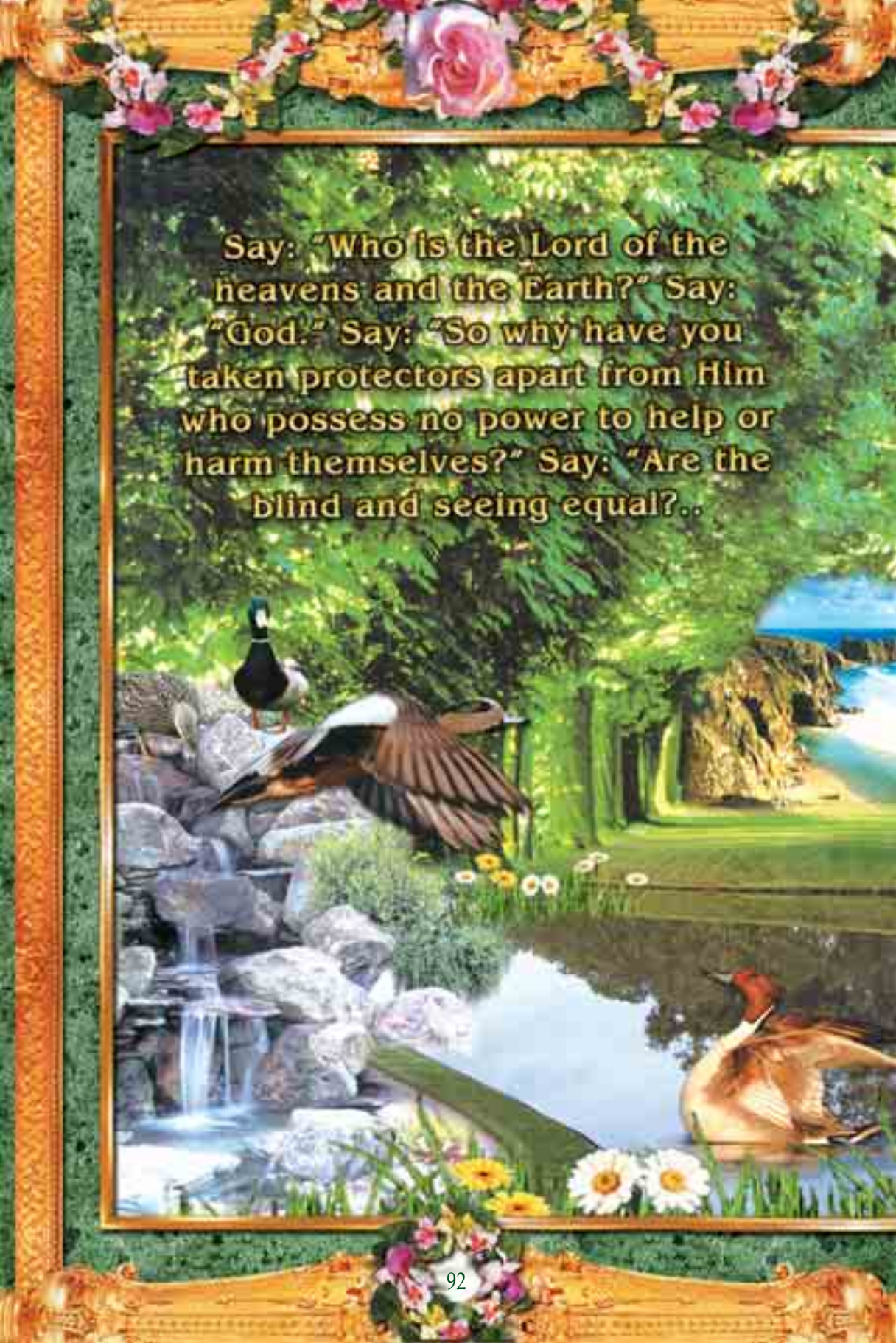
How birds find their way is a most remarkable mystery, on which a great deal more research will be conducted. Whatever the methods birds may use, its miraculous aspect remains unchanged.

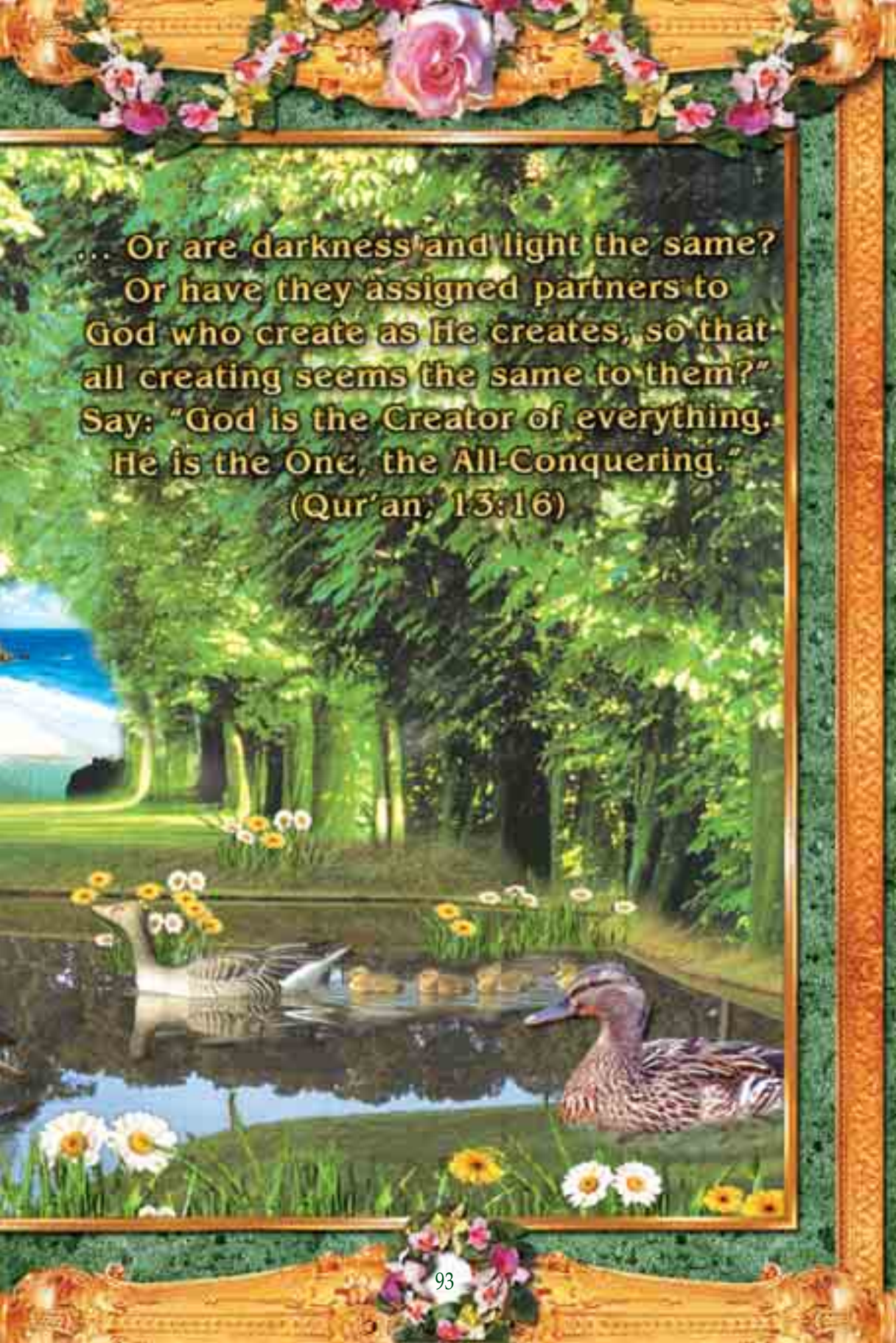
If a bird regulates the direction it goes in according to changes in Earth's magnetic field, some structure in its body must enable it to measure these changes. This invites certain questions. If a bird does not come into existence together with this system appropriate to its needs, have such systems developed by random mutations as the creatures evolve, as the

evolutionists assert? It is implausible that any system able to perceive and interpret magnetism has been produced by genetic accident. Furthermore, this sensory system is found in animals very distant from one another on the so-called evolutionary tree, and so we would have to accept that it developed in each one as a result of separate mutations. That makes this claim even more nonsensical. A bird can't possibly decide one day to develop a system for sensing a magnetic field and then install it in its body. Not even a person endowed with rational intelligence and knowledge can do such a thing, so it is totally beyond belief that a bird could bring off such an extraordinary feat.

The reality is, God the Omniscient has created all living things with their perfect systems. He knows from the outset what these creatures will encounter from the moment of their birth and what their needs will be, and He equips them with the organs and skills to meet all their requirements. God has also created the senses letting animals find their way—an obvious fact that we see in all migrating creatures. Nothing other than the fact of creation can account for this and other similar examples in nature.

O humanity! An example has been made, so listen to it carefully. Those whom you call upon besides God are not even able to create a single fly, even if they were to join together to do it… (Qur'an, 22:73)

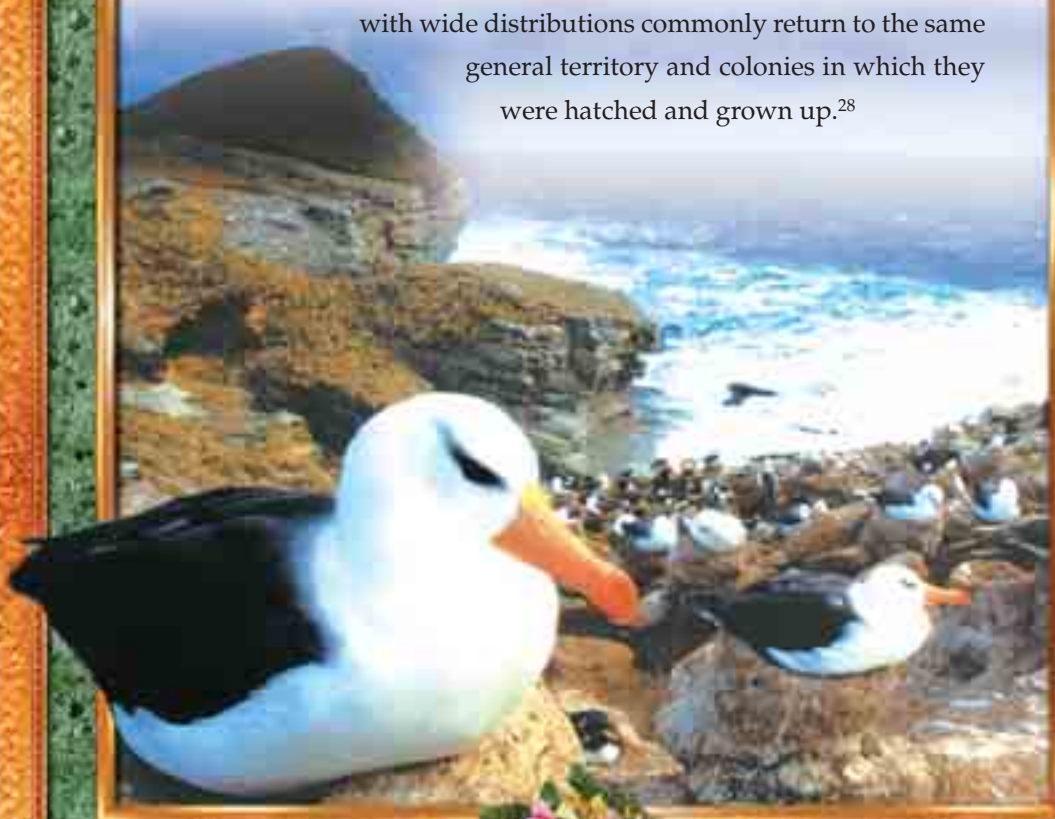

Say: "Who is the Lord of the heavens and the Earth?" Say: "God." Say: "So why have you taken protectors apart from Him who possess no power to help or harm themselves?" Say: "Are the blind and seeing equal?..


... Or are darkness and light the same?
Or have they assigned partners to
God who create as He creates, so that
all creating seems the same to them?"
Say: "God is the Creator of everything.
He is the One, the All-Conquering."
(Qur'an, 13:16)

The Long Journeys of Seabirds

Living in a number of habitats ranging from polar icecaps to tropical regions, some of these birds migrate great distances. Others make long journeys merely to forage for food. For instance, a male albatross (*Diomedea exulans*) does a round trip of more than 15,000 kilometers (9,300 miles) in search of food, while his partner is on incubation duty. At first, you may find it hard to believe a journey of so many thousands of kilometers, but some of the larger seabirds travel even greater distances.

Seabirds' migrations are usually dictated by the prevailing winds. Most of them can be described as nomadic. Some seabirds breed along the shores of distant continents or islands. Even those with wide distributions commonly return to the same general territory and colonies in which they were hatched and grown up.[28]



Seabirds Migrating at the Poles

Generally, the majority of birds breeding at the poles try to stay close to their established colonies, but the frozen sea and winter darkness compel them to migrate to ice-free areas. For example, the Sabine gull (*larus sabini*) of the North Pole is a migrant that flies as far as South Africa and the west coast of Peru.

Sterna paradisaea, the arctic tern, which has a vast breeding ground at high latitudes in the Northern Hemisphere, flies south to the shores of Antarctica. This species makes the longest migration, covering an astonishing 36,000 kilometers (22,000 miles) over a round trip between the North Sea and Antarctica.[29]

In so doing, it travels from summer in the north to summer in the south. The young birds and some non-breeding adults either stay in the south or linger in places with a good food supply. But at the first sign of spring, the birds that breed in northern regions must return to the Arctic Sea, or else they cannot complete the breeding cycle in time for their young to complete their feather development before winter comes.

The smallest bird living at the North Pole is the Wilson storm petrel (O*ceanites oceanicus*) weighing a mere 35 to 40 grams (1.2 to 1.4 ounces). This bird, which nests in clefts in the rocks, has very little time in the summer to complete its breeding cycle. In the breeding season, it migrates south and is to be found in the North Indian Ocean and the North Atlantic. The superb performance this tiny bird displays is the result of the perfect body features, created for it by God, thanks to which it can migrate very great distances.

THE MIRACLE OF MIGRATION IN ANIMALS

1. Wheatear
This is one of the smallest long-distance migrators, found across Europe and much of Asia, as far north as Alaska. It goes south of the Sahara for the cold season and can cover a distance of 800 kilometers (500 miles) flying non-stop for 24 hours.

2. Arctic tern
The longest-distance traveler among migratory birds covers a distance of 36,000 kilometers (22,000 miles) on its round trip between the North Pole and Antarctica.

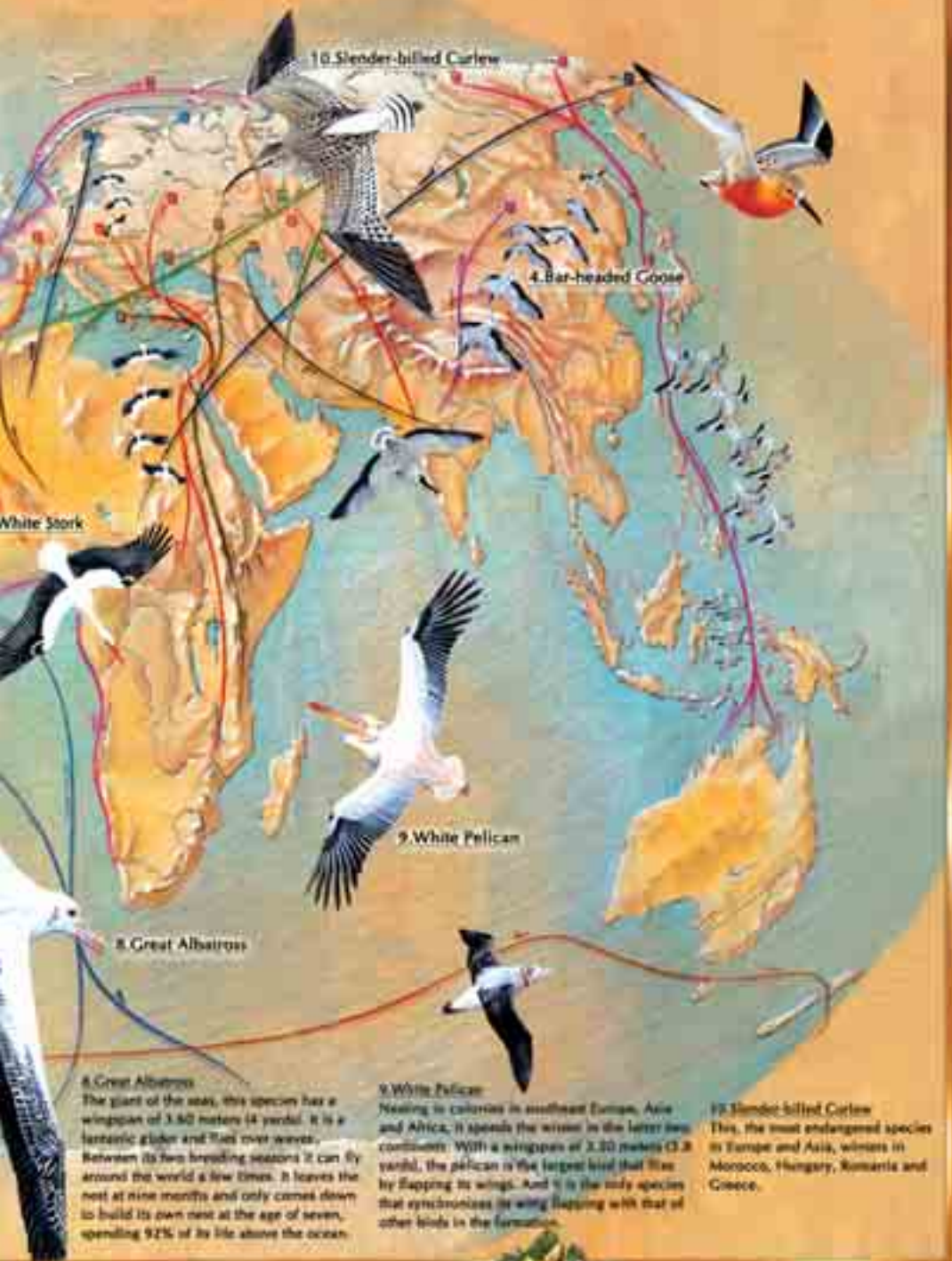
3.Swainson's Hawk
This bird spends the summer in the plains of North America. It congregates in massive groups to migrate to the Argentinean pampas for the winter, traveling 6,000 to 12,000 kilometers (4,000 to 7,400 miles). Swainson's hawk uses thermals to facilitate flight, and avoids crossing expanses of water, from which thermals rarely rise.

4.Bar-headed Goose
Also known as the mountain goose, this bird flies at great altitudes and has been spotted at 9,000 meters (5,500 miles) above the Himalayas and Everest, an altitude where it is impossible for people to breathe. Thanks to this species' very efficient form of hemoglobin, well adapted to heights, it can survive in spite of low level of oxygen.

5.Red Knot
This, the greatest traveler among shorebirds, nests at the pole and wanders between its breeding grounds, wintering grounds and stop-off places. They congregate in tens of thousands to fly over the Pacific Ocean and China to Australia.

6.White Stork
Leaving Europe and Asia in the months of August and September, this bird winters in the south of the Sahara, making a journey of up to 12,000 kilometers (7,400 miles). Storks fly in a broad front to find the rising air thermals. When a stork finds one of these corridors it spirals upwards, and the other storks follow.

7.Ruby-throated Hummingbird
The smallest migrator, weighing only 3 grams (0.1 ounce), this bird covers more than 6,000 kilometers (4,000 miles) a year. Before setting out, it doubles in weight 6 grams (0.2 ounce), an energy reserve that allows it to cross the Gulf of Mexico without stopping. They travel 900 kilometers (560 miles) at a speed of 40 kilometers (25 miles) per hour. Their wings, beating 30 to 40 times a second, cannot be seen with the human eye, and the hummingbird's heart can beat 1,440 times a minute. It nests in Quebec and Eastern America, then mid August to the beginning of September, it migrates over Mexico to Central America and to Panama.



8.Great Albatross
The giant of the seas, this species has a wingspan of 3.60 meters (4 yards). It is a fantastic glider and flies over waves. Between its two breeding seasons it can fly around the world a few times. It leaves the nest at nine months and only comes down to build its own nest at the age of seven, spending 92% of its life above the ocean.

9.White Pelican
Nesting in colonies in southeast Europe, Asia and Africa, it spends the winter in the latter two continents. With a wingspan of 3.30 meters (3.8 yards), the pelican is the largest bird that flies by flapping its wings. And it is the only species that synchronizes its wing flapping with that of other birds in the formation.

10.Slender-billed Curlew
This, the most endangered species in Europe and Asia, winters in Morocco, Hungary, Romania and Greece.

The Orientation Skills of Bats

Bats are nocturnal mammals, of which there are as many as 900 different species. They spend the winter in caves or mines, since these places supply a humid atmosphere that never falls below freezing, factors necessary for hibernation, where bats can pass the winter in a torpid state.

When they awaken from hibernation, their seasonal migrations begin. To find food, bats travel many kilometers. Some species of bat weigh less than 20 grams (3/4 ounce), yet despite their small bodies, some can migrate 1,000 to 1,500 kilometers (620 to 930 miles).[30]

Cave-dwelling bats have a problem to deal with. Their environment of constant temperature and humidity prevents them from knowing what the weather is like outside. However, they can perceive changes in air pressure, thanks to a structure in their middle ear known as the vitali organ.

By monitoring barometric pressure, the eastern pipistrelle bats of North America can sense when its prey, the moths, are flying and even at what altitude. The bat's barometric sensor has another function; at every moment, the bat knows exactly how high from the ground it is.[31]

It is not known exactly how bats navigate, but researchers believe that they use sight, as well as hearing and smell. Yet these assumptions do not completely explain the bats' navigational abilities. They travel at night and, as is well known, make use of echolocation during flight. Their vision isn't sufficiently developed for them to determine direction, and their echolocation is only effective up to a certain distance. The signals they emit using the tongue or larynx bounce back from objects and are perceived by the

Some bats travel great distances to find suitable caves where they can spend the winter.

bat's ears. A bat can understand how far away an object is, as well as its size, by the echo delay from the original sound and its frequency. For example, a bat can detect a 20 millimeter (4/5 inch) diameter sphere at five meters (16 feet) or a large rock face at 50 meters (165 feet). Bats can hunt at night and in overcast conditions, but this does not explain what helps them to find their way over long migratory distances.[32]

As far as we understand, a bat has inadequate eyesight, but a special system to perceive objects some meters away, make an analysis, and draw conclusions from this data. Bats also know the best places to feed and how to get to these regions. But the important question is, how do they know all these things? As is the case with all other creatures, research remains inconclusive on this point. The way animals make certain decisions for certain reasons, and their being fully equipped to implement these decisions cannot be explained by chance or other evolutionary logic. Any creature's perfect system is

evidence that it has been created—perfectly. But at the same time, it is a miracle that the animal is able to use this perfect system in a perfect way, and that a creature without a rational mind like ours can use this ability to make decisions with great expertise.

It is evident that God has created all living creatures, which explains why they have such exceptionally perfect systems and behave in such an intelligent fashion. With God's inspiration, bats have the capacity to use echoes and can travel far to the best feeding grounds without losing their way. All other explanations are groundless. All the evidence of creation, like the miracle of migration, consists of facts that refute the evolutionary theory.

> **Rather We hurl the truth against falsehood and it cuts right through its brain and it vanishes clean away! Woe without end for you for what you portray! (Qur'an, 21:18)**

The Direction-Finding Expertise of Butterflies

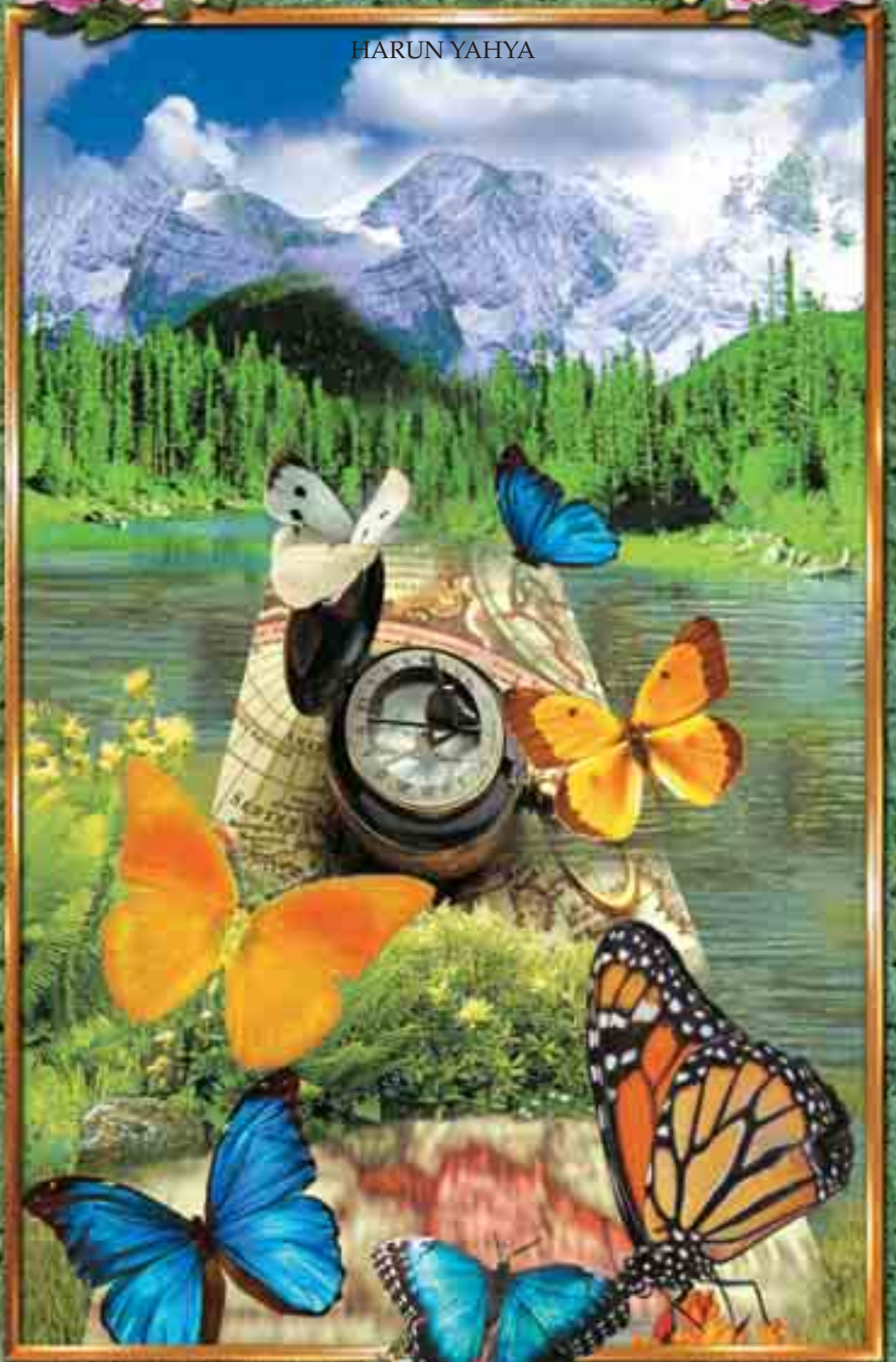
Migration of butterflies and moths may be seen insignificant, but their migrating swarms sometimes number in the millions—and under some circumstances, it takes a few generations to complete the migratory circuit. Temperate-zone butterflies tend to migrate to find feeding grounds, while tropical butterflies like the monarch migrate towards the rainy regions that suit their needs.[33]

The average life span of temperate-zone butterflies is between three and four weeks. Yet in the course of their short lives, they sometimes travel from one country to another, and sometimes leave it to other generations to complete the intercontinental migration. Migrating flocks can consist of millions of butterflies. These lovely brightly-colored insects, each species distinguished by different wing patterns, use an interesting method to find their way on the journeys that are a natural component of their lives.

How Do Butterflies Find Their Way?

In the temperate zone, there are few areas with flowers for butterflies to feed on, so these delicate little insects must migrate to reach their best feeding grounds. They will fly in a straight line to a flowery meadow, but on arriving they change their behavior and act as though they live there. They feed from the flowers, mate, and the females lay their eggs. But their idyllic meadow life lasts only a short time. Within a few minutes or several days, the butterflies leave the field.

Butterflies migrate only at the hottest times of the day and then only when the Sun is shining. When the Sun is at its brightest, they



line themselves up at an angle to the horizon. As the angle of the Sun changes, they maintain the same angle to the horizon. Since this angle stays constant, the direction they're moving in changes by approximately 15 degrees an hour. But unlike the temperate species, tropical butterflies do not change their migrational direction throughout the day.

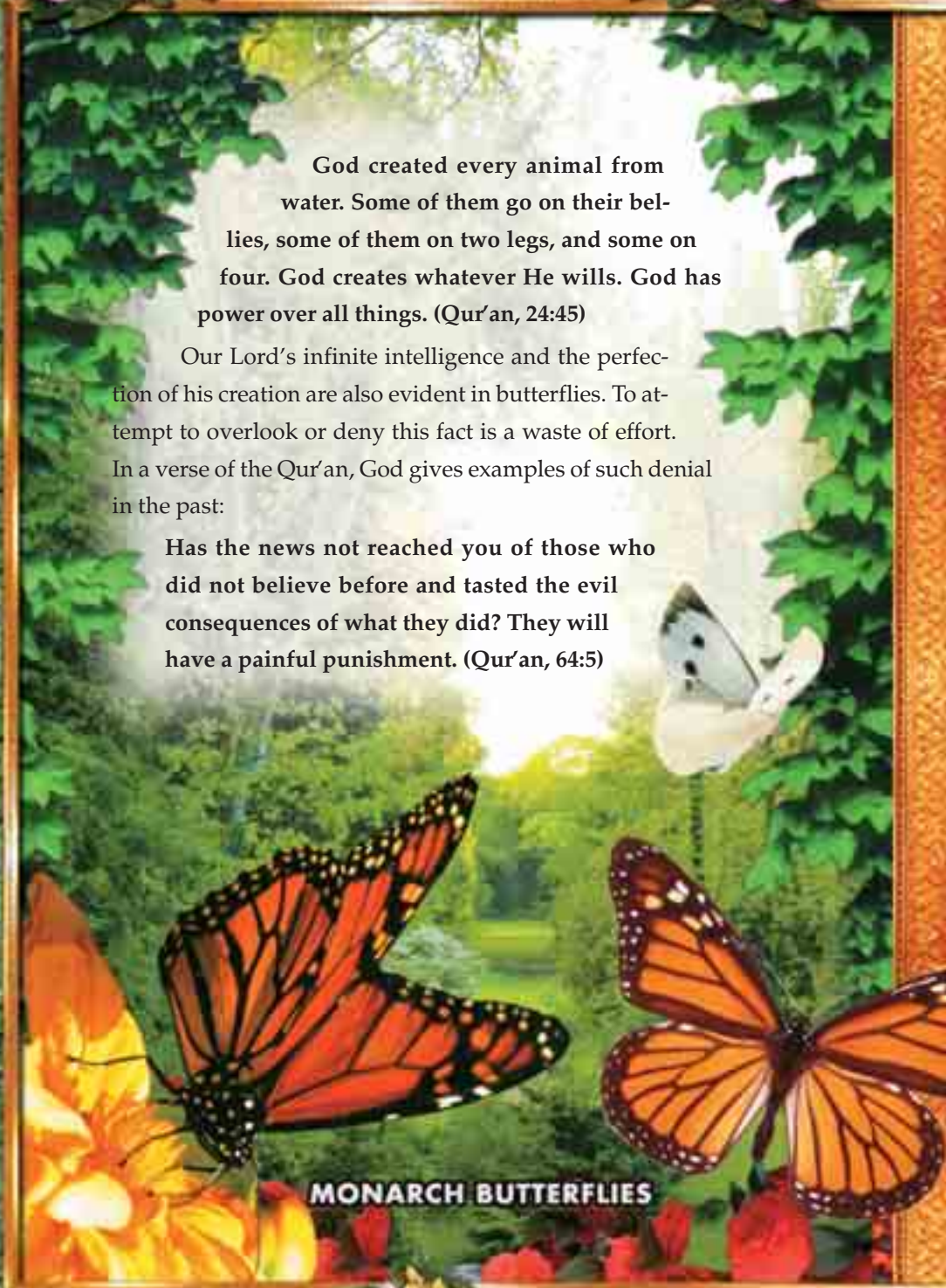
An individual butterfly heading east in the morning will still be flying east when evening falls. At the start of the journey, it takes its direction from the Sun, but does not subsequently alter its course as the Sun's position changes. Consequently, the butterfly must know that the Sun changes its position, and that if it changes its own course accordingly, it will arrive at the wrong place. It must also know the right and the wrong destinations for itself, and what direction will take it to the correct one. Each butterfly possesses all this knowledge, but by itself, this knowledge is not enough. Each butterfly must evaluate this in relation to its location and make a decision. Of course it is not rational to think that all of this depends on a little butterfly's ability to judge. The reality is that God has created all the characteristics they need to carry on with their lives.

Even the most durable pocket compass loses its sensitivity over time due to electromagnetic effect. However, the direction finding ability of these little butterflies, which is such an important aspect of their lives, is not damaged by external influences and does not let them down in the midst of their journey. God has created all life forms perfectly. In a verse of the Qur'an, God reveals the following about His creation of creatures:

God created every animal from water. Some of them go on their bellies, some of them on two legs, and some on four. God creates whatever He wills. God has power over all things. (Qur'an, 24:45)

Our Lord's infinite intelligence and the perfection of his creation are also evident in butterflies. To attempt to overlook or deny this fact is a waste of effort. In a verse of the Qur'an, God gives examples of such denial in the past:

Has the news not reached you of those who did not believe before and tasted the evil consequences of what they did? They will have a painful punishment. (Qur'an, 64:5)



MONARCH BUTTERFLIES

Migration of the Monarch that Takes Place Once Every Four Generations

In different phases of its life, the body structure of the monarch changes. At the larval, pupal and mature (or imago) stages, the butterfly shows completely different structure, size, color, habitat, behavior and biological systems.

Monarchs have very interesting characteristics that set them apart from other butterfly species. In the space of a year, monarchs have four different generations. The first three generations have an average life span of five to six weeks, but the fourth generation is quite different, in that it sets off on a journey lasting about eight months and stays alive until this journey is complete.

The life of any given monarch starts when the female lays her eggs on a milkweed plant. The tiny caterpillar hatching from each egg feeds on the leaves for a time and each one quickly grows. It sheds its skin five times as it grows during the larval stage. Its skin is shed for the last time as it passes to the pupal stage and becomes a green chrysalis, which hangs on the stem of a leaf by a fine but very strong thread. Within this chrysalis, the insect continues its development before emerging in the form of a brand-new beautiful butterfly. Its wings are crumpled at first, but as hemolymph (the blood-like substance of insects) fills its body and wings, they enlarge, and the monarch is ready for flight.

The journey of migration begins from different centers in Southern Canada and continues south. One group arrives in California and another further south in Mexico. These different

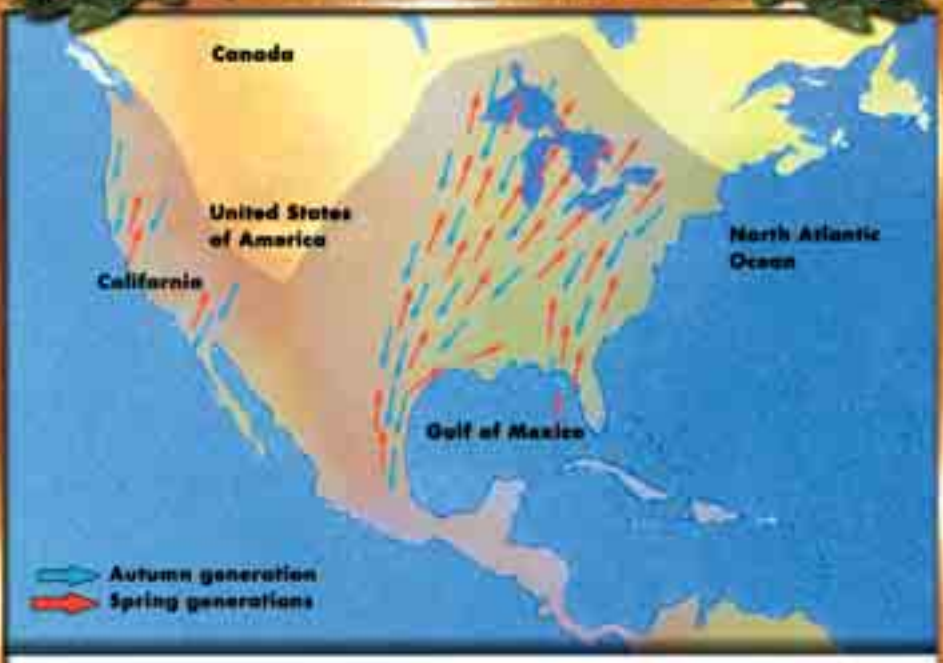
Monarch butterflies use their wintering grounds for years. They congregate in the wooded heights of Mexico in their millions, making the branches practically invisible.

monarch groups meet mid-route as though they have received orders from the same headquarters and continue their migration together.

The butterflies do not set off at just any time, but begin their journey at the autumn equinox. After flying for two months, they reach the warm forests in the south, where trees are covered by millions of monarch butterflies. Here the butterflies rest, taking no nourishment for four months, from December to March, surviving on the fat they have accumulated in their bodies, drinking only water.

Flowers that open in the spring are important for monarchs, and after their four months of going without food, they drink nectar, and store the energy they need for returning to North America, and mate at the end of March, just before setting out on the journey. Just at the equinox, when day and night are of equal length, the colony starts flying northward. Completing their journey, they bring forth the next generation to ensure the continuation of their species.

The newly-hatched caterpillars are the first generation of the year and will live for approximately one and a half months, after which come the second and third generations. With the arrival of the fourth generation, the journey begins again. Again, this generation

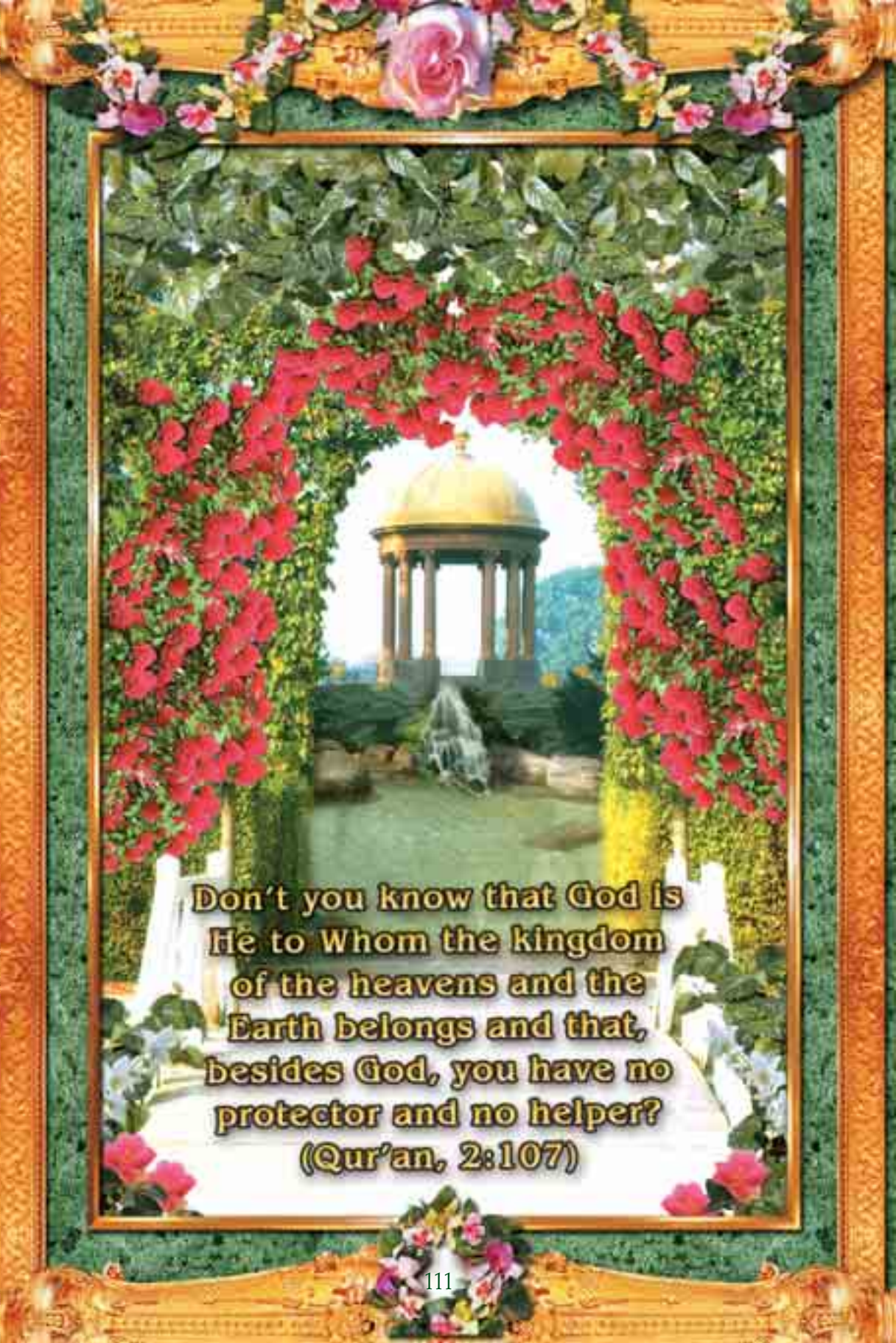


Above: **Major trends of monarch butterfly migrations in North America. The monarchs move northward in spring and lay eggs during the journey. They travel an average of 15 kilometers (9 1/2 miles) per day. Subsequent generations make longer and faster journeys back to the south without breeding.**

will live six months longer than the others, and in this way the chain will continue.

Why is one generation in four born with the characteristic of living six months longer? Why are these particular longer-lived butterflies hatched just ahead of the winter months? Why do they begin their migration at the equinox, and how can they make this fine calculation? How does a newly emerged monarch know the way, on a route it has never flown?

The answer to all these questions is that monarch butterflies have been created in accordance with a perfect migration plan and conform to it to the last detail. If there had been the smallest flaw in this plan, from the time these insects came into being, monarchs would not have completed their migration. Winter would have killed


Don't you know that God is
He to Whom the kingdom
of the heavens and the
Earth belongs and that,
besides God, you have no
protector and no helper?
(Qur'an, 2:107)

them, and monarch butterflies would have become extinct.

Of course these insects have been created, and the incredible migration they make each year has been taught to them. The Creator and Ruler of all forms of existence, God, Lord of the Earth and the heavens, is the author of their wonderful creation.

Migration of the Locusts Feared by Farmers

Since ancient times, these voracious insects that swarm together and can fly even between the continents have been most feared by farmers in certain parts of the world. Sometimes, millions of migrating locusts form a black cloud against the sky and devour all vegetation in their path—crops included—leaving economic ruin and famine behind.

Locusts are remarkable not only for the destruction they inflict on regions through which they travel. Scientists are also interested in the changes they undergo before migration, and have discovered some extremely surprising information.

Locusts go through two distinct phases, as regards body structure, life style, behavior and relationship with the environment. In its so-called *solitarious* phase the locust feeds alone in the fields, and in the *gregarious* phase it collects to form part of a massive swarm that can cause massive damage to the environment.

Under normal conditions locusts are solitary, and will even distance themselves from one another when put together, but they will group together when necessitated by environmental circumstances. This begins the start of the locusts' bodily changes. Preparing for their gregarious phase, their bodies enlarge. Their wings become transparent and strong and their color changes from yellow or green to black. So dramatic are these changes that in the past, scientists clas-

Below: **A young desert locust, about to complete its transformation to the adult stage. It takes 20 minutes for the wings to firm up after opening, but the locust cannot fly for a few days.**

Radar observations have revealed that locusts do not always fly in a swarm. Solo locusts can also cover great distances, but prefer to fly at night.

Above: **In October 1988, the desert locust set a new record. Specimens from West Africa were collected in the West Indies, having journeyed some 5,000 kilometers (3,000 miles) in five days or less.** ***(Fantastic Journeys, pp. 58-59)***

sified the locust's solitarious and gregarious phases as two separate species. Only 60 years ago was it understood that the locust has two separate phases.

In its transition to the gregarious phase, appearance is not the locust's only change. It also starts eating much more. A desert locust, in the gregarious phase and on the move, can consume its own weight in food everyday. When you consider the number of locusts in a large swarm, you can imagine the amount of damage they can inflict. For example, a large swarm can cover an area of approximately 1,000 square kilometers (400 square miles) at a density of 50 to 100 million insects per square meter, devouring some 80,000 tons of food a day. This quantity is sufficient to feed 40,000 people for a year! Even if a swarm of this size does not consume all the crops, the insects can cause considerable damage to the surrounding area.

In 1874, a doctor from Nebraska observed the speed and depth of a swarm covering the sky and estimated that it consisted of some 12.5 trillion locusts. Just one of 50-odd swarms seen in Kenya in 1954 was established to contain about 10 billion locusts.[34]

An Australian locust. Although locusts are more prevalent in the Middle East and North Africa, they inhabit in every continent except Antarctica. Locusts' muscles are capable of 10 to 20 times as much work as those of humans, and they fly at a speed of 16-19 kilometers (10-12 miles) an hour. They can fly continuously for up to 20 hours and, on even longer journeys, use gliding as well as flapping flight.

The Crucial Factor in Locust Migration

At present, we do not know exactly what causes a locust to move into the gregarious phase, although researchers say that an increase in population density triggers the process. Various laboratory experiments show that an area on the locusts' hind legs plays an effective role. Professor Stephen Simpson of University of Oxford revealed that the crucial point that sets off the transition to the gregarious phase is the femur region.

On examination, a locust's body reveals the wonder of the creation. A large area of the locust's integument is covered with touch-sensitive hairs and other mechanoreceptors. The hairs in the thigh region, which play an important role in inducing gregarization, are stimulated by touch.

The transition to the gregarious phase, which initiates locust migrations, occurs more often where there is an irregular distribution of food. In a region where vegetation is spotty, locusts in the area start grouping together to feed. In this way, they come into close contact with one another, and their transition to the gregarious phase begins.

Locust migration is affected by climatic conditions, the seasons and rainfall, for to breed and lay their eggs, they need to be in rainy regions. In some species, females lay their eggs immediately after it rains and the ground is soft. Some species do lay their eggs on dry ground, but the young do not emerge until it rains—a precaution that ensures a food supply for the newly-hatched locusts. Swarms of locusts move with the wind, which carries them to regions where there's a possibility of rainfall, which will give them the opportunity to breed.

Of all the species, desert locust—found in Central and North Africa down to Tanzania, the Middle East, Pakistan and India—is the most widespread and the most destructive.

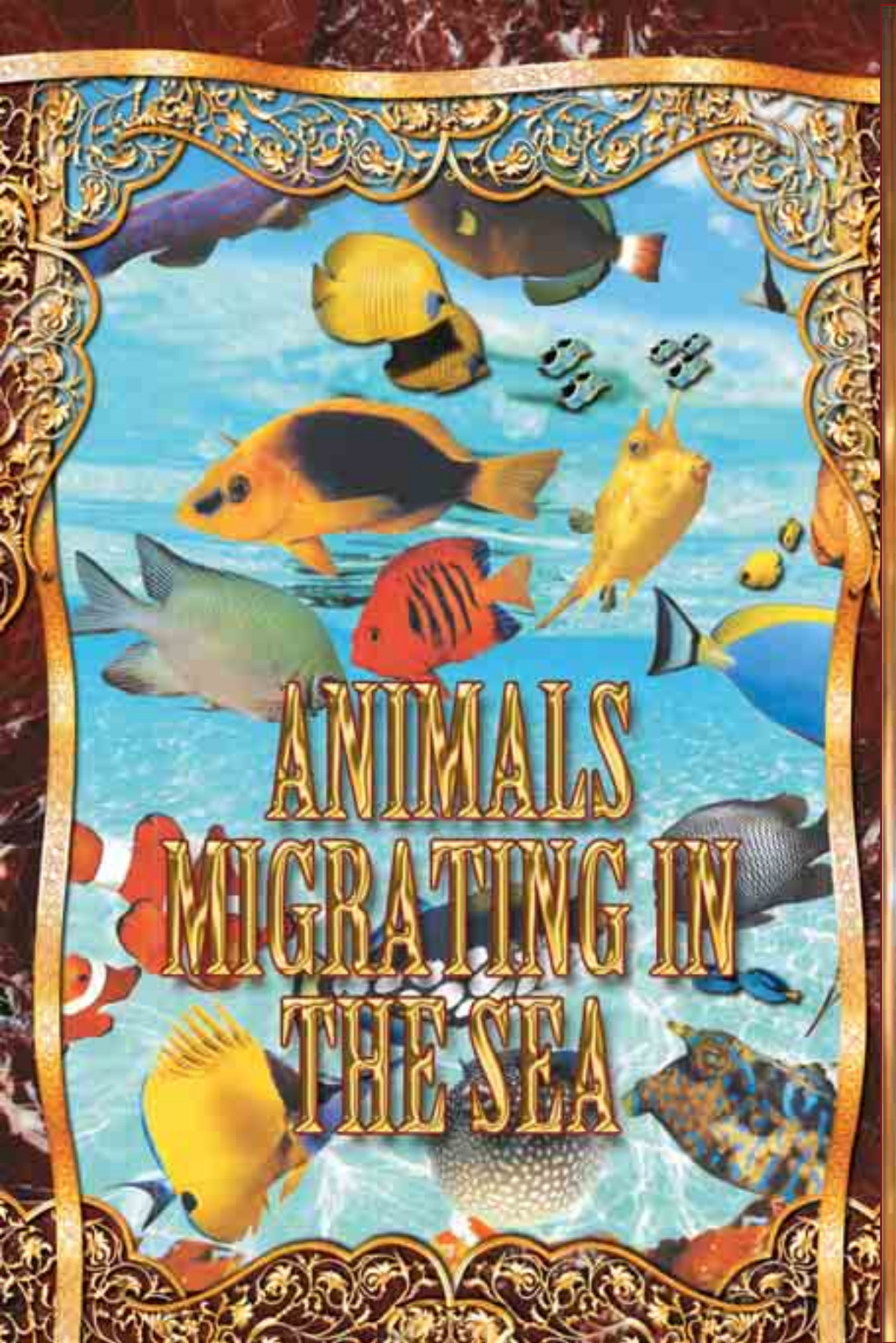
In October, 1958, one of the greatest locust plagues in recorded history took place in eastern Ethiopia. A swarm of some 40,000 million locusts covered an area of approximately 1,000 square kilometers (400 square miles) and advanced some 3,000 kilometers (2,000 miles) from hatching grounds in northern Ethiopia and Sudan. A large section crossed Somalia and died in the Indian Ocean. A small section stayed in Ethiopia and bred again.

In common with all animals, God has created the locust with all these incomparable mechanisms. With these characteristics given them by God, locusts are either solitary or gregarious as the need arises, able to migrate *en masse* to regions where they can continue their lives.

These insects give evidence of their creation, evident to all who examine nature thoughtfully and act according to their conscience:

Such metaphors—We devise them for humanity; but only those with knowledge understand them. God created the heavens and the Earth with truth. There is certainly a sign in that for the believers. (Qur'an, 29:43-44)


Praise be to God, to Whom
everything in the heavens and
everything in the earth belongs, and
praise be to Him in the Hereafter.
He is the All-Wise, the All-Aware. He
knows what goes into the earth and
what comes out of it, and what
comes down from heaven and what
goes up into it. And He is the Most
Merciful, the Ever-Forgiving.
(Qur'an, 34:1-2)


ANIMALS
MIGRATING IN
THE SEA

From the shallow waters to the depths in all the oceans of the world, and particularly in tropical regions, and in the seas a number of creatures migrate in various ways. Some creatures migrate from time to time, while others do so continuously. One of the most notable marine migrants is the lobster.

Long Distance Ocean Travelers: Lobsters

Towards the end of autumn, weather conditions in the region inhabited by the lobster are very changeable. Due to high air pressure, it becomes very windy. The sky darkens, rain falls, and the temperature drops. At the same time, the wind creates large waves in the shallows inhabited by lobsters, making the water turbid. This signals the start of the lobsters' migration season.

It is not known exactly why lobsters migrate in autumn or how they time it, but available information points to the influence of environmental factors. Sudden temperature changes and intense water movements may prompt lobsters to change their environment. The important point is that lobsters notice the climatic changes, understands that these conditions constitute a risk, and take precautions accordingly. But to take these precautions, they must know what the best habitat is, and how to get there easily. After making these decisions, they head off in a highly conscious fashion.

Lobsters' Remarkable Migratory Method

Lobsters usually migrate to calmer waters, and their journey is a remarkable sight. As many as fifty lobsters come together to form a column, with each lobster positioning itself so as to touch the one in front. In this formation, they walk along the sea floor for a number of days and nights.[35]

The convoy members maintain their respective positions by establishing continuous contact with the abdomen of the lobster in front, using their antennules and the tips of their foremost legs. Even if their antennae are removed, this contact is not disrupted. A lobster whose antennae have been removed will increase the frequency with

In the regions inhabited by the lobster, weather conditions towards the end of autumn are very changeable. Due to high air pressure, it becomes very windy. The sky grows dark, rain falls and the temperature drops. The wind creates large waves in the shallows that lobsters inhabit, and the water grows turbid. This signals the start of their migration season.

which it touches the lobster in front with its foremost legtips. If these are also removed, the lobster will make use of the tips of its second legs. In this way, even if a lobster cannot see in murky water, the queue is preserved. When contact with the lobster in front is lost, water motion caused by the lobster ahead is probably used by the lobster behind to regain contact, while chemical stimuli show it that it is following a lobster.

When lobsters make a communal decision to migrate, a journey in single queue is advantageous in several ways. Primarily, group action saves the lobsters along the way from having to face potential dangers alone, because all available eyes and antennae are being used at the same time to perceive and avert possible enemies. On the migration route, when they encounter attacks from large fish, the leader starts to turn. Sensing this, the other members are alerted to the danger and also follow the leader around coiling into a circle and forming defensive pods or rosettes to repulse the predator. Under normal circumstances they would quickly become a meal, but this precaution protects them from the enemy. A lobster's most vulnerable part is its abdomen, and they sustain the most damage in this region. When they are lined up, the lobster behind covers and protects the abdominal region of the lobster in front.[36]

While migrating, queuing also gives lobsters improved mobility. The drag a single lobster encounters as it advances through water is halved if it follows another lobster. Thanks to this efficiency, they can cover greater distances in a shorter time. Some species have been clocked at a speed of 1 kilometer (5/8 mile) per hour.

After settling in an unknown place, lobsters will return to their own territory, but it is still not known what method they use to achieve this. A spiny lobster, *Panulirus argus*, in spite of being taken

thousands of kilometers from where it was caught and deprived of all directional clues along the way, still managed to return to its former abode.

An interesting experiment was conducted on this subject. Lobsters caught off shore were placed in covered opaque containers and trucked to the testing site. In half of the trips, magnets were introduced to the container of lobsters, some suspended freely on strings to cause constant magnetic fluctuation. In the other half of the trips, lobsters were transported without magnets. The movement of the truck shook the containers, and before departure for the test site some 37 kilometers (23 miles) away, the truck was driven in random directions and round and round in circles to cancel out any clues regarding direction. Then all the lobsters were unloaded and put in a tank in the natural local magnetic field.

The next morning, the lobsters' eyes were covered and their directional ability was tested. No navigational difference was found between the lobsters transported with magnets and those without. Without hesitation, both groups made for the place where they had been caught.[37]

How did the lobsters apply a method not yet understood, even though they were in a different place? It is not possible that one day, a lobster decided to navigate using its own intelligence. Nor is it feasible that lobsters developed this successful migratory behavior in stages. They cannot have developed this migratory ability on their own. To take all these factors into account and arrive at the preferred destination without getting lost is remarkable, beyond the lobster's intelligence. God, Who creates all things and Who best knows His creations, knows all that lobsters will encounter throughout their lives. The supreme Power that equips them with every skill they re-

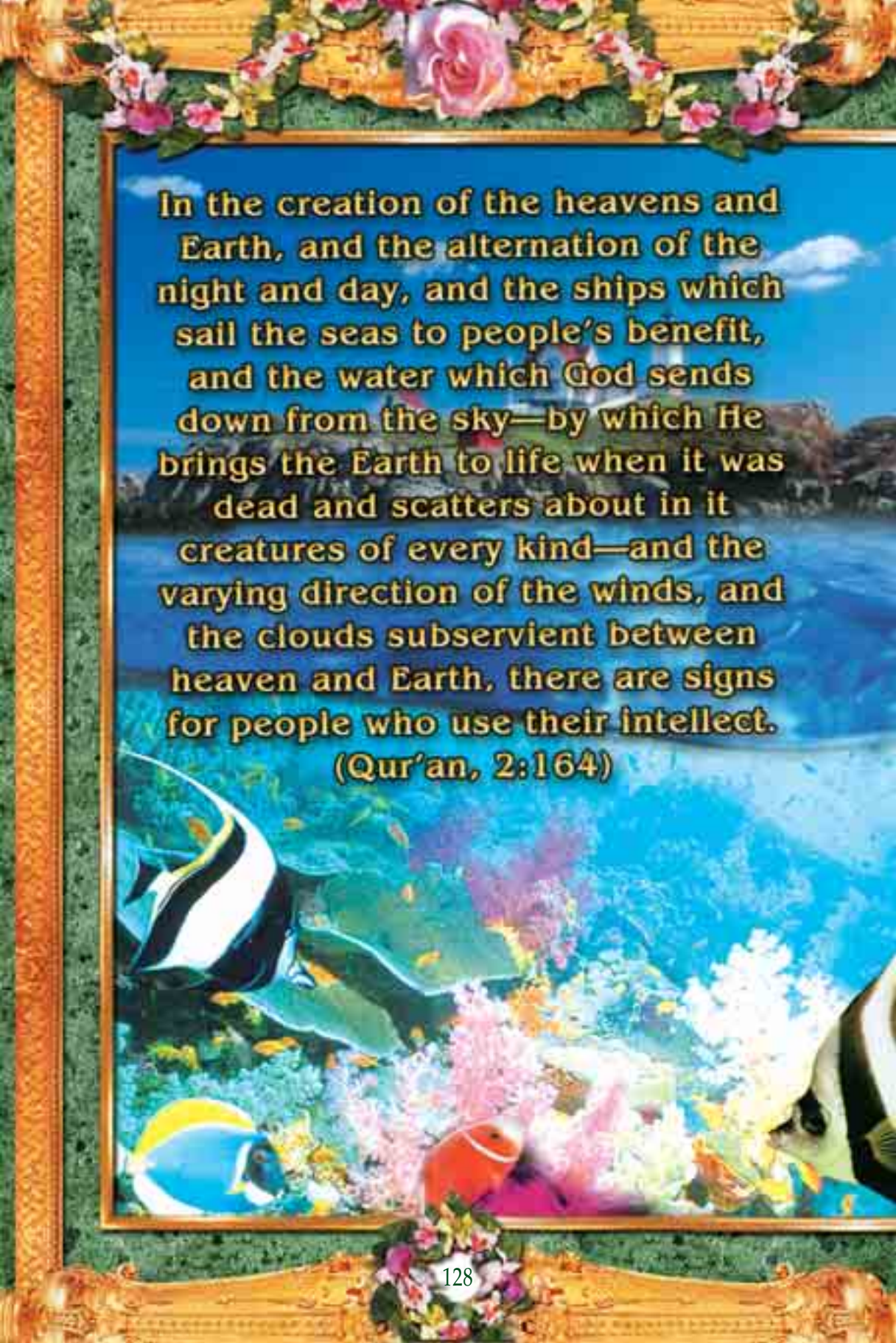
In their autumn migration, spiny lobsters stay right behind their leader. When threatened, they coil round into a defensive rosette, with all the pincers outwards, so that an enemy trying to attack is confronted with sharp weaponry at every angle.

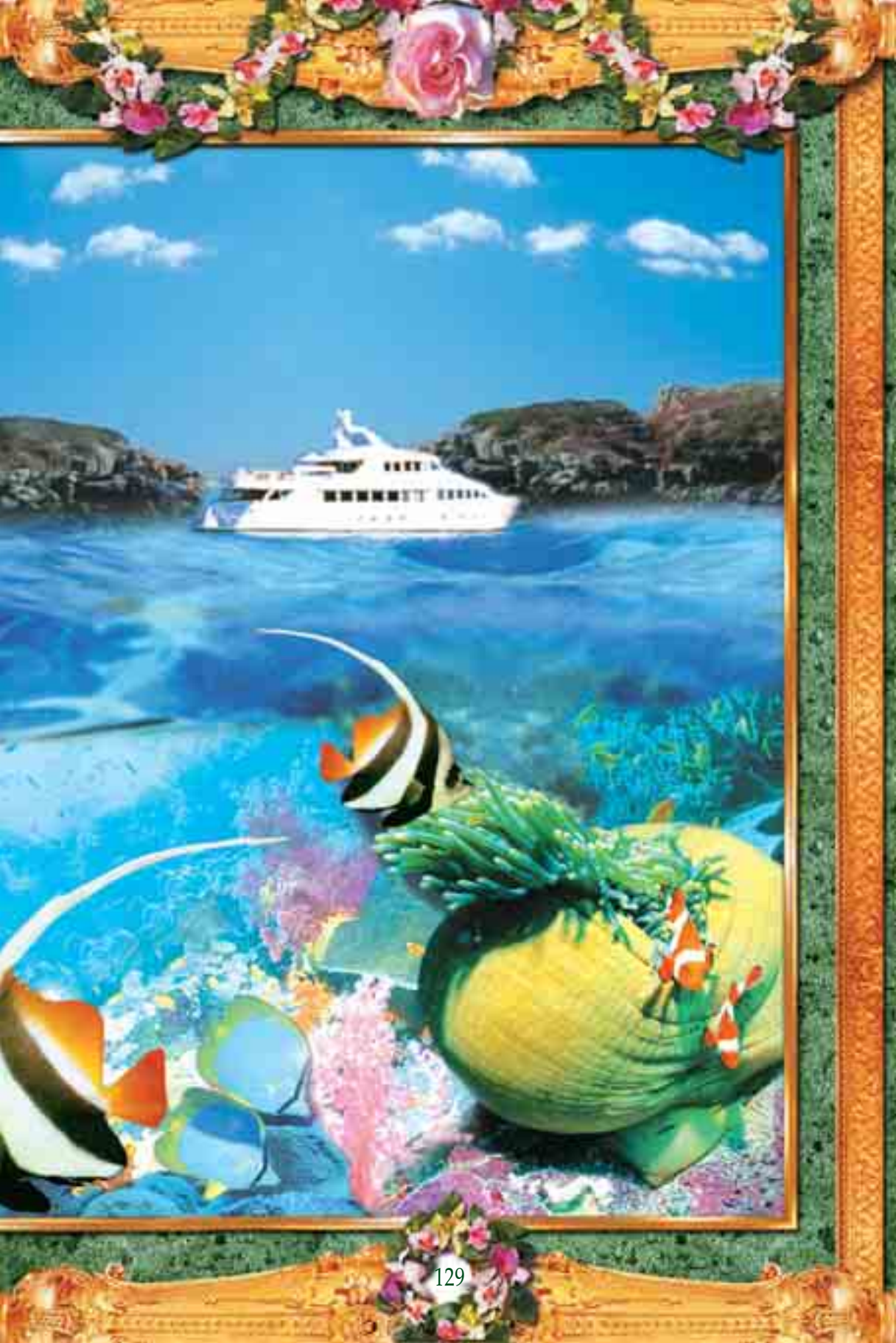
Spiny lobsters seen walking in single queue during autumn migration. Walking across the sea floor, each lobster maintains contact with the lobster in front.

A spiny lobster in the nest it has made for itself in the coral of the shallow waters of the West Atlantic. Spiny lobsters feed in a variety of places on the sea floor. It is still not known exactly why these animals migrate as a group in autumn.

quire is our Lord. This is just one of the indications of the supreme art of His creation:

> **God, there is no deity 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. (Qur'an, 2:255)**


In the creation of the heavens and Earth, and the alternation of the night and day, and the ships which sail the seas to people's benefit, and the water which God sends down from the sky—by which He brings the Earth to life when it was dead and scatters about in it creatures of every kind—and the varying direction of the winds, and the clouds subservient between heaven and Earth, there are signs for people who use their intellect.
(Qur'an, 2:164)



Migrations of Marine Fish

The diverse species of fish living in the seas make journeys of various lengths. From the little rockfish to larger tuna to whales weighing tons, all have different ways of migrating. Some migrate to sources of food, others to reach a suitable breeding ground, and still others to escape harsh weather conditions.

In comparison with the changing conditions on land, one might assume that regular movements of tides and ocean waves provide more constantly reliable conditions for navigation. But in the depths of the sea, the movements and changes are even more radical than on land and more difficult to observe and understand. In spite of these difficulties, still marine fish manage to migrate.

Foraging Migrations

Marine fish migrate in many different ways. One or more migrations are in progress at all times, be it a question of a few meters or hundreds of meters over either hours or days. The only common factor in these different journeys is the motive, since a great number of fish migrate regularly to feed.

Coastal fish migrating to feed make use of the tides, by means of which they reach the shore and are then carried back to their territory. Each day, they spend a few hours foraging over the submerged tidal flats. Some fish regularly migrate for foraging on a day-night cycle. The grunt, so named because of the sound it makes when it is caught, is a colorful schooling fish on Caribbean coral reefs. To avoid being eaten, these fish shelter in the crevices of the reef during the day and at dusk, venture out in schools to where food is plentiful. In the seagrass meadows, they scatter and feed on the invertebrates they find. Just before dawn, they follow the same route back to the reef. Each school uses the same path day in, day out, for many years.[38]

Spawning Migrations

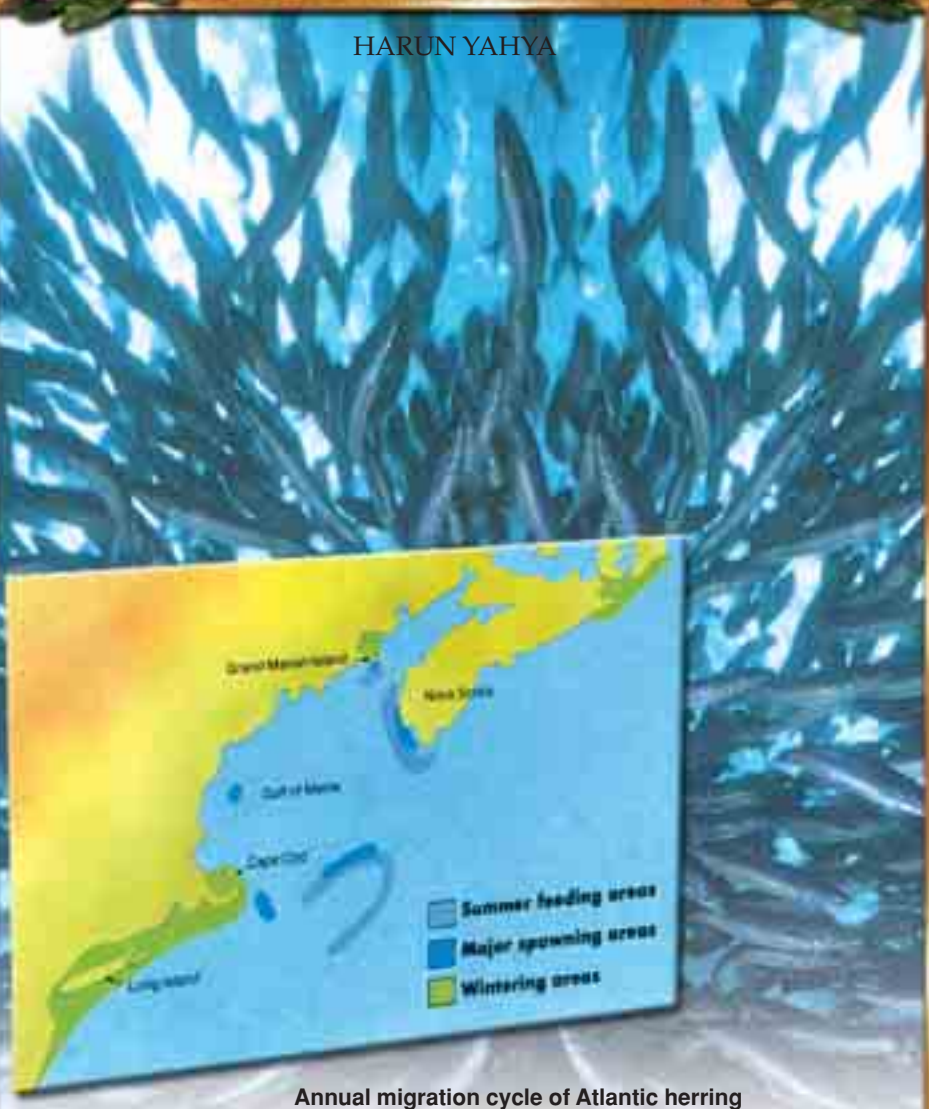
Besides foraging, marine fish also migrate for the purpose of spawning, however much the form of migration may differ according to the species. Some fish migrate on a daily or seasonal basis to reach suitable breeding grounds, because some fish spawn every day and others every month. The journeys to their spawning areas may be short or trans-oceanic.

In some species, there are five to ten members in these migrations, and in others thousands come together. All form schools, as though they knew that moving together is advantageous for them.

Research conducted on herring gives us some important ideas on their breeding and migration. First, the fish migrate simultaneously on two planes. One is upward and downward, tracing the movement of the plankton the fish feed on, and the other is the circular migration to their spawning areas.

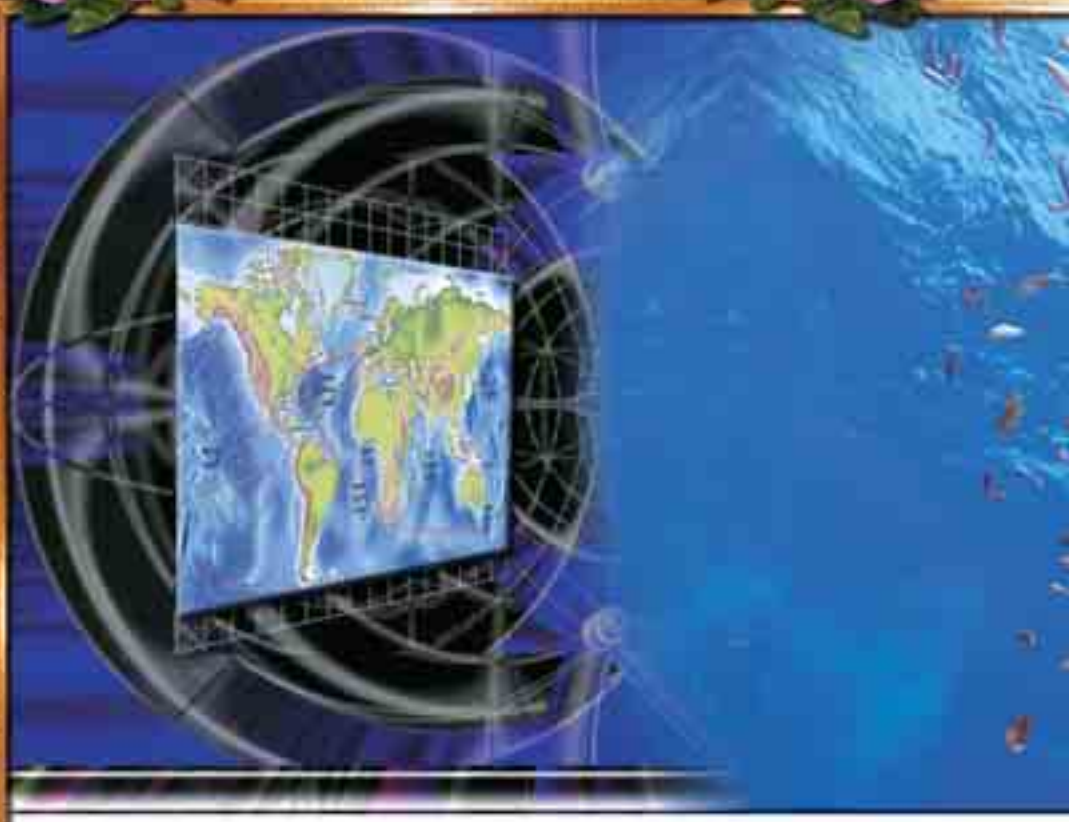
These fish stay at the spawning ground for a few months of the year and then disperse. Not all herrings spawn at the same place at the same time. They gather together at different times and places, but always in great schools, and the adults arrive at the same spawning ground every year. The spawning grounds are determined according to the abundance of food—thus whirlpools and shores are usually preferred.

At every stage of the migration journey, decision-making mechanisms come into play at the right time, the right place, in the right way. No species of fish has the intelligence to make decisions based on which circumstances are appropriate. The truth is that at all stages, the supreme intelligence evident belongs to God, the Creator of all living creatures. Concerning those who search for a creator other than God, the following is revealed in the Qur'an:



Annual migration cycle of Atlantic herring

Say: "Am I to desire other than God as Lord when He is the Lord of all things?" What each self earns is for itself alone. No burden-bearer can bear another's burden. Then you will return to your Lord, and He will inform you regarding the things about which you differed. (Qur'an, 6:164)



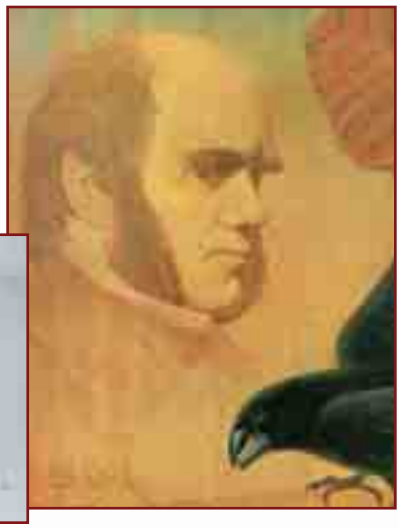
Navigation in the Ocean

In an ocean thousands of square kilometers in size, how does a fish find its way to its spawning ground? This raises a second question: How does it know that a place where it has never been will be suitable? These remarkable abilities and navigational skills of fish clearly expose the pointlessness of any efforts to explain migration in terms of an evolutionary process and coincidences.

Similarly intelligent behavior in animals is a subject the evolutionists choose not to dwell on. This is why, when presented with an example of this kind, they try to skirt around the issue with the word "instinct." But they are unable to give an explanation as to the source of instinct. Even Charles Darwin himself makes the following confession in his book, *The Origin of Species*:

> ... so wonderful an instinct as that of the hive-bee making its cells will probably have occurred to many readers, as a difficulty sufficient to overthrow my whole theory.[39]
>
> … it seems to me wholly to rest on the assumption that instincts cannot graduate as finely as structures. I have stated in my volume that it is hardly possible to know which, i.e. whether instinct or structure, change first by insensible steps.[40]

With these explanations, Darwin admits that instinct cannot appear of its own accord and that this question is enough evidence to collapse his theory. Even so, he skips over the subject in order to make evolutionary theory seem plausible. The reason is contained in these words:



Charles Darwin and his book *The Origin of Species*, containing his confessions on the subject of animal instincts.

> Finally, it may not be a logical deduction, but to my imagination it is far more satisfactory to look at such instincts… not as specially endowed or created instincts, but as small consequences of one general law leading to the advancement of all organic beings,—namely, multiply, vary, let the strongest live and the weakest die.[41]

Here, Darwin clearly acknowledges that a much more plausible explanation for instincts is the existence of a Creator. Then he says that even if it is true, by using your *imagination* it is possible to claim that all these perfect skills referred to as instincts appeared by coincidence. But as you can see, the founder of evolutionary theory himself, cannot explain the existence of instincts with evolutionary theory.

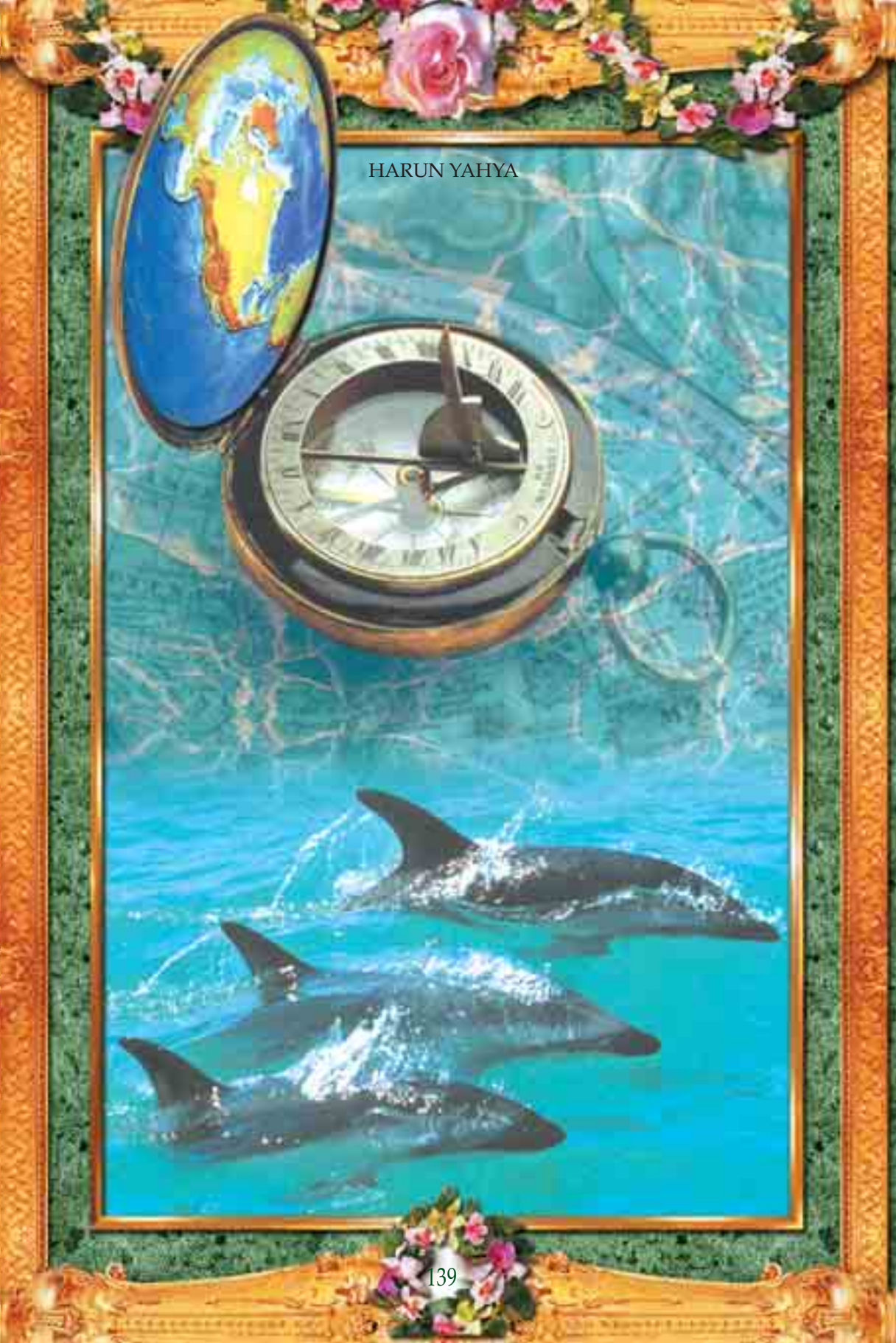
Nevertheless, from the moment they are born the animals in question exhibit intelligent behavior that the evolutionists cannot explain. They all perpetuate their species by the inspiration of God, their Creator. They have no rational intelligence or judgment of their own. Almighty God, Who knows all things better than they and Who knows their needs better than they do, has created them together with these characteristics.

Orientation Techniques

Fish migrating from ocean to ocean make use of a number of different methods to navigate. Research conducted on coral reef fish has shown that they use coral outcrops to find their way. Scientists established that the fishes' regular migration route went over a particularly prominent piece of coral or rock, and when the rock was moved to a different position, the fish changed their route accordingly. Those species of fish migrating along the shore probably use a similar method to determine their route, swimming parallel to the shore and tracing the shape of the coast.

In common with animals that migrate overland and in the air, some fish also navigate by making use of the Sun. A number of fish use this method when swimming from where they shelter at night to their feeding places close to the shore. When parrotfish are deposited

Migration route of tuna



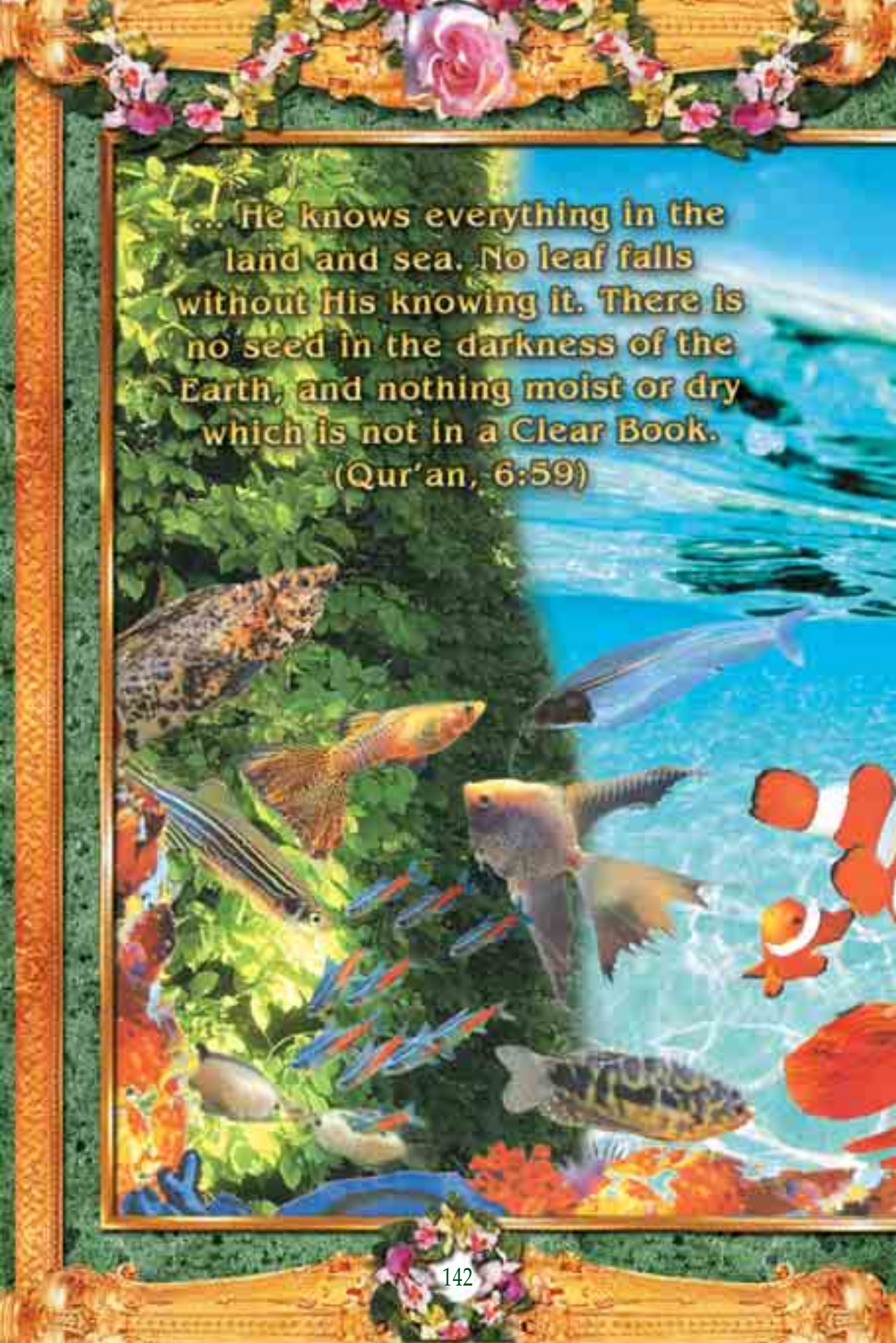
far from the shore on a sunny day, they swim straight for the shore, whereas on a cloudy day they swim around aimlessly. But how migrating tuna navigate at night and on overcast days is still a remarkable mystery. These fish are far more skilled than humans at finding their way to where they have to go. It is a sign leading to faith that a fish can follow a direct route to its underwater goal as though it had a bird's eye view. God has created all the systems these animals will need throughout their lives and inspired in them all forms of behavior and orientation skills, by which they can find their way through vast oceans.

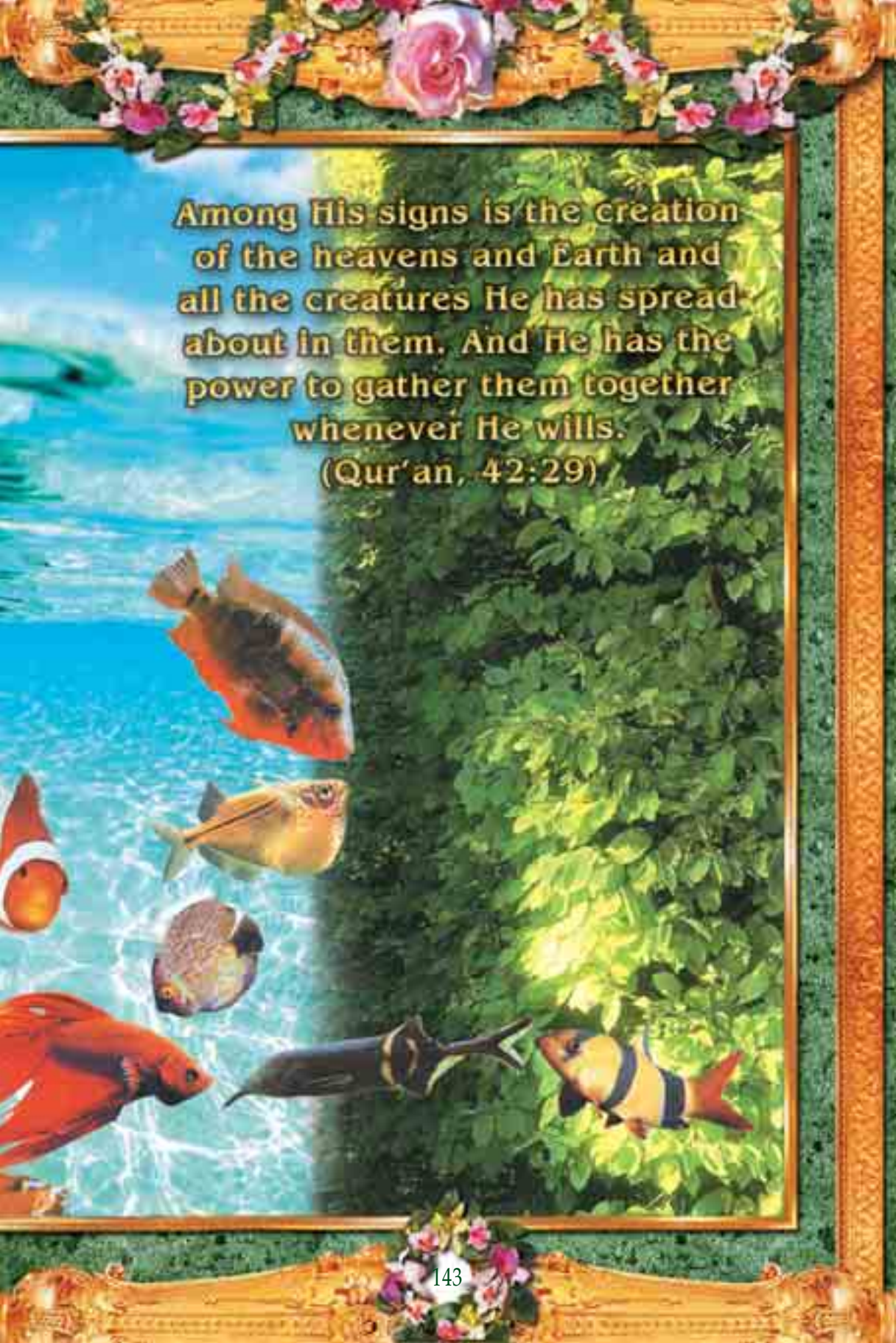
Fish also find their way by detecting the world's magnetic field and certain electrical fields like birds do. Experiments have shown that sharks can perceive changes in the world's magnetic field. It has also been discovered that in their heads and snouts they have numer-

ous pits sensitive to electrical fields, and these physical characteristics have been proposed to explain their navigational ability.

Ocean currents create powerful electrical fields as they cross the Earth's magnetic field. These fields are like prominent highways in the ocean for a shark. But however much these may explain, they can't shed light on how oceanic fish actually navigate. For example, tuna don't have the lateralis pits that sharks do, so what mechanisms do they use to find their destination? Researchers have not found any explanation for this. But even if a related mechanism is found one day, the migration of fish will remain an extraordinary mystery, for it is not possible for a fish to possess such a perfect skill by its own volition or by the effect of coincidences. Even a conscious and intelligent human being cannot develop such an organ at will, yet fish have enjoyed these characteristics for millions of years. Nothing but the existence of God and the fact of His creation can explain the order in animal life. God creates everything in the universe and shapes them within an order. God inspires in them the superior intelligence they display throughout their lives:

Everything in the heavens and the Earth belongs to God. He knows what you are engaged upon… (Qur'an, 24:64)


... He knows everything in the land and sea. No leaf falls without His knowing it. There is no seed in the darkness of the Earth, and nothing moist or dry which is not in a Clear Book.
(Qur'an, 6:59)


Among His signs is the creation
of the heavens and Earth and
all the creatures He has spread
about in them. And He has the
power to gather them together
whenever He wills.
(Qur'an, 42:29)

Superior Intelligence in Migrating Plankton

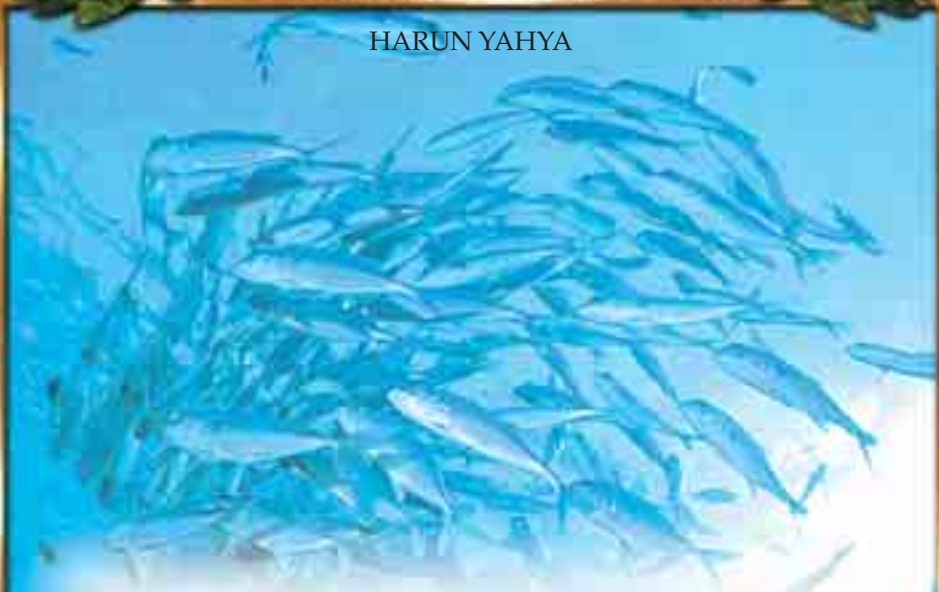
Plankton is a Greek word meaning "wandering" or "drifting." For this reason, it is a common term for the plant and animal organisms that drift freely in oceans and lakes. While some plankton are too small to be seen with the naked eye, they can also be as large as 3 meters (10 feet) in length, like large jellyfish.

Both plant and animal plankton migrate in vertical and horizontal directions. The more important one is vertical migration, but usually movement is achieved in both directions simultaneously. The basic reason for vertical movement is feeding. The plankton move up and down in the water to find food. In plant plankton, increased amounts of gas or oil, or reduced levels of salt achieve upward movement. The converse applies to sink. Animal plankton swim by means of legs, stiff hairs and fins, migrating in accord with the time of year and the timing of reproduction.

The most important factor influencing the timing of their migration is thought to be light. At dusk, plankton move towards the surface, and as light increases towards dawn they return to the depths.[42] Food supply and the presence of predators also influence their migration. For these creatures, most of which are of microscopic proportions, to time migration to their best advantage, they must have prior knowledge of the dangers and benefits that await them. To take precautions accordingly means they have the ability to judge, because the plant plankton they feed on grow only near the surface of the water, where there is ample sunlight. But because the predators, the concentration of which is higher in these surface waters, can see them more easily in the daytime, it's dangerous for them to feed by day. For this reason, animal plankton stay in the depths during the day and

The daily vertical migration cycle in the deep ocean is continuous. Towards dawn, animal plankton migrate to the depths, away from where there is an abundance of plant plankton (dark yellow strip). At dusk, they rise to the surface to feed on plant plankton and to hide from predators.

Plankton is a food source for a number of animals.



come up to the surface to feed at night. The deliberate way they move is quite remarkable. It is of course God, Lord of all, Who teaches them this seemingly conscious behavior:

> **God—there is no deity but Him—the Lord of the Mighty Throne. (Qur'an, 27:26)**

> **Do not call on any other deity along with God. There is no deity but Him. All things are passing except His Face. Judgment belongs to Him. You will be returned to Him. (Qur'an, 28:88)**

God has endowed every creature He has created, from the sea to the skies, with evidence of His art. People of thought and intelligence see this evidence clearly and duly praise Him. Unbelievers, on the other hand, continue to overlook the evidence before their eyes and persist in their obstinacy. In a verse of the Qur'an, God tells how they persist in their lack of faith in the face of all evidence:

> **... Though they see every sign, they still have no faith... (Qur'an, 6:25)**

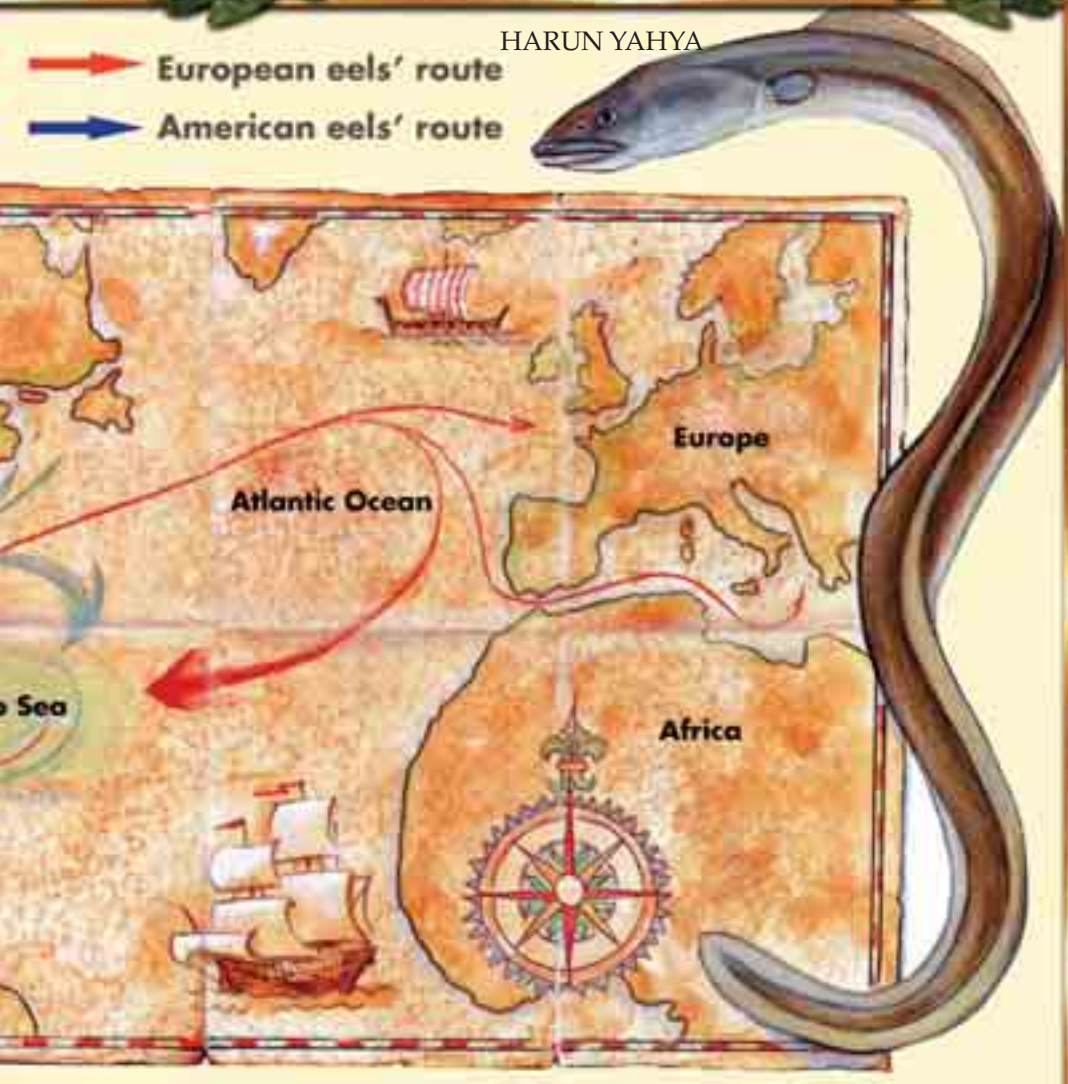
Eels: Remarkable Adventurers in the Ocean

In the Sargasso Sea, located south of Bermuda in the North Atlantic Ocean, strong North Atlantic current and gentle winds prevail. It is also the start and end point of one of the longest oceanic migrations made by freshwater eels.

The eels undertake one of the most inexplicable and remarkable migrations of all. As many as 720 species of eel inhabit the rivers and streams of Europe and North America, and the birthplace to millions of these is the Sargasso Sea. But no adult eel has ever been caught there, because after hatching, they quickly leave this region and swim to the rivers of Europe and America. Later when they reach maturity, about the age of 15, they migrate back to Sargasso and after spawning, die there. The young eels (called elvers) that hatch continue their migration back to fresh water.[43]

Their adventure prompts questions that various research projects over the years have sought, but failed, to answer:

- Why do they return, years later, to die in the region they deserted shortly after hatching?



- How do they reach an unknown sea from the rivers?

- What drives eels to undertake a tiring journey thousands of kilometers long?

- In the vast Atlantic Ocean, how do they find the Sargasso Sea without a compass?

- How do newborn eels make their way from the ocean to rivers, against the current?

After starting out on their journey from the Sargasso Sea, these remarkable creatures display various kinds of miraculous behavior. When hatched, they have no one to guide them on their journey of some 6,000 kilometers (3,700 miles), yet without getting lost, they make their way from Sargasso to where their parents lived, in the rivers of Europe and North America. At this point, the warm ocean current known as the Gulf Stream helps get the little fish on the right track for Europe.[44] Finally they reach the rivers where they will live until maturity when—as if by common agreement—they all swim from the rivers to the ocean and start out for Sargasso where they were born and where they will lay their eggs. The cycle is repeated in the same way.

The transparent juvenile eels, 6 to 7 centimeters (2.5 inches) in length swim upstream, close to estuary and river banks. The return of the glass eels begins in different places, in different seasons lasting from autumn to the end of spring. These young eels show incredible determination in their attempts to travel upstream, often crawling up small waterfalls.[45] Here it should be noted that eels have poor swimming ability. In spite of this they migrate in the ocean covering some 10,000 kilometers (6,200 miles) to breed and die. But why, when there are so many places closer, do they choose the Sargasso Sea in particular? Scientists have tried to answer the question of why the European eel migrates over such a long distance. It is also rather surprising that without exception, all newly hatched eels go on a long journey to the region their parents came from, instead of remaining where they are. That these fish set off on such a journey as soon as they come into the world with no adults to show them the way indicates that this impetus is given to them before they are born. In that case, who can impart such knowledge?

The evolutionists have no answers to these questions. No chain

of coincidences can explain such perfect organization, intelligence, and faultless behavior. As the example of the eel shows, the only explanation for the chain of miracles in migration is creation. In these creatures, God has inspired a superior intelligence to show evidence of His creation to humanity. To those without prejudice, the migration journey of the eel is sufficient to foster faith in God.

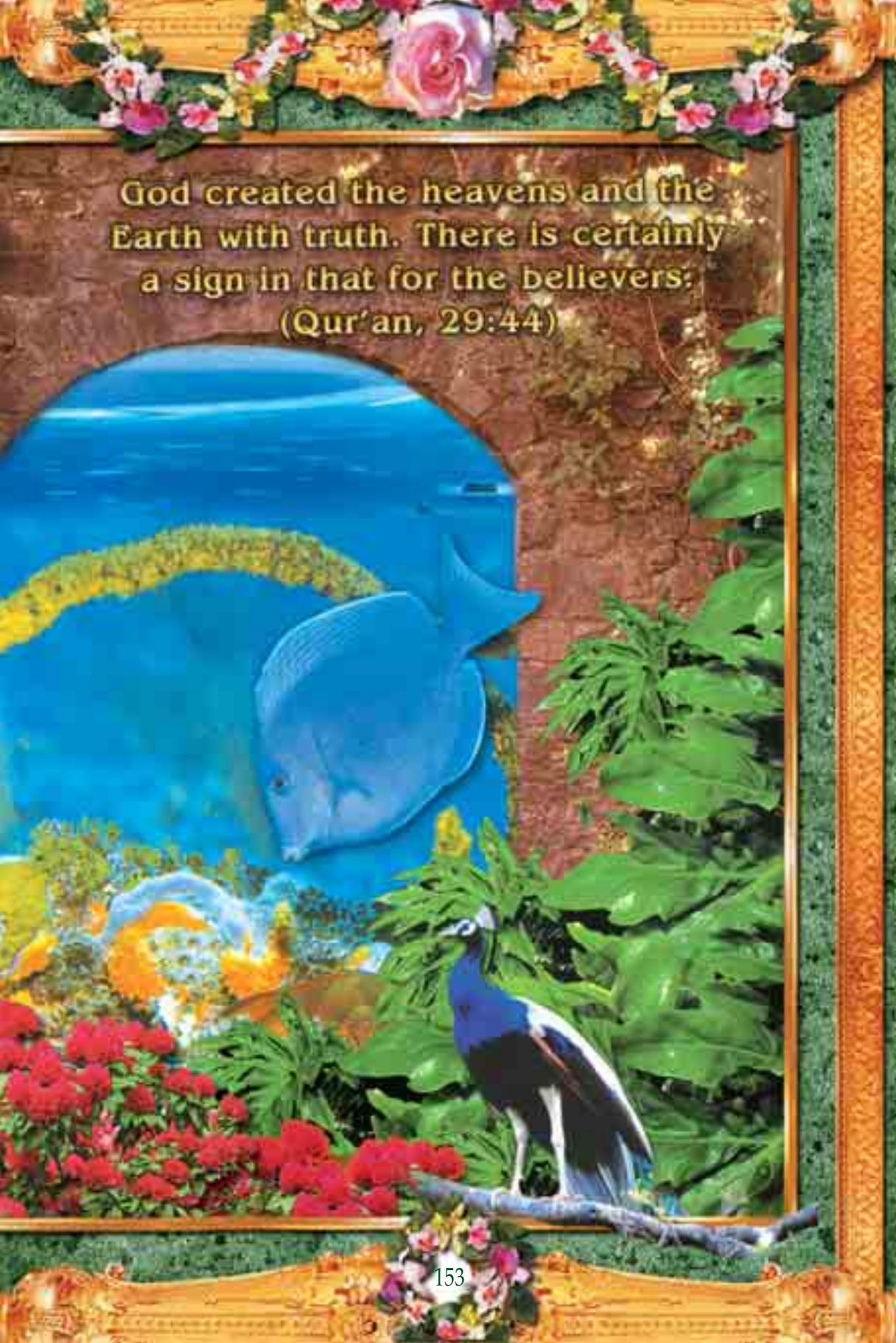
God has eternal knowledge. From the moment of their creation, creatures are endowed with characteristics to let them cope with whatever they may encounter in life. Their bodies are perfectly structured down to the last detail, in harmony with the tasks they will carry out and the environments they will live in. Like all systems in the universe, migration is very complex but at the same time, regular and reasoned in its organization. In the Qur'an, God reveals the following on the futility of those who look for faults in His creation:

> **He Who created the seven heavens in layers. You will not find any flaw in the creation of the All-Merciful. Look again—do you see any gaps? Then look again and again. Your sight will return to you dazzled and exhausted! (Qur'an, 67:3-4)**

Round Trip of Whales

The whale is the largest living creature of our time. The very largest is the blue whale, growing as long as 35 meters (114 feet) and weighing as much as 130 tons. Even the smallest of the whales known as the pygmy right whale grows to 6 meters (19 feet) and weighs 5 tons. These gigantic bodied creatures can be classified into two groups; baleen whales, that have an apparatus in their oral cavity, made of a substance similar to hair and nails, hooves and horns, for filtering the small fish, crustaceans and plankton they feed on; and toothed whales that feed on various kinds of fish and warm-blooded animals like seabirds and sea mammals.

Migration for whales is an annual round trip from tropical to polar seas. The baleen whales are the most remarkable. These whales breed in warm waters of the tropics or subtrop-


God created the heavens and the
Earth with truth. There is certainly
a sign in that for the believers:
(Qur'an, 29:44)

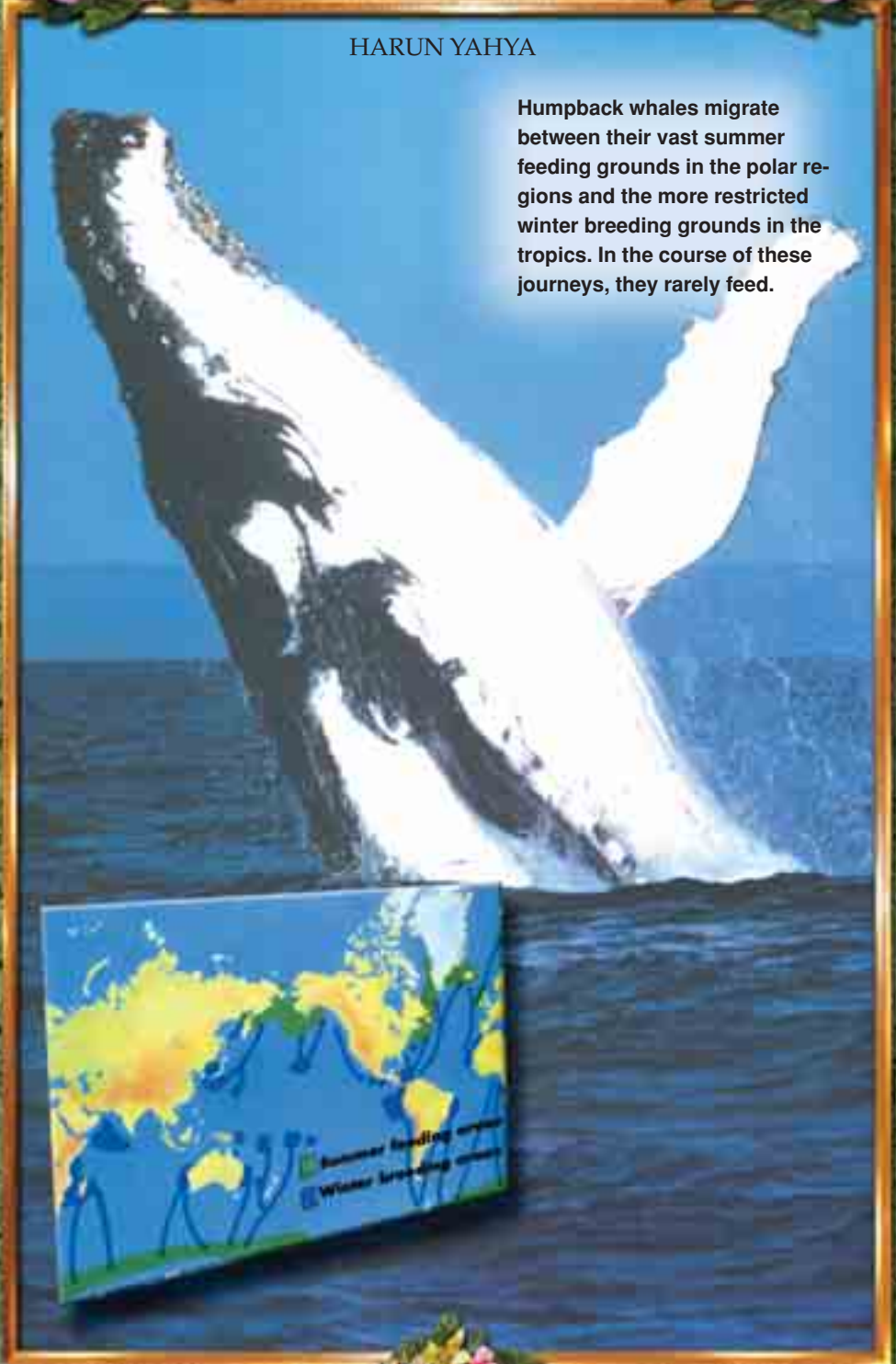
ics. The characteristics of these breeding grounds are important for the species' survival, since newborn whales have no protective layer of blubber and need warm water to survive. They would die if they were born in the polar seas, so there is every good reason for the young to be born in warm tropical waters.

For a few months, young whales feed exclusively on their mother's milk. Since whale milk is rich in protein and fat, the young grow fast and soon accumulate blubber. This is vital, for the young have to grow fast to survive in the freezing polar waters.

Some time after giving birth and rearing their young, whales set off for the polar seas in search of food. Baleen whales spend at least four months of the year without feeding, simply living off the blubber they have accumulated over the summer. On the return journey to the breeding areas, they can swim more than 7,000 kilometers (4,300 miles) without feeding, even if they are pregnant and suckling young.[46]

It is interesting to note the features of the feeding grounds chosen by whales feeding on plankton. In the sea as on land, all life depends on the presence of plants. Thanks to photosynthesis, inorganic building blocks are synthesized into organic materials. Deep-level water rich in nutrients as well as nitrate, phosphate and sulfate moves towards Antarctica, rises to the surface as it approaches the continent and is then carried north on the surface by the ocean currents. In this nutrient-rich water, plant plankton grow much larger, with the result that the Antarctic Ocean has ten to twenty times more plankton than tropical seas. As if they know this, baleen whales come to these regions to feed.

Toothed whales, on the other hand, do not migrate to the same extent as baleen whales. Some live in rivers, and so their movements are limited.



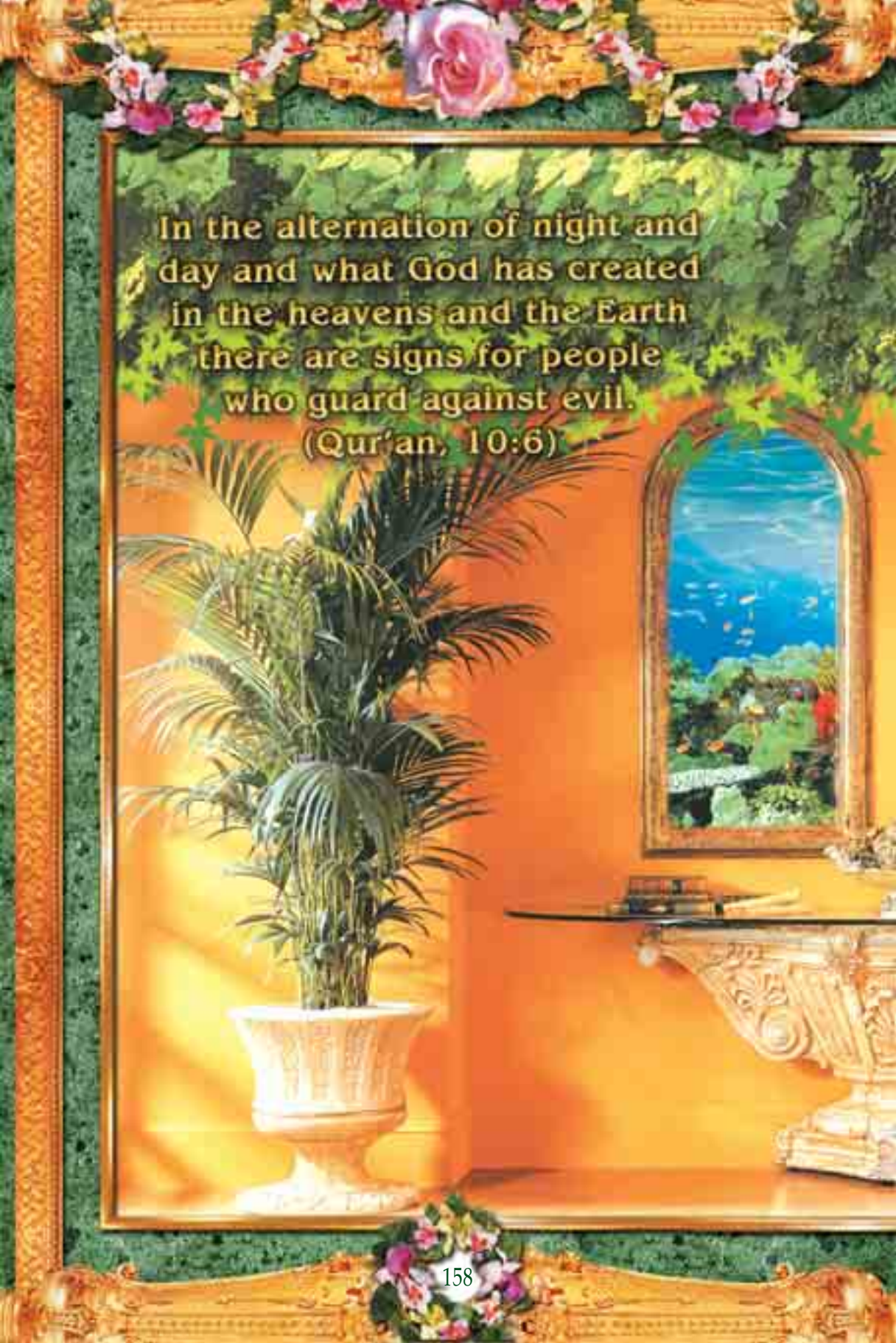
Humpback whales migrate between their vast summer feeding grounds in the polar regions and the more restricted winter breeding grounds in the tropics. In the course of these journeys, they rarely feed.

Scientists studying the long journeys baleen whales make to their special feeding and breeding grounds are curious about the methods they use to navigate. The most common explanation is that whales have a structure for detecting relative differences in the Earth's magnetic field. It is thought that there are deposits of magnetite for this purpose in the tissues surrounding the brain. By using the world's magnetic field, whales acquire a simple map and a timer that let them determine their position and move forward by perceiving small differences in the regional magnetic field.

Each piece of information related up to now is one link in a chain of miracles. God knows from the outset what young whales will need and what their body structure will be like. Because God creates the whole universe, from the Earth to the sky, and continues to create each and every moment, His knowledge is all-embracing.

After they have given birth, these whales cannot know where they will be able to find food and how to get to that region. Each one of these creatures' physical perfection, intelligence, and organization is evidence of the creation that leaves no room for doubt. Everyone who knows these things acknowledges that they could never result from coincidences. They would not claim that a seagoing mammal had enough rational

Gray whales migrate in shallow shores from their summer feeding grounds at the poles to the warm temperate seas, where they give birth.


In the alternation of night and
day and what God has created
in the heavens and the Earth
there are signs for people
who guard against evil.
(Qur'an, 10:6)

intelligence to possess such knowledge, which some people may discover only when they read about it here.

Those who evaluate this knowledge sincerely have faith in God, but those who are unjust and self-glorifying deny His obvious existence, even though they have seen the truth. These people will be as lost in the Hereafter as they are in this world. God is the One Who has need of nothing:

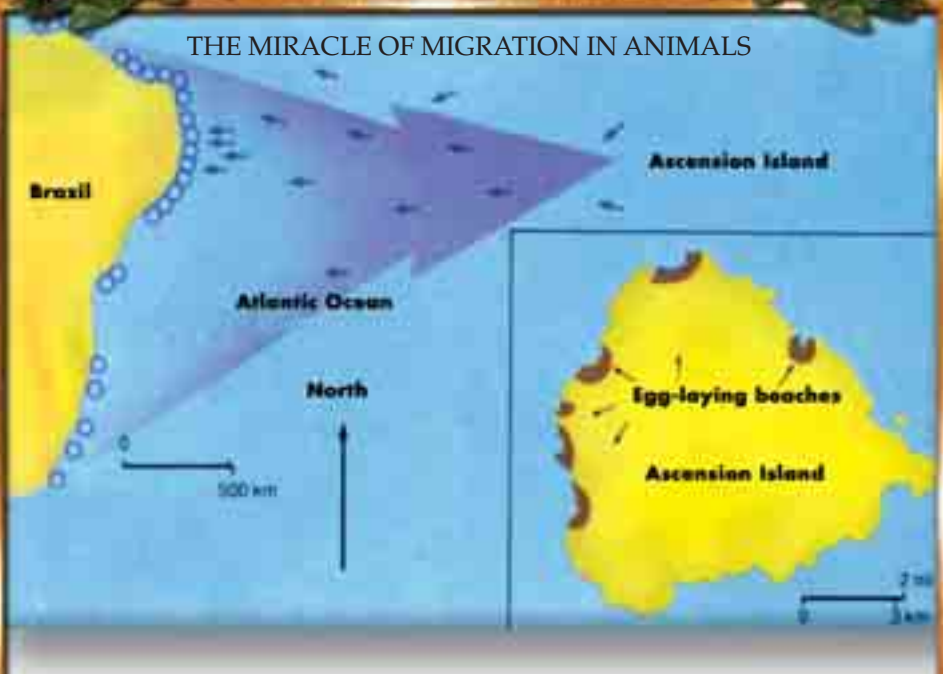
> **Among His signs is the creation of the heavens and Earth and all the creatures He has spread about in them. And He has the power to gather them together whenever He wills. (Qur'an, 42:29)**

The Long-Distance Migration of Sea Turtles

The life cycle of the sea turtle and its long migrations make it one of the most interesting and highly researched animals. Yet it is not yet possible to explain fully how it manages to navigate so perfectly during long-distance migrations from its feeding ground to the breeding ground.

There are several different species of sea turtle. From the perspective of migration, the most interesting of these is the green turtle

(*Chelonia mydas*), which feeds along the Brazilian coast. Each year, thousands of these turtles migrate to Ascension Island in the Atlantic, a journey of about 2,300 kilometers (1,500 miles). When we consider that the island they migrate to is only 11 kilometers (7 miles) wide, their migration skills can be more easily appreciated. An experiment conducted on the turtles' movements focused on the route followed by an adult loggerhead female, who was nesting in south Queensland. She was tagged with code number X38756 and not seen again for seven years and eight months. Then in 1989 she was caught in the southern Gulf of Carpentaria 2,543 kilometers (1,600 miles)



Green turtles migrate from the shores of Brazil to mate and lay their eggs on Ascension Island. The navigational skill of this species astonishes scientists.

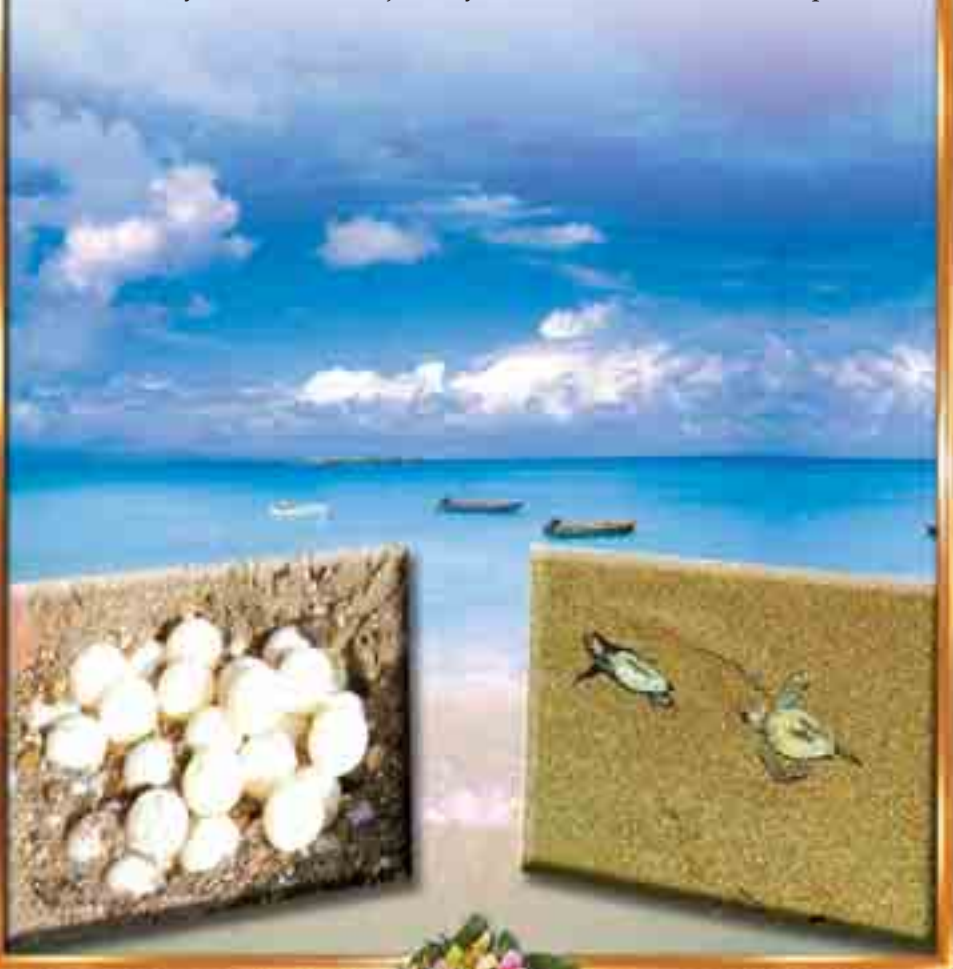
away. Eighty days later, she was found again laying eggs on her original nesting beach. Investigation of her ovaries showed that she had not bred at all in the intervening eight years.

In this time, the turtle had traveled a minimum distance of 5,100 kilometers (3,100 miles). Assuming that her migration began the day she was caught, she had to cover 32 kilometers (20 miles) a day to return to her breeding ground. First she would have had to go northeast to cross the Gulf of Carpentaria, then after passing through Torres Strait, head in a generally southerly direction. She must have been exposed to a range of currents, some running with her, and some against her. If this turtle had meandered at random, she wouldn't have been able to complete the return journey so quickly.[47]

This purposeful journey and its defined destination raise an important question.

For the turtle to succeed in this migration for breeding purposes, memories of previous journeys must have been stored in her memory. How was this complex information stored? It is irrational and illogical to credit this perfect organization to the turtle's ability to remember after so many years. Doubtless, these animals were created together with their skills.

The turtles mate close to the breeding grounds they have reached by this incredible journey. But the females store the sperm



they receive and move up to some 100 kilometers (60 miles) to their nesting beaches, where they fertilize the eggs with their stored sperm. The production of a clutch of eggs takes about two weeks, after which the female lays as many as 120 eggs. She will repeat this process about ten times in the same nesting season. During the nesting season, the female stays in the sea close to the beach, and at the end of the season she returns to the feeding area without waiting for the eggs to hatch. While in the nesting ground, the turtles feed very little and gain the energy they need from the fat reserves they stored up in the feeding ground.

How do they find the same place, after covering a distance of thousands of kilometers?

Females do not usually breed in two consecutive years. Some species maintain an interval of at least two years and a maximum of eight years between breeding migrations. But when the time comes to go back to the breeding ground, the turtle returns to the same beach as before, almost 2,300 kilometers (1,500 miles) away. That these reptiles can find their way to this place thousands of kilometers away is one of the most miraculous aspects of migration.

The eggs laid on the nesting beaches hatch in 7 to 13 weeks. Here too, a miracle takes place. Unlike humans, sea turtles do not carry sex chromosomes. The temperature of the nest determines the gender of the offspring, and this determination occurs during the incubation period. Warm nests produce exclusively female hatchlings, while cool nests produce all males.

From the moment sea turtles open their eyes, it is obvious that they act under the inspiration of God. With no experience to benefit

from or adult to guide them, the new little hatchlings know what to do. Once hatched, they do not head straight for the sea, but wait until nightfall. This way, they are protected both from the burning heat of the Sun and dangers on the beach. At night they make directly for the sea. Although their sense of direction is not fully understood, turtles

are thought to be light-sensitive. The sea is always more luminous than the land, and these little creatures may be directed by this luminescence.

Once the hatchlings reach the sea, they begin a journey full of risks. Some of them are devoured by crabs and birds on the beach. From the minute they enter the water, some become a meal for fish or sharks as they make their way through the shallows to the open sea. After a few days of swimming non-stop, they rest and start feeding

on surface plankton. These young turtles settle in their feeding area on the ocean floor and stay in the same place for decades until they mature. When they reach adulthood, surprisingly they start their journey back to where they were hatched.

From the time of their birth, turtles are solitary throughout their lives, having little contact with other members of their species. Consequently, other turtles cannot teach them where to migrate to, how to feed, or where their breeding ground is to be found. So how does a newly hatched turtle acquire all this knowledge?

As already stated, it is Almighty God Who gives all creatures the skills they will require before they even come into the world, Who teaches them what they need to do in their lives.

A turtle spends most of its life alone, but is created with characteristics that enable it to live in this way. It is equipped with superior skills to perceive environmental signs: a strong sense of smell and vision. Although it has no external ears, it can hear very low-frequency sounds far beyond the range of the human auditory system.

The fact that it possesses all these complex systems is proof that God the Omniscient has created it with such perfect characteristics that it can live alone. Once again, people reflecting on this witness God's infinite power, and act with the knowledge that they are responsible to our Lord. In the Qur'an, God makes known that those who act contrary to this are consumed by fire:

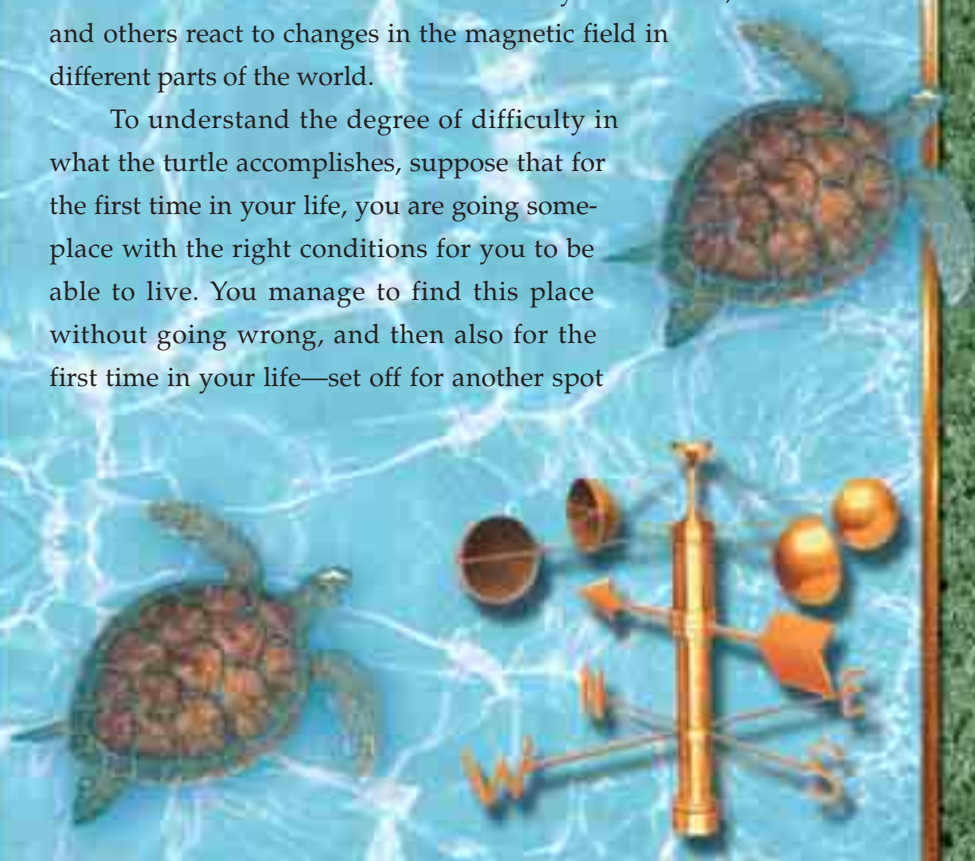
> **In the alternation of night and day and what God has created in the heavens and the Earth there are signs for people who guard against evil. As for those who do not expect to meet Us and are content with the life of this world and at rest in it, and those who are heedless of Our signs, their shelter will be the Fire because of what they earned. (Qur'an, 10:6-8)**

How, exactly, do turtles navigate?

Not only do migrating turtles return to their birthplace after decades of oceanic wandering, but can also find their way home after being in the feeding grounds. Much research has been conducted on this, but results are inconclusive. All that is known is that in finding their way every time, these creatures show great intelligence.

Many ideas have been advanced on this subject, but none of them provides adequate explanation. It is thought that some species reach their destination by following the coast, other species that cross oceanic waters follow scent trails carried by the currents, and others react to changes in the magnetic field in different parts of the world.

To understand the degree of difficulty in what the turtle accomplishes, suppose that for the first time in your life, you are going someplace with the right conditions for you to be able to live. You manage to find this place without going wrong, and then also for the first time in your life—set off for another spot



that is also right place for you. Assuming beforehand that you will have to return, you try to keep in mind every characteristic of this place, taking note of its smells, the environment's natural features, even the magnetic field of the region. When you return to this place, you bring all this recorded information into play. In doing so, of course, your physiological system cannot only determine the magnetic field of the place, but you can also work out what your right environment should be by identifying these characteristics.

Of course it is impossible to do all this without the help of technological devices. It is equally unreasonable to imagine that turtles can do the same on their own.

In spite of more than thirty years of research, turtles' navigational mechanisms are still not clearly understood. Even if we knew how they manage to do this, obviously their system could not have developed of its own accord. God creates everything in the universe and manifests His eternal intelligence in every corner of the universe. God gives whomever He desires of His eternal knowledge to the extent that He wills. Those who deny God can find no other explanation, even if they research for their entire lifetime. It is revealed in the Qur'an that there is no other deity:

> **Your deity is God alone, there is no deity but Him. He encompasses all things in His knowledge. (Qur'an, 20:98)**

The Upstream Migration of Salmon

Having to swim in the salt ocean, swimming upriver, sometimes leaping over waterfalls 3 meters (10 feet) tall without crashing into rocks—these are only a few of the trials that migrating salmon undergo in order to spawn.

The most important characteristic of salmon, which spawn in rivers along the western coasts of North America, is their ability to cross rivers and even jump waterfalls in the course of their migration journey. In breeding season, the females lay their eggs in a shallow stream. The young feed on nutrition already in the yolk sac attached to them. After a few weeks, they are ready to search for food in the stream, where they live for about a year.

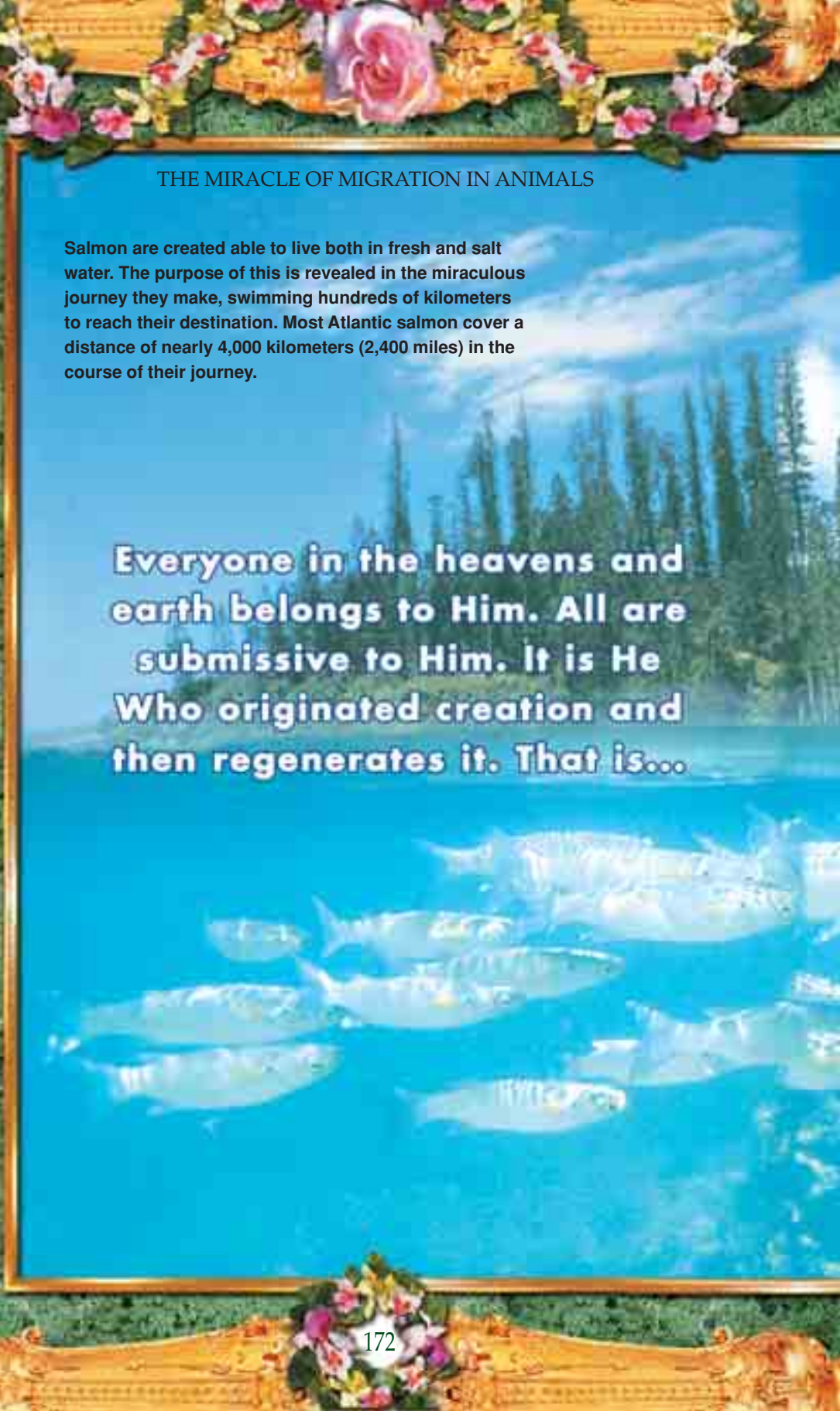
At the same time, thousands of salmon start migrating along the riverbed. Their final destination in a journey that lasts some weeks is the Pacific Ocean.

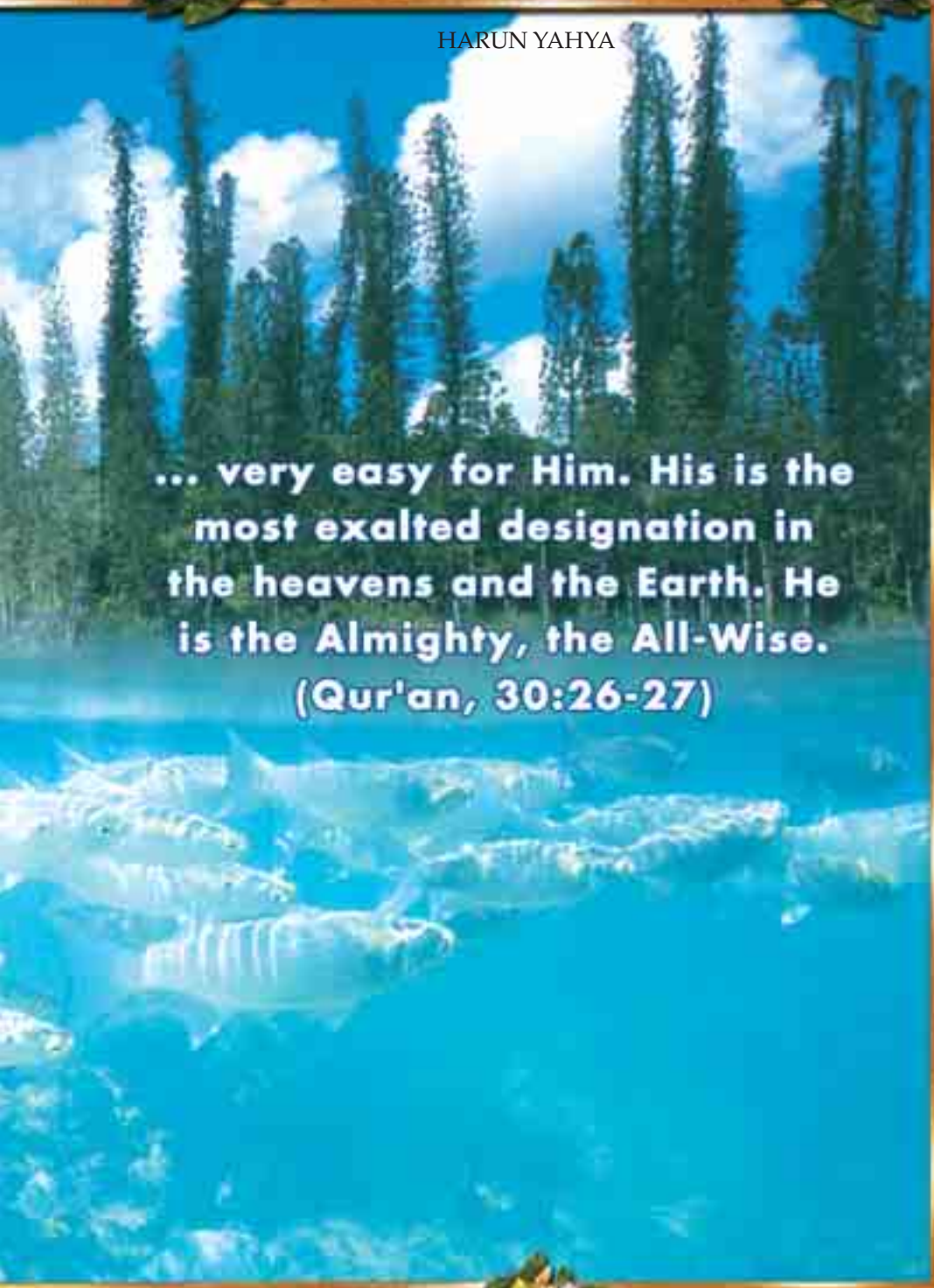
Salmon's physical constitution enables them to live in both fresh and salt water. As soon as they reach the ocean, a structural change takes place in their bodies that prepares them for saltwater life. In the ocean for the next one to four years, they will cover great distances, until they have matured and are ready for the final and most difficult journey of their lives. They are ready to return home, to the fresh running water where they were spawned.

Now they start swimming upriver against the flow in the same riverbed they once descended down to get to the sea. No obstacle they encounter defeats them. Even when faced with waterfalls, they continue on their way leaping up through tons of flowing water. They can even leap over 3 m (10 feet) obstacles. Indifferent to any wounds on their bodies, they continue on their way. And finally they reach the

Salmon risk their lives by leaping up waterfalls to return to the place they were spawned. To do so, they must find the river they emerged from some years earlier. In fact, they find the points where these rivers meet the sea as though they are using a compass or a map.

Salmon are created able to live both in fresh and salt water. The purpose of this is revealed in the miraculous journey they make, swimming hundreds of kilometers to reach their destination. Most Atlantic salmon cover a distance of nearly 4,000 kilometers (2,400 miles) in the course of their journey.




... very easy for Him. His is the
most exalted designation in
the heavens and the Earth. He
is the Almighty, the All-Wise.
(Qur'an, 30:26-27)

The migratory patterns of Atlantic salmon take place over a very broad area in the Northern Atlantic.

riverbed where they were hatched years before and lay their eggs. Shortly after fulfilling their duty, the salmon die.

It is hardly likely that without help, a person could manage to get to his birthplace thousands of kilometers away, by an arduous route he had only followed once before, without taking a wrong turn. But from birth, salmon can succeed at something that's impossible for humans. It is obvious that salmon cannot develop this ability by their own efforts and that coincidence cannot provide this species with such superior talents.

To understand the true wonder of the salmon's journey, consider what a salmon must take into account as it approaches a river:

First, it has to determine its route. A fish is hatched in some branch of a river quite a way inland. Rivers often have many branches. Accordingly, for the salmon to return to where it came, it must choose the right fork every time. Salmon manage to find their way on routes they have descended only once before, correctly choosing—again and again—the branch of the river that will take them to their natal streams.

Throughout the journey, salmon expends a lot of effort and an enormous amount of energy, but in spite of this it eats nothing at all, because the energy it will need on its tiring journey has already been stored. What's more, the amount of fuel required has been perfectly calculated and stored accordingly.

When examining such factors as the respective salinity of the sea and of the rivers, it emerges that salmon are perfectly equipped to live both in the sea and in freshwater environments.

In spite of all their difficulties, salmon successfully return to their birthplace to spawn; and have been making this incredible journey for millions of years.

All salmon that have ever lived have had the same success in this seemingly impossible task. How and why?

Research has shown that to carry out this journey, salmon possess a special sensory system—a natural compass that can perceive the world's magnetism to help them find their way in the ocean and navigate without error in the vast Pacific. But how do salmon find their natal streams? This requires a system completely different from a natural compass.

Research has shown that salmon are created with the most sensitive olfactory organs. Every branch of every river on Earth has its own chemical composition, and salmon find the one they were spawned in by following its scent.[48]

An Example of the Salmon's Incredible Journey

In reality, every river on Earth has its own unique chemical composition. The differences between these characteristic smells are so small that almost no animal could perceive them.

Except the salmon...

An incident at the Prairie Creek Fish Hatchery in North California exposed an incredible migration adventure.[49]

On 2nd December, 1964, a salmon judged by its size to be two years old was found in one of the rearing tanks among the hundreds of young fish. Its back fin bore the special metal clip of the hatchery, showing that this fish was one of those reared two years before, that had been released into the ocean. But how had it managed to return and get into one of the enclosed tanks of the fish hatchery?

The metal grill covering the entrance to the canal used to drain excess water from the tank was found to be broken. To return to its birthplace, could the salmon have gone into one of the hatchery's drainage canals and broken the cover to reach the tank?

There was no other explanation. But considering the route the fish had to take to get from the ocean, it would seem impossible.

To return to this tank where it was reared, the salmon would have to start its journey from where the Redwood Creek flows into the ocean. Then, after swimming upstream for five kilometers (three miles), the fish would have come to the first fork in the stream. After deciding which to take, it would have swum north—to encounter a more difficult decision, because this next fork would have presented two very similar signals. The hatchery where the salmon was reared lay right between the two branches of the river. The salmon would have thought first of taking the right fork, because the hatchery's water flowed down from the right.

Nevertheless, it chose the left fork and started approaching the hatchery from the rear.

Its reason for this surprising decision was concealed under a nearby roadway, passing over a canal that drained excess water from the hatchery. Normally, what came from this canal would have drained into the earth before reaching the river. But that year, there had been heavy rainfall, and water from the canal reached as far as the river. This shallow flow was enough to show the salmon the way.

The salmon must have followed the scent it recognized and left the river to swim along the drainage canal, swimming or dragging itself through water only 5 to 10 centimeters (2 to 4 inches) deep.

Then, after finding the right way through the complex water pipes in the tunnel, it would have found itself trapped.

It would have squeezed into the concrete canal under the hatchery's wooden footpath.

But the salmon didn't give up. It found the pipe 12 centimeters (5 inches) in diameter connecting the canal to the tank, then moved along this pipe to come up against a final obstacle: the metal grill at the end of the pipe. It got round this obstacle with a few hard butts of its head.

And so at the end of this incredible journey, the salmon wound up in the tank where it had come into the world two years previously.

When the staff at the fish hatchery had worked out the route, they wondered if perhaps some other salmon were returning to the tank. To investigate, they took up the wooden boards of the path and looked into the canal below. And there, to their amazement, were no fewer than 70 salmon, all with the fish hatchery's tag.

This extraordinary story gives us some important evidence about the creation.

It is interesting that each phase of the journey is carefully calculated.

It is a miracle in itself that after some years, a "programmer" orders the salmon back to the riverbed where it was spawned.

In addition, it is no coincidence that the fish has a natural compass that lets it find its way in the vast ocean, as well as the world's most sensitive olfactory receptor.

All this shows that the salmon is specially created for the migration route determined for it.

Each phase of the salmon's journey is achieved by means of finely calculated systems.

1) That the fish goes to the sea and then, after some years, returns to the riverbed where it was spawned is in itself a miracle. In addition, the fish has;

2) Genetic information that lets it adapt from fresh water to salt water,

Salmon in a stream

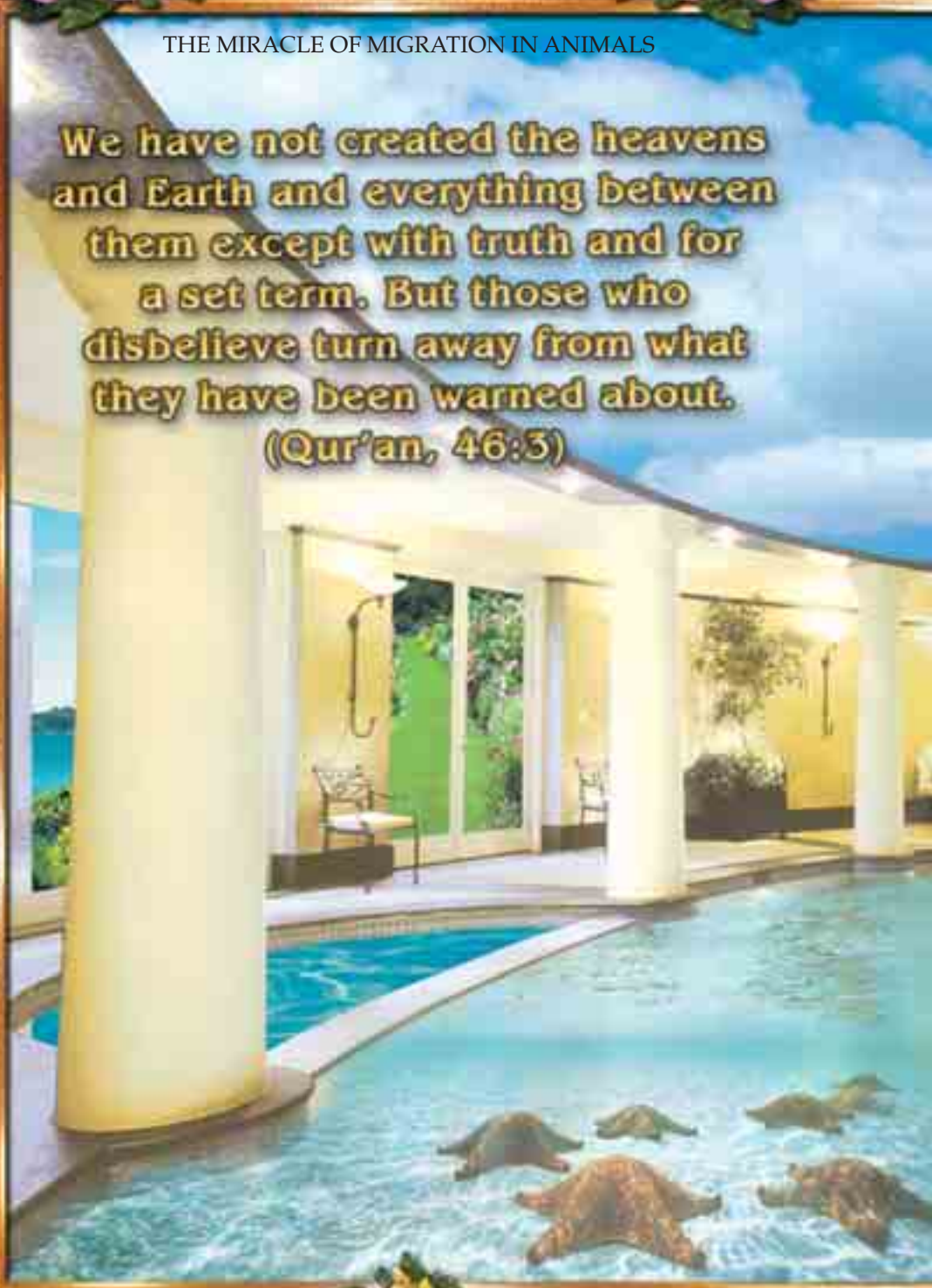
3) A natural compass system for perfect navigation in the vast ocean,

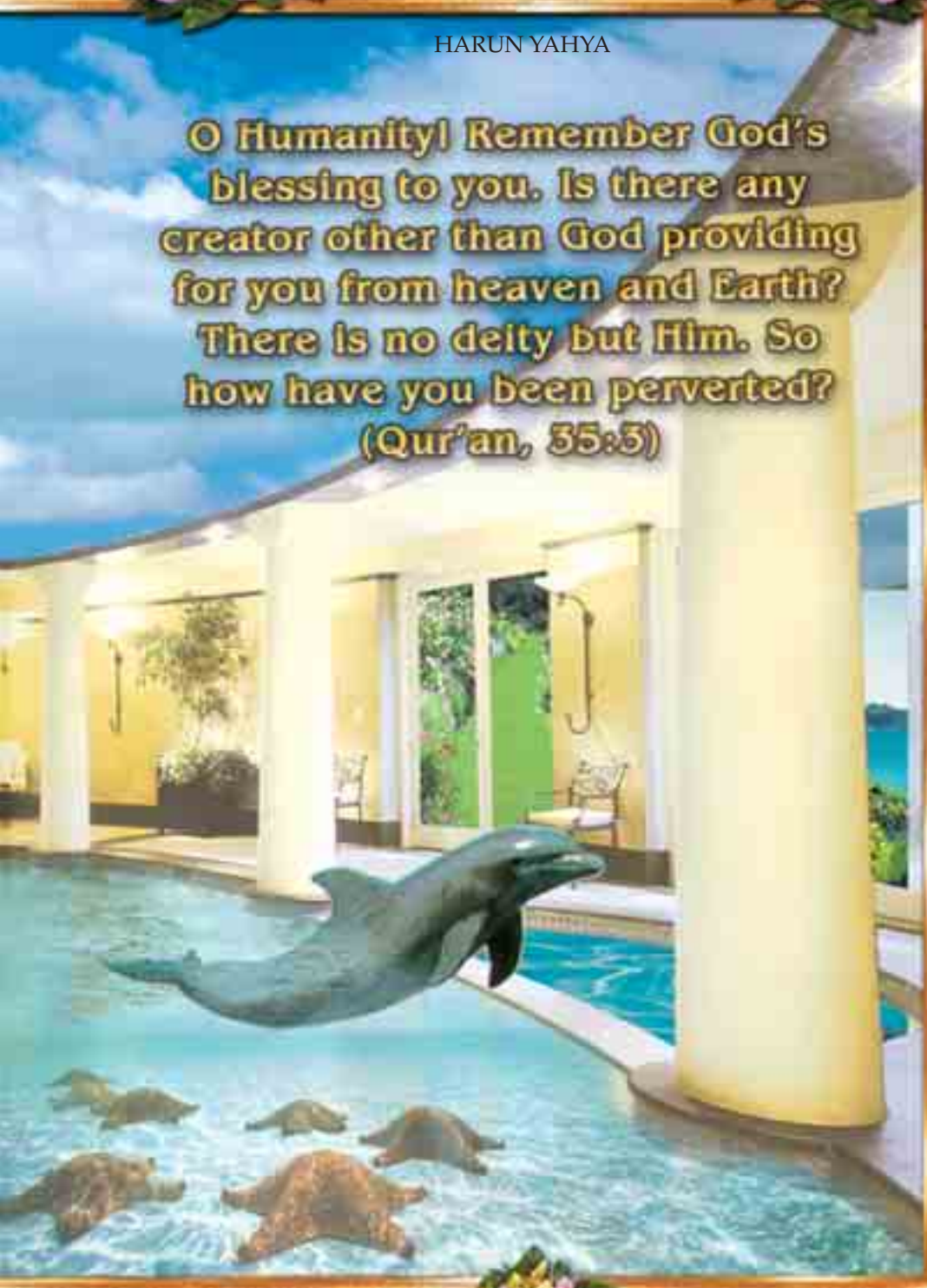
4) An exceptionally sensitive olfactory receptor that lets it detect the scent of its natal stream.

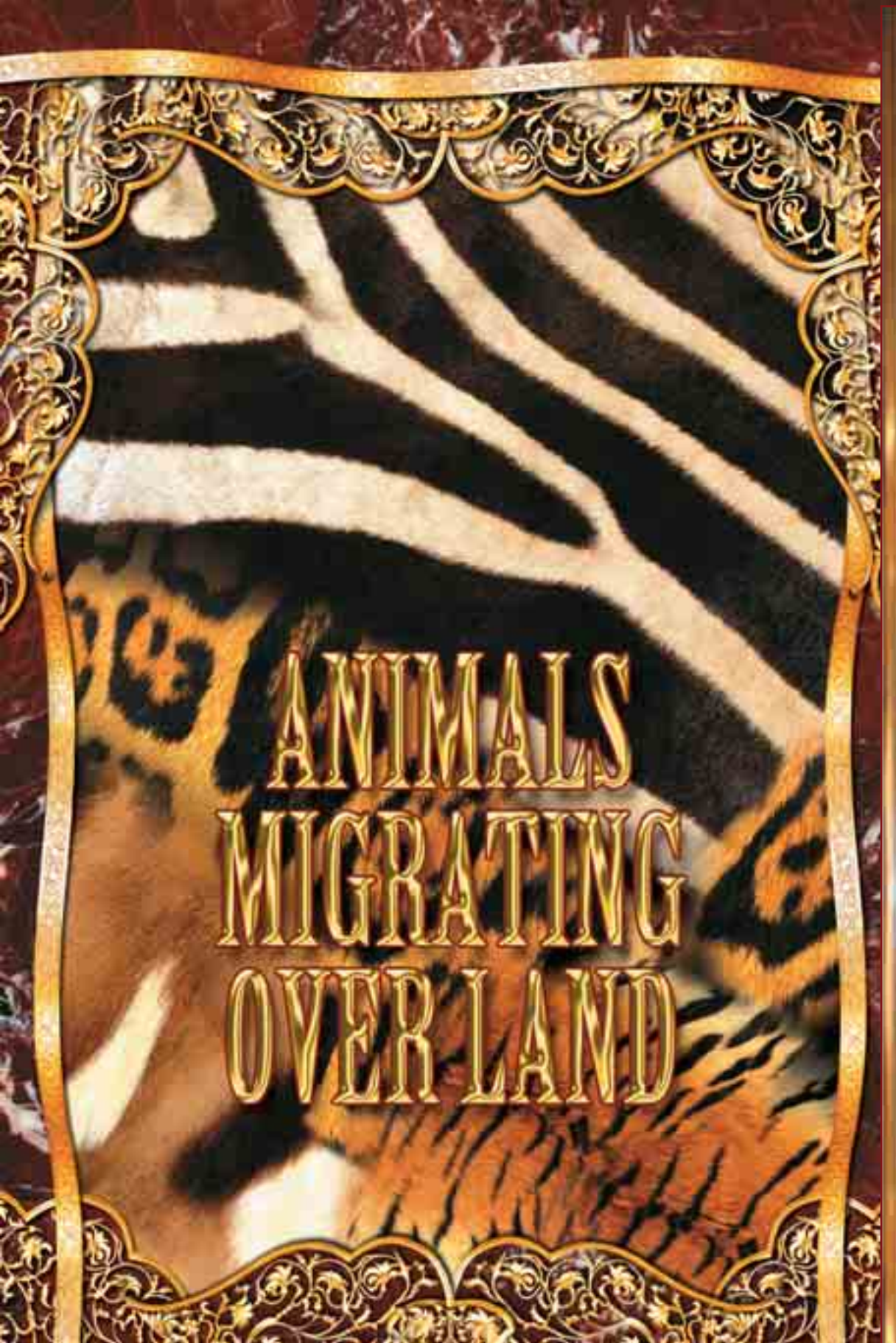
By itself, each of these exceptional systems is enough to destroy the "coincidence" theory put forward by evolutionists. The salmon's journey is a miracle of creation and planning that invalidates the word "coincidence."

The Creator of the salmon, together with all its exceptional characteristics, is God, the Supreme Lord of the universe. In a verse of the Qur'an, it is revealed as follows:

> **Everyone in the heavens and the Earth belongs to Him. Those in His presence do not consider themselves too great to worship Him and do not grow tired of it. (Qur'an, 21:19)**


We have not created the heavens
and Earth and everything between
them except with truth and for
a set term. But those who
disbelieve turn away from what
they have been warned about.
(Qur'an, 46:3)


O Humanity! Remember God's blessing to you. Is there any creator other than God providing for you from heaven and Earth? There is no deity but Him. So how have you been perverted? (Qur'an, 35:3)


ANIMALS
MIGRATING
OVER LAND

Migrating elephants, the largest living land animals, weigh between two to seven tons. One of the smallest migrating land animals, the Belding's ground squirrel weighing only 125 grams (4 ounces), starts migrating at the age of only two months. Some of these species, varying so greatly in size, migrate to find feeding grounds or more suitable environments, while others migrate for reasons not entirely understood.

Elephants

The daily feeding requirements of a mature elephant are very high. An elephant consumes around 75 to 150 kg (165 to 330 pounds) of food and 150 to 300 liters (40 to 80 gallons) of water a day, which is why an elephant community, roaming as a herd, needs a number of feeding grounds. Elephants journey constantly over hundreds of kilometers to feed on leaves, tree bark, fruit, grass and plants. They spend 70 to 90% of each 24-hour day either feeding or moving towards new sources of food. The remainder of their time is spent bathing, drinking, resting and sleeping. Usually they'll spend up to a few days in one place before moving on, since if they do not, they may totally exhaust the vegetation in that area.

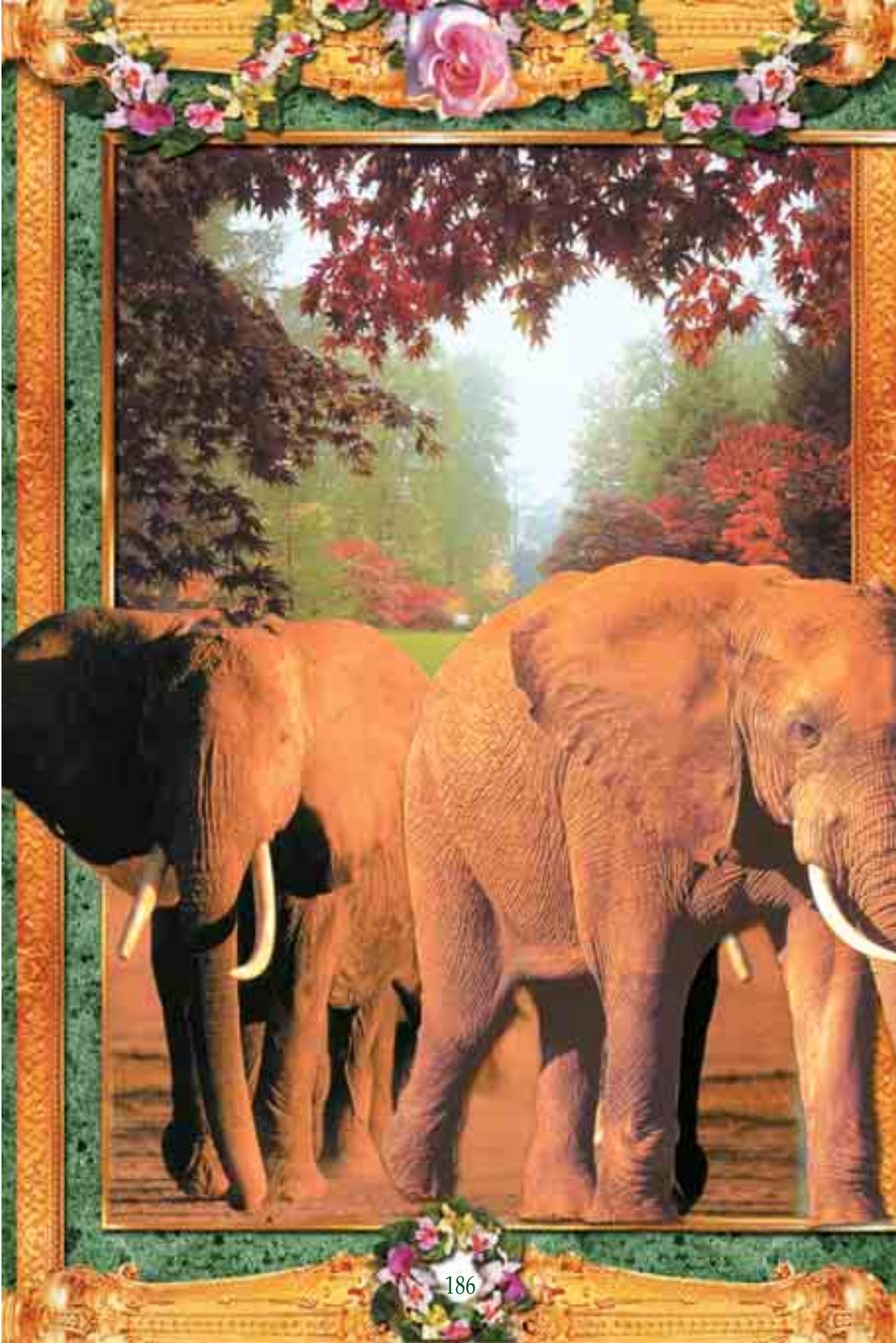
Nowadays, elephants live principally in East Africa and in the Far East, especially in Sri Lanka. Their migration to new feeding grounds occurs mainly when there is no rainfall. For this reason, elephant herds are more common in the dry season. Rainy season is best

suited for calving, so mating and birth take place in the rainy season. The gestation period in elephants lasts 22 months, the longest in all land mammals, so that the same weather conditions prevail when they become impregnated as when they give birth, so that calves are born when food is abundant.[50] This perfect timing in giving birth is remarkable.

Migration of elephants to find food in areas of high rainfall is still a mystery, in spite of research into how these animals determine which direction to travel in, and what factors they use to determine the right time to migrate.

Only a number of theories have been put forward. So far, research suggests that elephants make use of the Sun, Moon, and stars, landmarks such as mountains and rivers, as well as the length of daylight hours and climatic changes like heat, wind, and humidity. Nevertheless, no organ or system in their bodies has yet been discovered that would allow them to do so. It is thought that the elephants' keen sense of smell and their skin's extreme sensitivity to detect wind direction play a role in their migratory movements.

All these suppositions and deductions have one thing in common: These animals must have an accumulation of knowledge to de-



termine direction by the position of heavenly bodies. Professional route-finders need years of training in mathematics and physics, yet these creatures need no maps, chronometers, compasses, or charts to find their way with certainty.

This is enough to prove that they have been created by a supreme Creator Who equipped them with whatever they require. This Creator is God, Lord of the Earth and the heavens and all that lies between. God's power is infinite and incomparable. Humanity's most important responsibility is to live as He desires, understanding this truth and praising Him:

> **O humanity! Worship your Lord, Who created you and those before you, so that hopefully you will guard against evil. It is He Who made the Earth a couch for you, and the sky a dome. He sends down water from the sky and by it brings forth fruits for your provision. Do not, then, knowingly make others equal to God. (Qur'an, 2:21-22)**

Compass

Since the 12th century, ocean-going explorers have used magnetic compasses to determine their route. The first compasses consisted of no more than magnetized needles suspended on strings to show the north. Later, these needles were fixed on a pivot at the center of a dial.

Cross-staff

Above left: This instrument, popular with 16th-century navigators, was used to measure latitude. One end of the staff was held at the navigator's eye. The cross-piece was then slid forward or back until its upper edge lined up with the Sun or pole star and the lower edge with the horizon. The point where the cross-piece cut the scale on the staff was noted, to be converted into degrees according to a table.

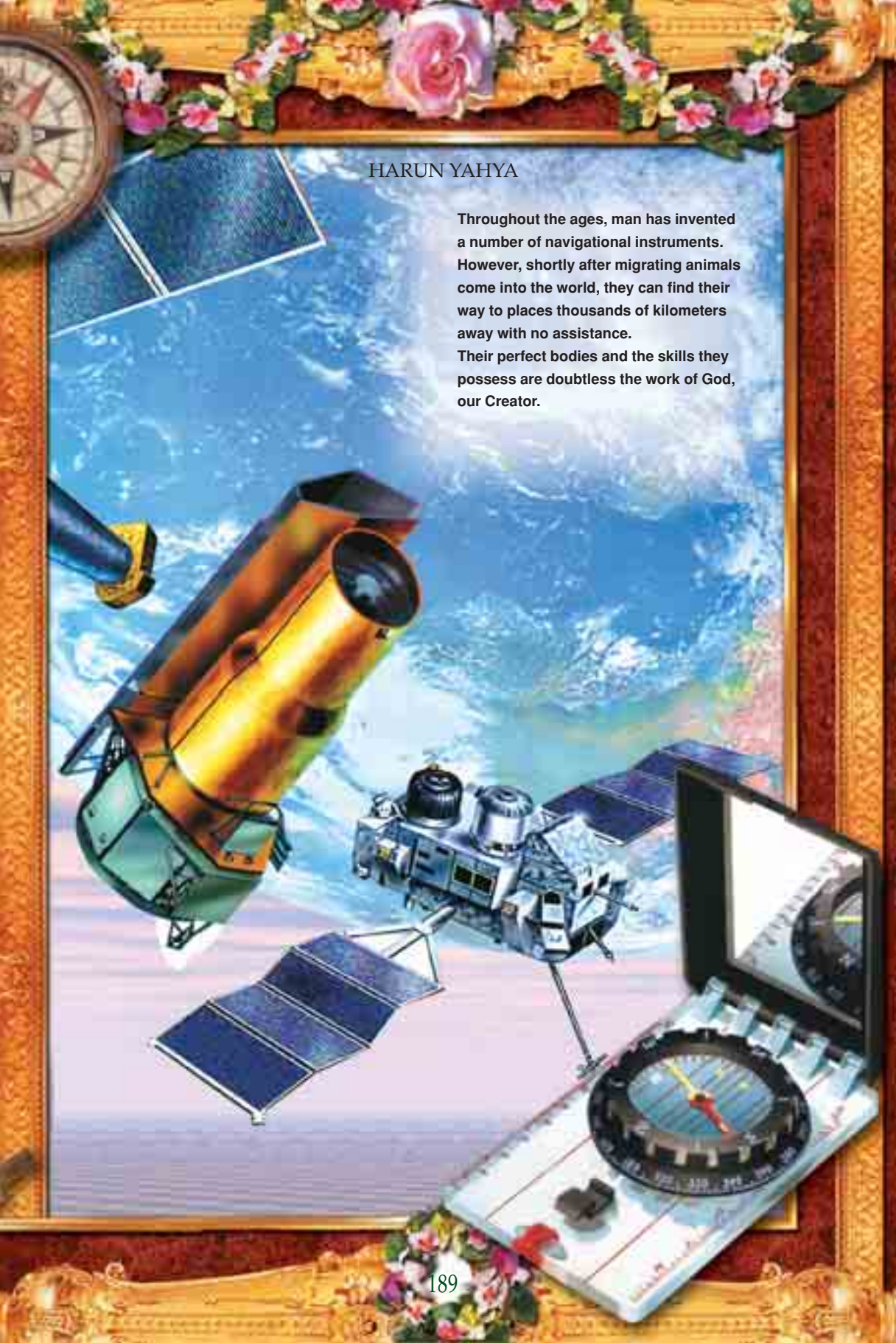
Astrolabe

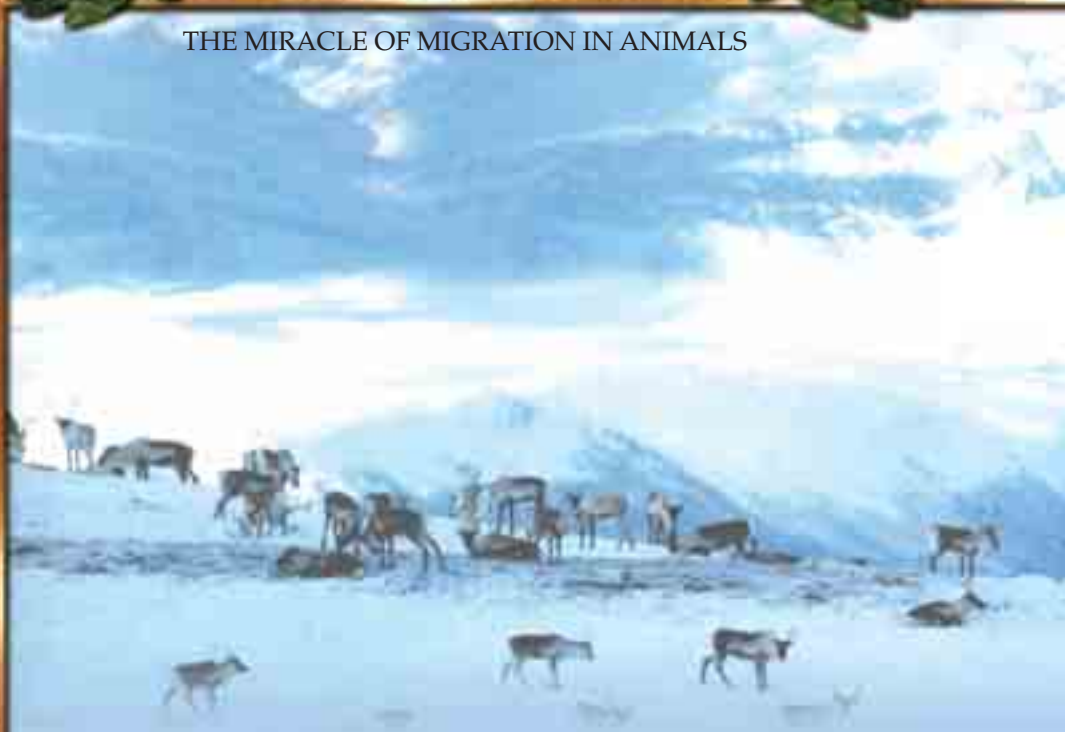
Above: Arabian astronomers made a two-dimensional model of the heavens. The instrument was suspended from a cord so as to hang perpendicular to sea level, while the user could sight a star or the Sun through two small holes in the plates on its moveable vane, and read its altitude from the graduated scale around the rim.

Sextant

Right: The English navy invented the sextant in the mid-18th century. It could measure latitude to a degree of accuracy of 0.01 by means of a mirror arrangement. The navigator views the Sun through the telescope and reads its angular distance above the horizon off the scale. The data is then used to calculate the ship's position.

Throughout the ages, man has invented a number of navigational instruments. However, shortly after migrating animals come into the world, they can find their way to places thousands of kilometers away with no assistance.
Their perfect bodies and the skills they possess are doubtless the work of God, our Creator.

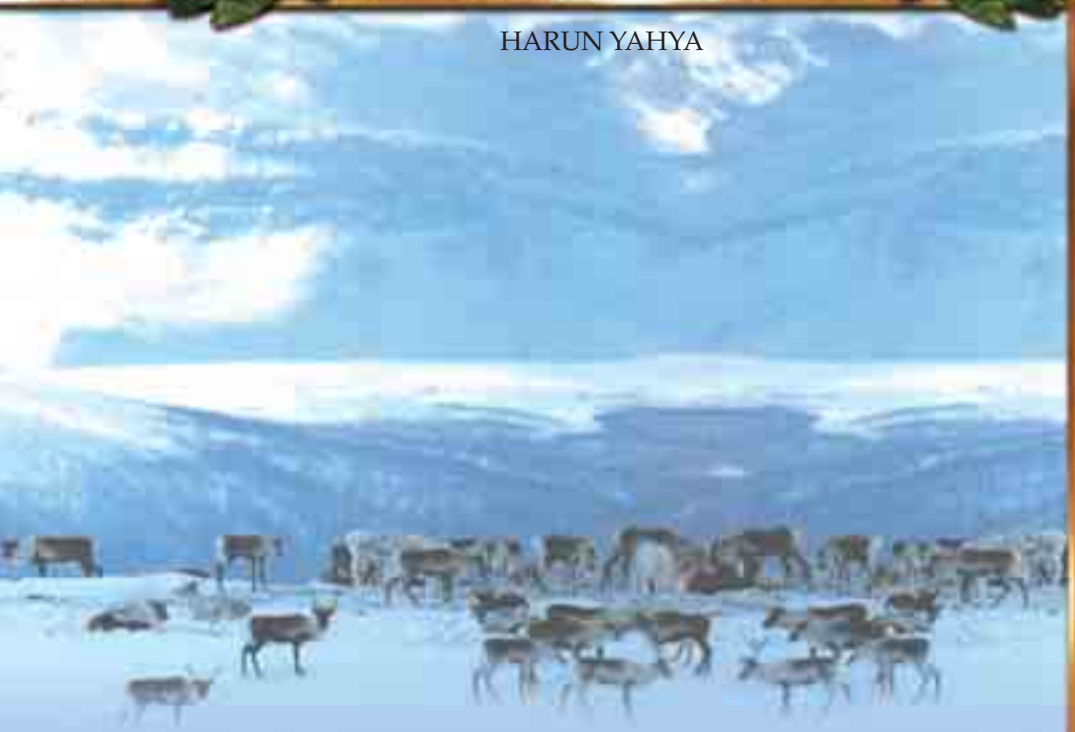




Caribou Migrations

The barren-ground caribou (*Rangifer tarandus*) is one of the longest distance travelers of animals migrating overland. They generally inhabit regions where winter is severe, but these animals are strong walkers. Satellite tracking of ten adult female caribou established that they traveled 4,350 kilometers (2,700 miles) from their forest winter habitat to the coastal plains. One cow from this herd set the world's record for the longest journey by land mammals at 5,055 kilometers (3,140 miles) in a year.[51]

The reason for caribous' migration varies according to the season. In spring they travel from their winter habitat to where they will give birth to their young. Pregnant females start their journey while the ground is still frozen, and the calving grounds are also snow-covered when they arrive. But they must find food when their young are born, and they give



birth in places where there is an abundance of flower buds of cottongrass and other vegetation. They stay in the region for 7 to 10 days to feed.

It's not yet known exactly what environmental signs influence the start of migration, but a group of pregnant females was observed to adjust their rate of migration. This group of cows was delayed on account of the depth of the snow. But once migration began, they traveled more than 40 kilometers (25 miles) a day, arriving where they were to give birth at the same time as another group of cows that had set off a month before them, having covered a distance of only 6 kilometers (3 1/2 miles) a day. This is an astounding indication of consciousness. Whatever the conditions, God has inspired these animals to be where they should be, at the time they should be. Otherwise, it wouldn't be possible for an animal to calculate the distance to the place where it will give birth, how many days remain until that time, and how far it should travel every day to get there on time. A caribou does not have such powers of judgment.

For the time of the migration, the caribou waits until the conditions are the most favorable—when the ridges are exposed to strong winds, when the lakes are frozen over, and the snow is either shallow or crusted. The deeper the snow, the more energy they will have to use. When forced to walk in deep snow, they march in single file, and an adult female usually takes the lead. She opens a path in the snow so the others use less energy following her. After a few hundred meters, another caribou takes over the lead.[52] This is clever organization, and it can't be said that caribou do this of their own free will, displaying self-sacrificing behavior by conscious agreement among themselves. It is

not possible for an animal to develop such a method and have the others agree. But since these animals act in this way from the first moment of their existence, they must have been taught this behavior. And no doubt, the One Who has taught all caribou from their very first moment in time is their Creator, our Lord God.

Deer that Assess the Nutritional Value of Plants

As already stated, caribou are constantly on the move; and what drives them to this activity is the search for food. The basic forage is lichen, which is an easily digestible, but slow-growing plant. The deer

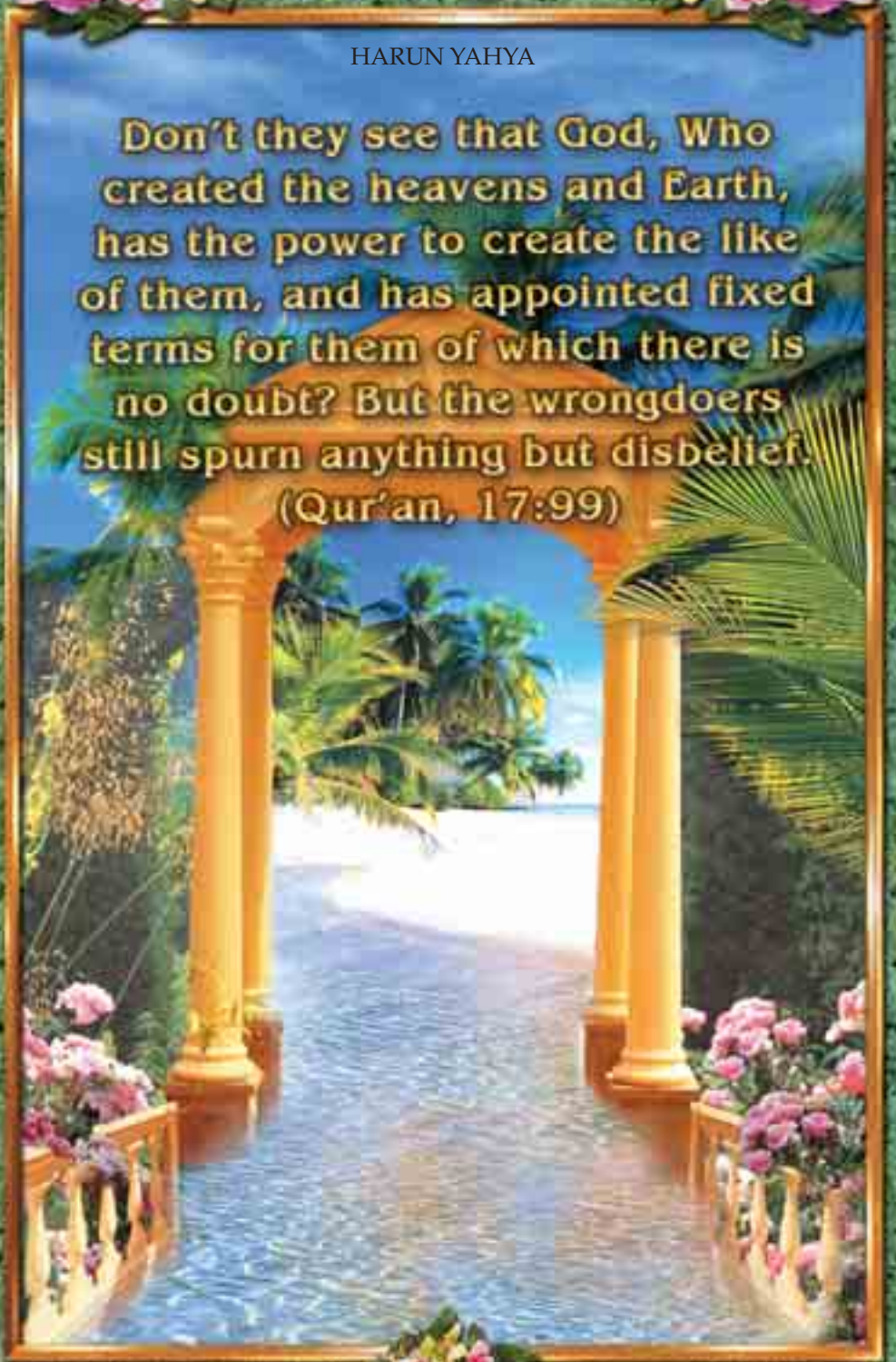
usually winter where there is an abundant supply of lichen but little snow, making it easier to reach the food supply. In summer, they need protein and minerals to produce milk in order to suckle the newborn fawns. And lichens contain very little of these.

The nutrients in plants vary according to latitude, altitude and soil composition. At high latitudes, plants are rich in protein and minerals as well as being easy to digest—but only at the beginning of the growth season, not in all seasons. As if they were aware of this fact, caribou move to such areas at the beginning of summer.

Further into the summer season, the nutrient value of these plants is gradually reduced. As temperatures drop and snow starts to cover the ground, lichen once again becomes the most suitable food, and for this reason, caribou start migrating back to their winter grounds. It is not possible for these animals to think like botanists or geography experts and know which plants grow at what season at what latitude, what nourishment these plants contain, and what direction they need to go in to reach them. But these animals consistently display exactly the right behavior they need to continue their existence, which clearly shows that this behavior has been taught to them.

With endless mercy, Almighty God protects the life forms He has created. In addition to creating the deer's bodies to be totally compatible with the conditions under which they exist, God inspires their behavior at all times. These creatures live their lives with the inspiration of God, and each one of them is evidence of His infinite power:

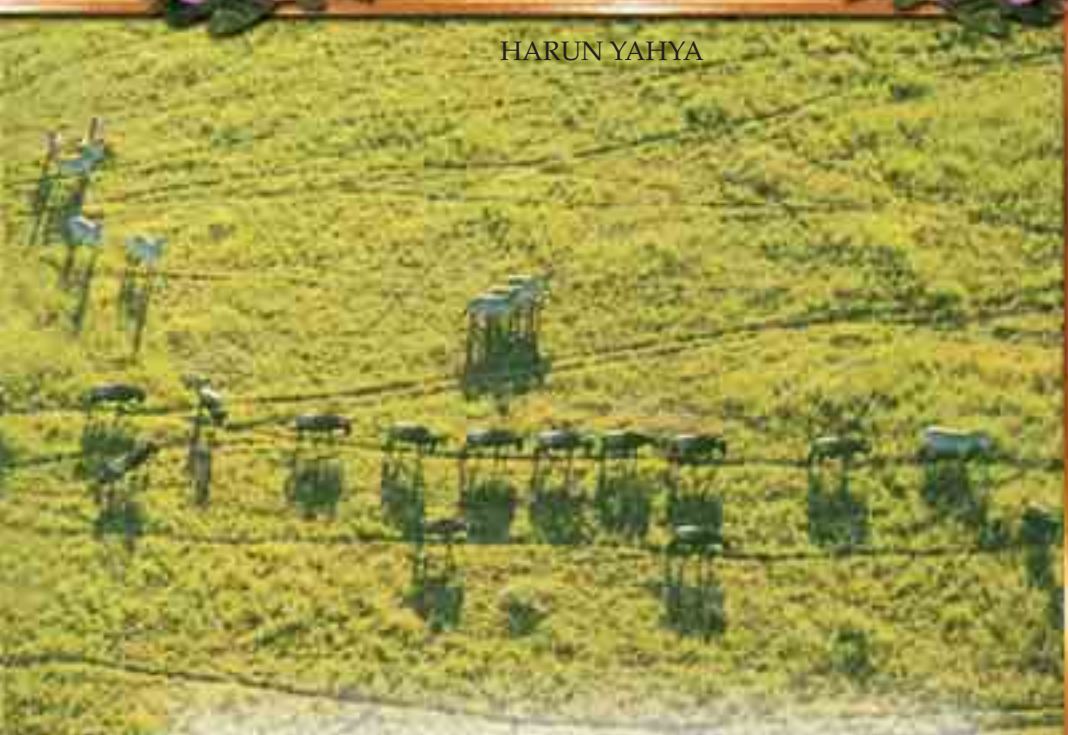
> **The Originator of the heavens and Earth. When He decides on something, He just says to it, "Be!" and it is. (Qur'an, 2:117)**


Don't they see that God, Who created the heavens and Earth, has the power to create the like of them, and has appointed fixed terms for them of which there is no doubt? But the wrongdoers still spurn anything but disbelief.
(Qur'an, 17:99)

Wildebeest

For the wildebeest, life is a constant search for food and water, and for this reason they migrate. Wildebeest travel north from the Ngorongoro Crater Highlands in the east to the shores of Lake Victoria in the west as far as the Mara country in Kenya. This area of 30,000 square kilometers (11,600 square miles) is known as the Serengeti-Mara ecosystem. Their annual migrations in this vast area cover 3,000 kilometers (1,900 miles).

The wildebeest take routes similar to those they have taken before, but every year their movements vary slightly. How long it rains and at what time of the year has an effect on food availability and hence, on the animals' migration. At the start of the rainy season in November or December, the wildebeest move from the dry regions of the acacia woodlands in the north and west of the



ecosystem to the treeless grassy plains of the Serengeti. The wildebeest herds form a great mass that grazes as it advances. Even though each animal is on the move at all times, the herd covers a certain area for a week or so. They do not stay in one place for long, because there is not enough grass in their range to support such a great number of animals.

Crossing the Mara River

In some years, more than a million wildebeest cross over Kenya's Masai Mara reserve. In spite of the dry season, there is extensive grazing land in the area known as the Mara and Lamai Wedge in the northwest of the Serengeti. But to reach these rich pastures, the wildebeest have to cross the Mara River.

In July or at the beginning of August, thousands of wildebeest pour down from the northern Serengeti in order to cross the

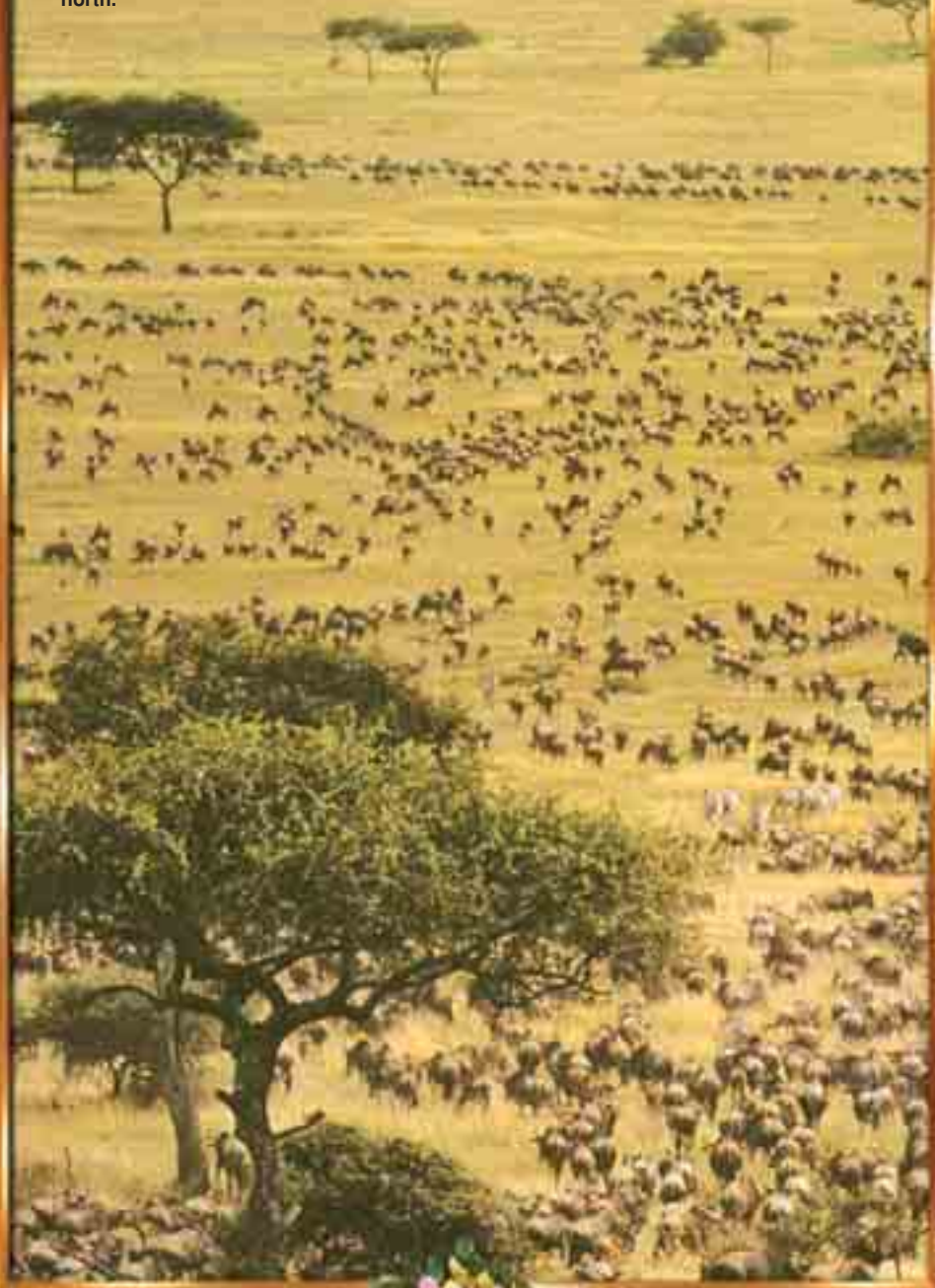
river. Sometimes they choose highly dangerous points and fall off cliffs or struggle to get through seemingly impossible mud flats. Some drown. Older, more experienced ones use places where they have crossed before, and the young follow them.

Whatever incites the animals to make this crossing—sometimes, purely because they want to drink water—once they have started, nothing can stop them. If motor vehicles or predators try to block their way, they cross at a different point, and have been known to reach the river through the forest.

Towards the end of September or October, wildebeest in the Mara region start returning to the Serengeti. The rains have started, and the herds move further south, following the rain. If the rain stops, they wait at the edge of the wood-

Towards May, plains in the Serengeti dry out, the grass withers, and the wildebeest start migrating north to the plains where long grass is more plentiful. Some years, more than a million wildebeest cross the Mara River to reach the Masai Mara reserve in Kenya on the other side.

When rains come to the Serengeti and the short grass grows green, the wildebeest start migrating back. When the rainy season ends in May, the dry season begins again. As the plains lose their green grass, the wildebeest are forced to start a new migration north.



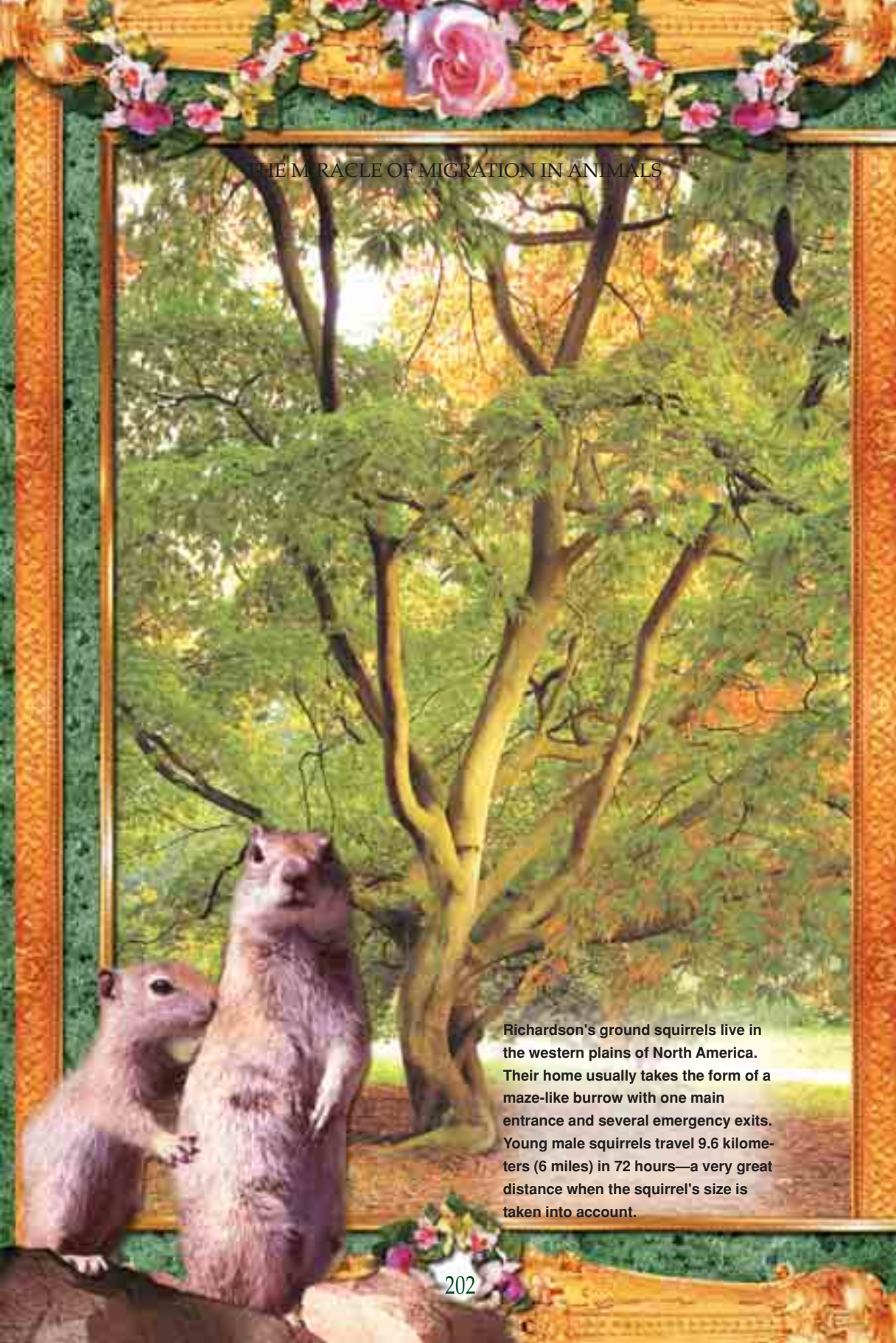
lands, and continue their migration when it starts raining again. In December they reach the plains of short grass.

The volcanic soils of the Serengeti are rich in nutrients, but just below the surface lies a hard layer of calcium carbonate. This hard layer does not admit trees' roots, but supports growth of perennial grasses. In the cold nights, these grasses' short roots absorb every drop of condensation. This enables them to survive even the driest days, and after the rain, they start sprouting.

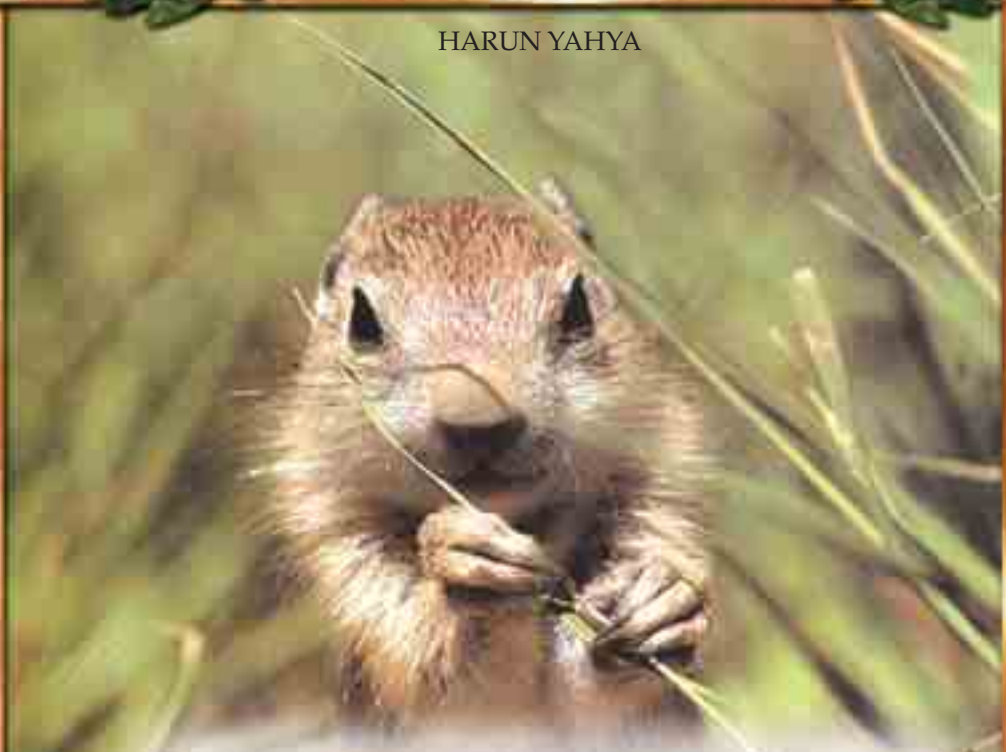
These Serengeti grasses consumed by the wildebeest have short stems with small leaves, a response to protect them from thousands of hungry animals. Being constantly grazed keeps the grasses short. Moreover, during grazing, the plants' growth hormones pass from the roots into new shoots, thus aiding new growth. The animals' saliva also has an important function as a growth stimulant.[53] Wildebeest do not stay long enough in the same environment to cause damage, and they also enrich the soil with their manure as they move from place to place.

God creates everything perfectly and provides for all. The harmony in the habits of the wildebeest and the special composition of the soils where they live, the special characteristics of the grass that grows there, and many other details all demonstrate that every phase of the migration phenomenon has been created.

Truly God, He is the Provider, the Possessor of Strength, the Sure. (Qur'an, 51:58)

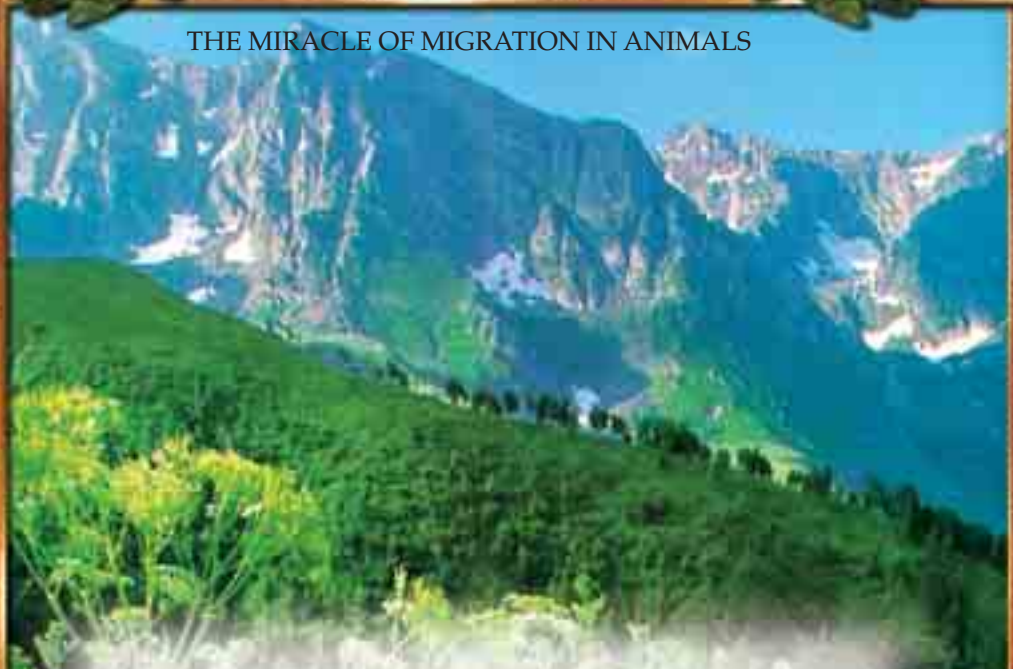


Richardson's ground squirrels live in the western plains of North America. Their home usually takes the form of a maze-like burrow with one main entrance and several emergency exits. Young male squirrels travel 9.6 kilometers (6 miles) in 72 hours—a very great distance when the squirrel's size is taken into account.



Migration of Ground Squirrels

Most ground squirrels live in groups on open grassland, eating grasses and seeds. At night they sleep in underground nests. The distances these little creatures migrate are very great in relation to their body size. At the age of only two months, when they are half the size of the adults and weigh only 125 grams (4.5 ounces), Belding's ground squirrels (*Spermophilus beldingi*) leave their birthplace, never to return. The tiny squirrels travel a distance of 1 kilometer (2/3 mile) before settling. This would be the equivalent of a 600-kilometer (370-mile) trek for a person weighing 75 kilos (165 pounds). In other words, in relation to their body weight, they cover a greater distance than the wildebeest's 3,000-kilometer (1,900-mile) annual migration cycle from the south of the Serengeti to Kenya and back.[54]



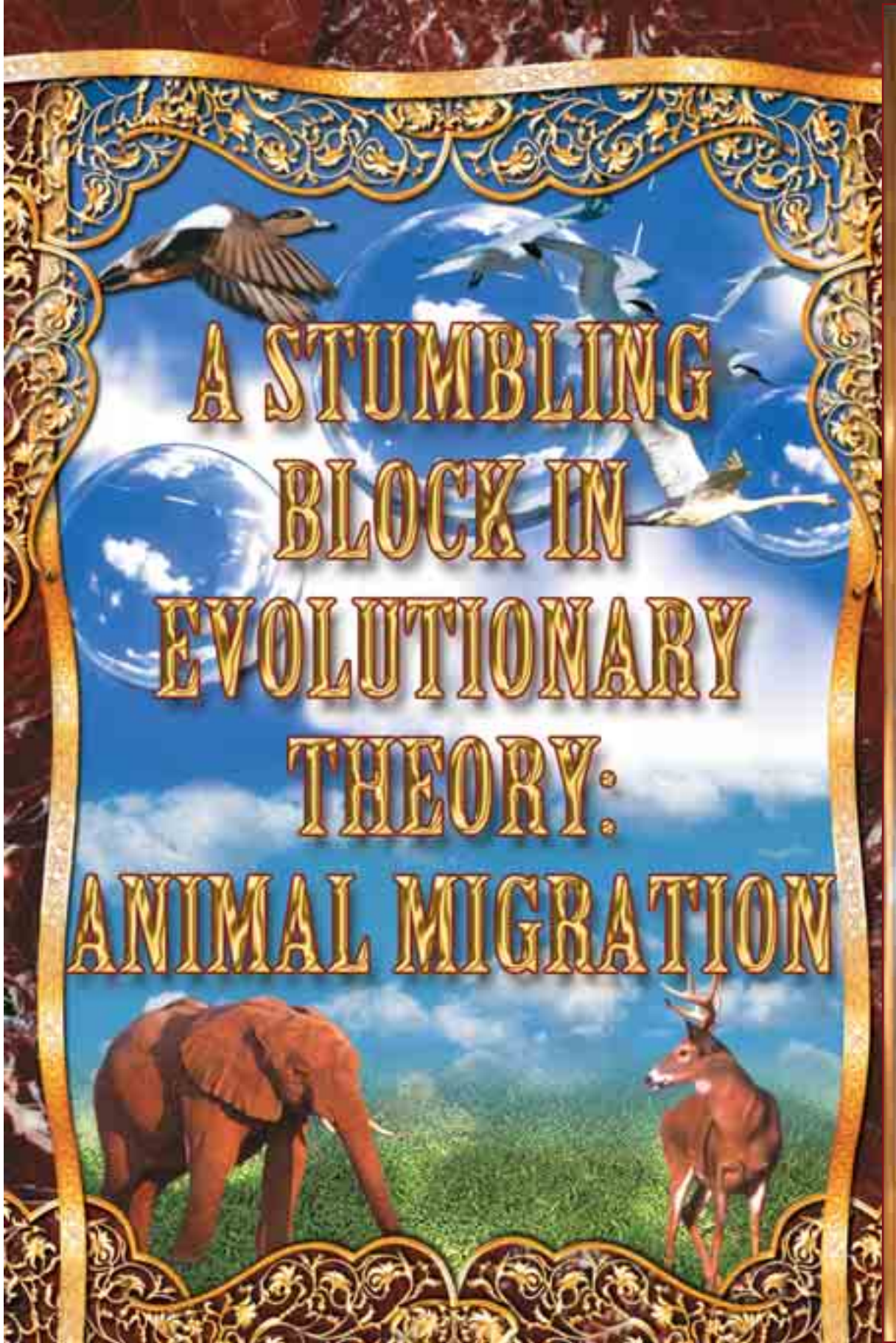
Lemmings: North's Small Migrants

These herbivorous rodents that inhabit the tundra zones of the North Pole and the Alps live in large communities, and regularly migrate as a group.

Lemmings are seasonal migrators. In winter, they live in dry places or on rocky slopes with a thick covering of snow. When the snowmelt starts filling their underground burrows, they move to moist summer pastures next to rivers or bogs. At the end of the breeding season, they move back to the winter grounds. This migration begins in July and lasts several months. First the adult males leave the region, followed by the females and finally, the young lemmings. When the number of lemmings is low, their migration does not last long. But every three to four years the numbers greatly increase, and they can migrate over very great distances.[55]

Lemmings' bodies perfectly fit their environmental conditions and lifestyle. They remain active throughout the arctic winter without freezing to death, because their heavy fur that grows in the winter reduces heat loss and protects them from the cold. They also grow longer front claws. With their claws, they dig tunnels under the snow to form their burrows, where they live, protected from the cold and their predators.

God, Lord of the whole universe, has created lemmings in accord with their environmental conditions. For example, collared lemmings' coats turn from brown to white for the winter. In summer they are brown, but in winter they are all white. Their white winter coats help them to avoid the predators that depend upon them for food.


A STUMBLING BLOCK IN EVOLUTIONARY THEORY: ANIMAL MIGRATION

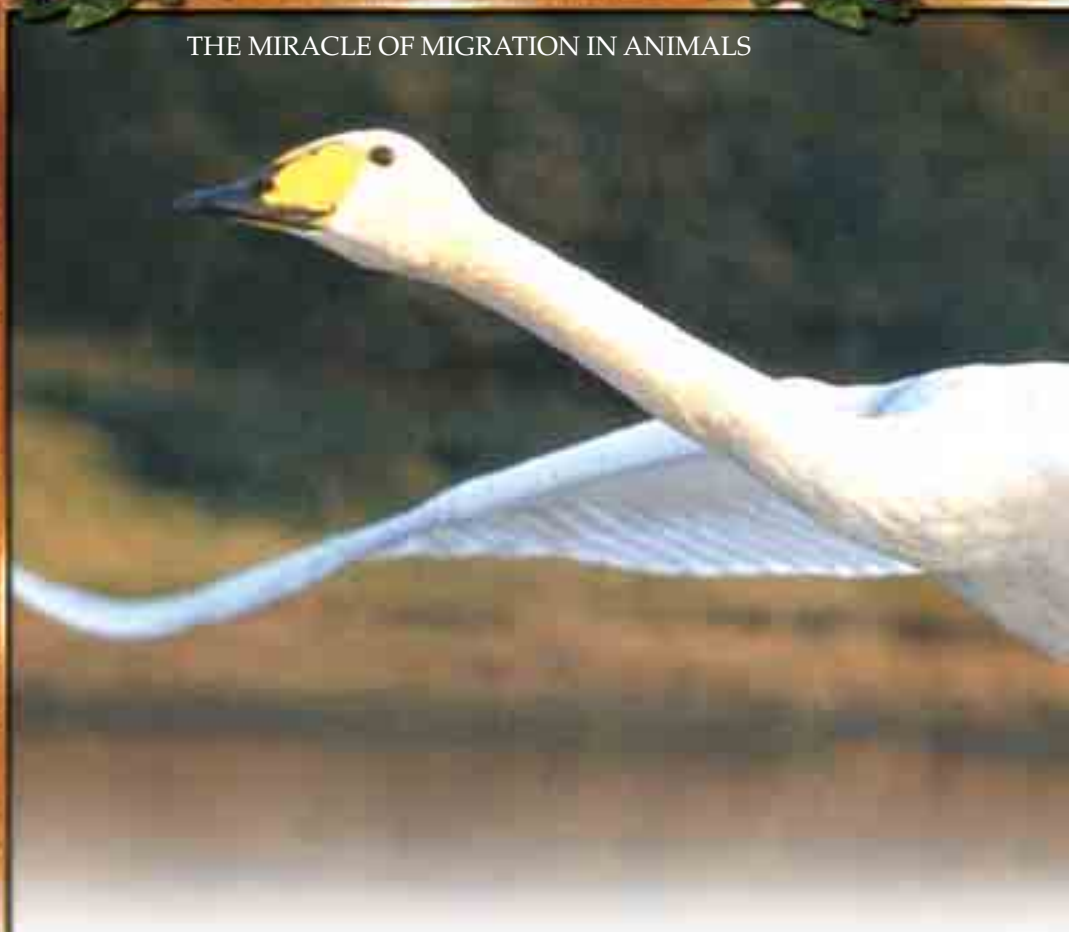
The preceding sections of this book have examined the complexity of animals' migratory behaviors and mechanisms. The very fact that such complex behaviors exist constitutes evidence that God has created these animals.

But how does Darwinist evolutionary theory—which claims that animals appeared as a result of natural effects and coincidences—explain migration? What claims do evolutionists make on the subject of migration?

This chapter offers a brief answer to this question and you will see that on the subject of migratory behavior and mechanisms, evolutionary theory comes to a dead end.

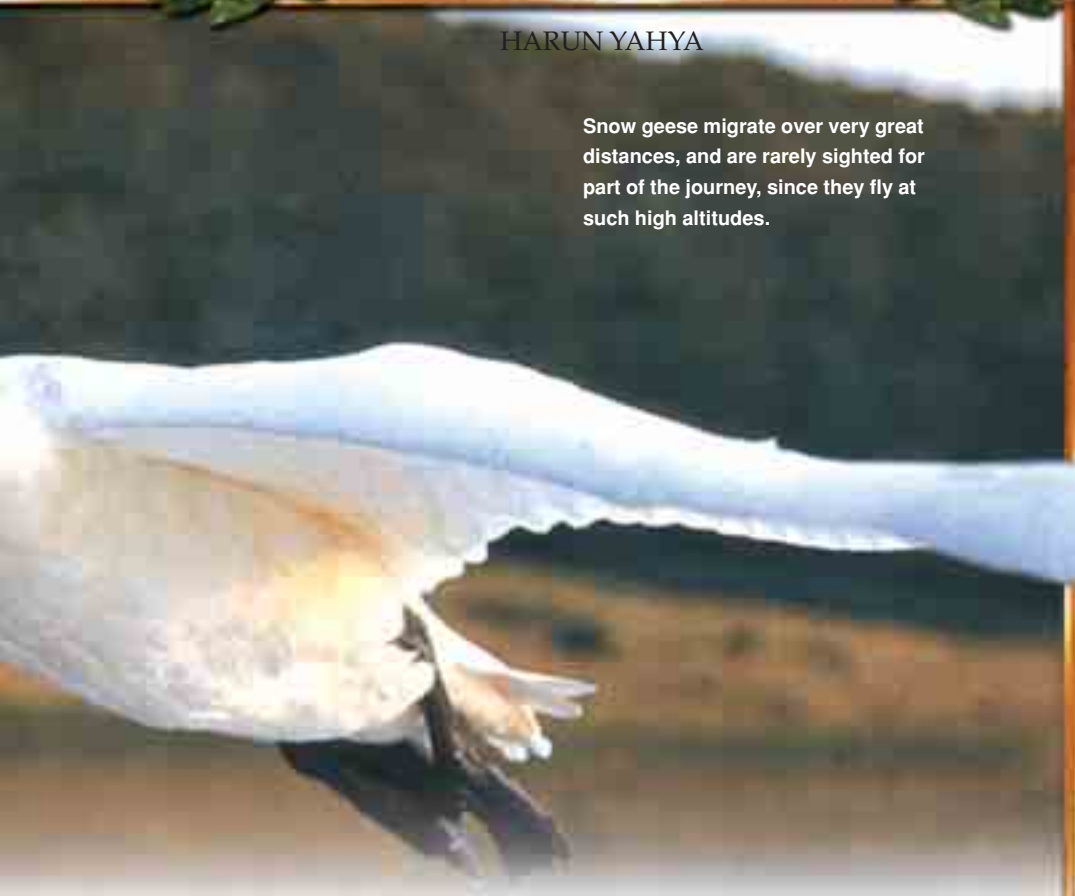
On the one hand, animal migration shows the superior knowledge of God in creation, but also exposes the invalidity of the claims of evolutionary theory. As we know, evolutionary theory tries to explain the root of animals' behavior to so-called evolutionary mechanisms—mutations brought about by coincidental effects and the unconscious process of natural selection. According to this theory, these unconscious evolutionary mechanisms can eventually explain every question on the origin, variety and behavior of animals. However, scientific developments have produced conclusions that totally contradict the evolutionists' expectations.

Findings in paleontology, biochemistry, anatomy and genetics have shown evolutionary theory to be based on false claims. The defeat of its claims by modern science is the subject of several of our books. (For detailed information, see *Darwinism Refuted*, *The Evolution*



Deceit, and *The Collapse of the Theory of Evolution in 20 Questions*.) In this chapter, it will suffice to touch upon how the evolutionists cling to their theories with contrived elucidations in their attempts to explain various aspects of animal behavior.

First, evolutionary sources offer no satisfactory or tenable explanations for animals' migratory and navigational skills. This is surprising, as the evolutionists often make up false evidence when they cannot find support in fields such as paleontology or molecular biology. Animal migration does not lend itself to such fabrications, which is why evolutionists' efforts to explain migrating animals are based on no evidence and go no further than a few biased hypotheses. To



Snow geese migrate over very great distances, and are rarely sighted for part of the journey, since they fly at such high altitudes.

evolutionists, it's a total enigma how animals reach their destinations without going astray, how they muster the energy to travel thousands of kilometers, how they develop strategies to cope with weather conditions, and how their memories are strong enough to let them remember the way back. The following is an admission that evolutionists are aware of the difficulties they have on this subject and the contradictions of their explanations:

> There's a lot of controversy about how migration developed, and a lot of competing theories. It probably is a mixture of competition and climate and food availability. And probably partly just accident.[56]

On the flight of migrating birds, the Danish ornithologist Finn Salomonsen has this to say:

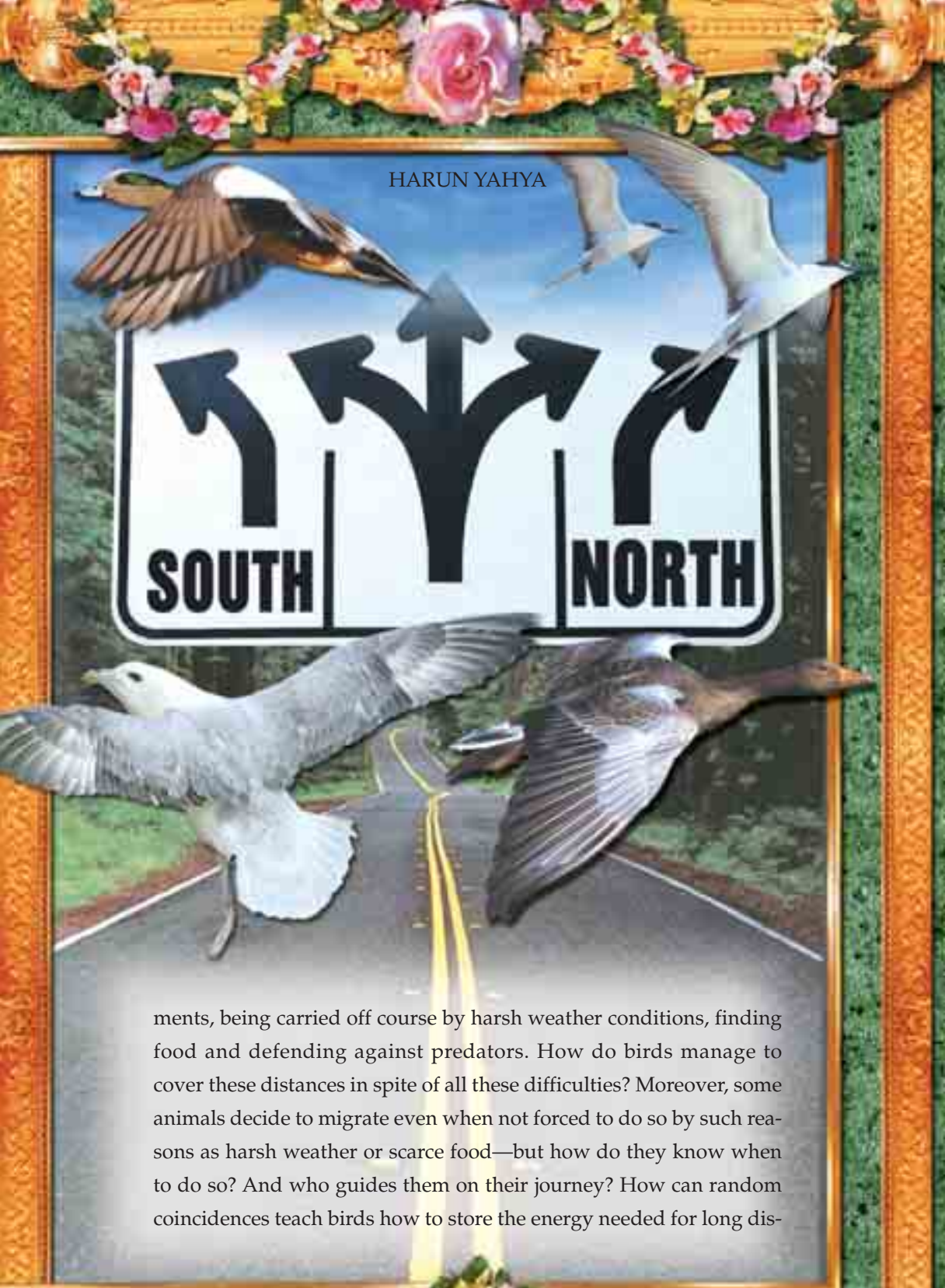
THE MIRACLE OF MIGRATION IN ANIMALS

> The ability of birds to find their way while flying is a mystery and a puzzle. Few other questions have over the years given rise to so many theories and speculations as this one.[57]

Evolutionary theory is based on the results of coincidental effects. The very word "coincidence" suggests unconscious, random, unplanned and haphazard events. Yet in their explanations, evolutionists use the concept of coincidence as a system of conscious, rational intelligence and a source of knowledge. Evolutionary sources refer to coincidence as a power with foresight that can take preventative measures, create perfect designs, and make decisions for a specific purpose. When animals' circumstances change, coincidence is described as making the necessary adjustments and innovations. These claims surely give rise to certain questions:

How can random effects create a characteristic in an animal, of whose effects themselves have no knowledge? How can they program it into that animal's genetic code so it can be passed on to future generations? It is doubtless impossible for coincidence to identify a need and create appropriate solutions. And it is beyond the realms of probability for an animal to differentiate by trial and error whichever characteristic serves it best from those that do not.

In migration, many animals cover vast distances with nothing to show the way or any instrument to guide them. When weather conditions and climatic changes are taken into consideration, as well as the size of the animals, this phenomenon takes on new dimensions. Migration's remarkable aspect lies not just in the length of the distances covered. Some migratory birds return to their former winter habitat after spending several years in one region. Some of their journeys are made by individual, solitary birds and during the night. And whether the journey is to be 1,000 or 10,000 kilometers (620 or 6,200 miles), great physiological preparation is necessary. Some of the problems that migrators may encounter include high energy require-



ments, being carried off course by harsh weather conditions, finding food and defending against predators. How do birds manage to cover these distances in spite of all these difficulties? Moreover, some animals decide to migrate even when not forced to do so by such reasons as harsh weather or scarce food—but how do they know when to do so? And who guides them on their journey? How can random coincidences teach birds how to store the energy needed for long dis-

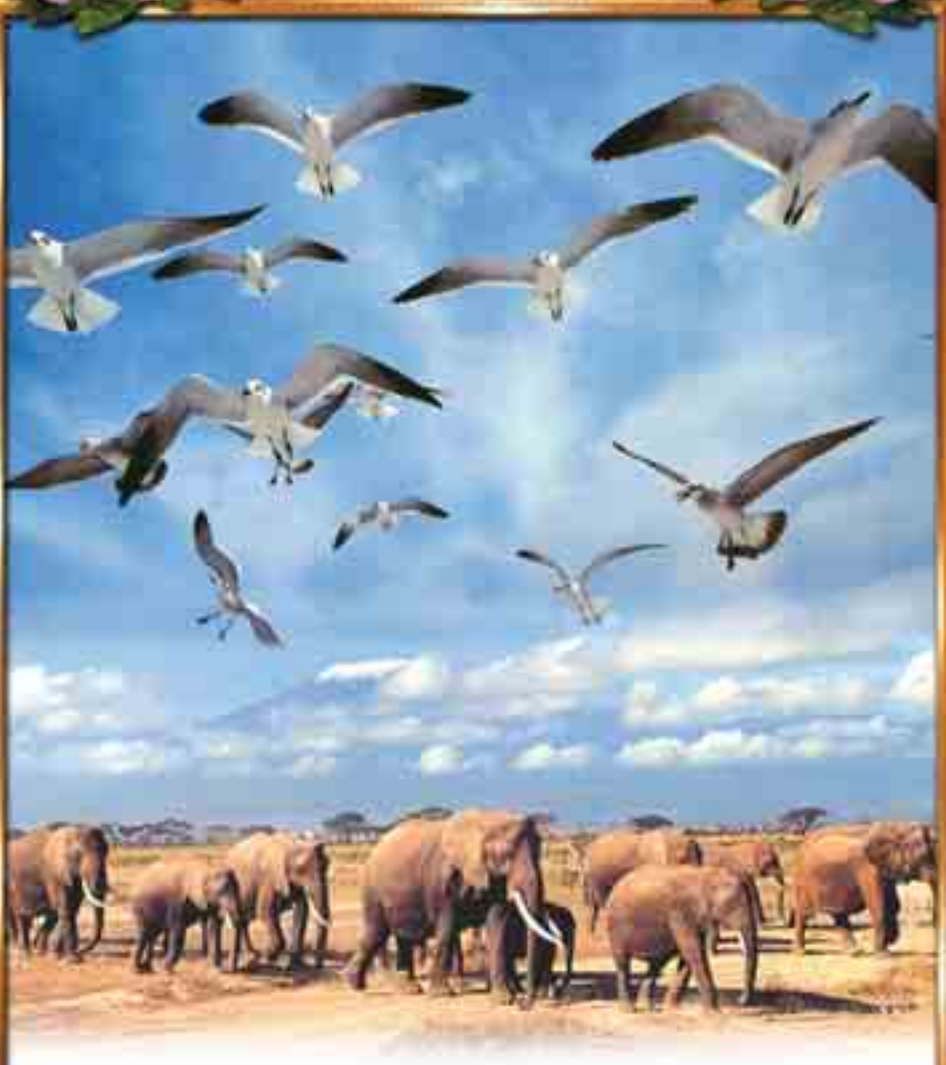
tance travel, navigate, and judge time? Darwinists pass over such questions with veiled explanations like the following:

> The migratory habit has evolved independently among many kinds of birds. Different species travel in different directions, to different places, at different times, and for different reasons. Whatever the causes, migration would not have evolved unless the benefits exceeded the hazards.[58]

Those who consider no possibility besides evolution draw biased, limited conclusions in evolutionary terminology that doesn't clearly express the intended meaning. They clearly overlook the remarkable aspects of animals risking their lives in crossing vast oceans and deserts. Why do they feel the need to set off on such a dangerous journey? How would they know they will find a suitable habitat where they have never been before? Deviating from the journey by even one degree could bring creatures to the middle of an ocean or desert, so how do they manage to navigate so perfectly?

Migrating animals are also very exact in the timing of their journeys. What makes a flock of birds take off at the same moment, as though in agreement with one another? Who calculates the same period every year? What makes the intricate mechanism known as "the biological clock," claimed to regulate annual behavior, work so perfectly? Who lets them know when the time has come and initiates their pre-programmed movement?

Evolutionary ornithologists claim that birds' migration routes are shaped by weather conditions, subject to change with each new generation. However, none of these elucidations explains how birds can establish that there are suitable climatic conditions and a plentiful food supply on the other side of the world, and can judge the best routes as though reading a map. What's more, evolutionists are unable to answer how these migration routes are passed on to subsequent generations.



There is no question of coincidences defining time and having knowledge of navigation, and making these conscious concepts manifest in living creatures. All these questions indicate the presence of a Creator possessing infinite knowledge and intelligence. As a verse of the Qur'an makes known, all living creatures are under the control of God, **"… there is no creature He does not hold by the forelock…"** (Qur'an, 11:56).

Natural Selection and Mutations Cannot Explain Living Creatures' Perfect Structures and Behavior

New-hatched chicks follow exactly the same migration routes used by previous generations, without the guidance of experienced birds. The hummingbird has a brain the size of a grain of corn and a body weighing 2 to 5 grams (0.07 to 0.1 ounces), yet it covers great distances perfectly. According to evolutionists, natural selection is why a living creature lives in harmony with its environment and migrates to a more beneficial region. But when evolutionary scientists claim that there is competition and struggle between living creatures in nature and that animals are still evolving by means of natural selection, they are making a great scientific blunder. Today, it is an accepted fact that natural selection has no evolutionary effect and therefore, falls far short of explaining the origin of living species.

According to natural selection, creatures whose physical characteristics make them best adapted to their environment have a better chance of surviving to breed. However, this advantage never results in the creature's evolution. For example, birds' tendency to migrate is no reason for large wingspan, as some evolutionists claim. Natural selection will never transform them into a different living species or provide them with any organ or characteristic that they didn't already possess. Natural selection can only encourage birds with large wings to fly greater distances, to where better living conditions prevail.

As a mechanism, natural selection was described before Darwin. For example, in a flock of birds threatened by freezing cold, those physically able to fly long distance will survive and over time, the rest will become fewer in number or die out. But Darwin gave natural selection a different meaning. By asserting that this mecha-

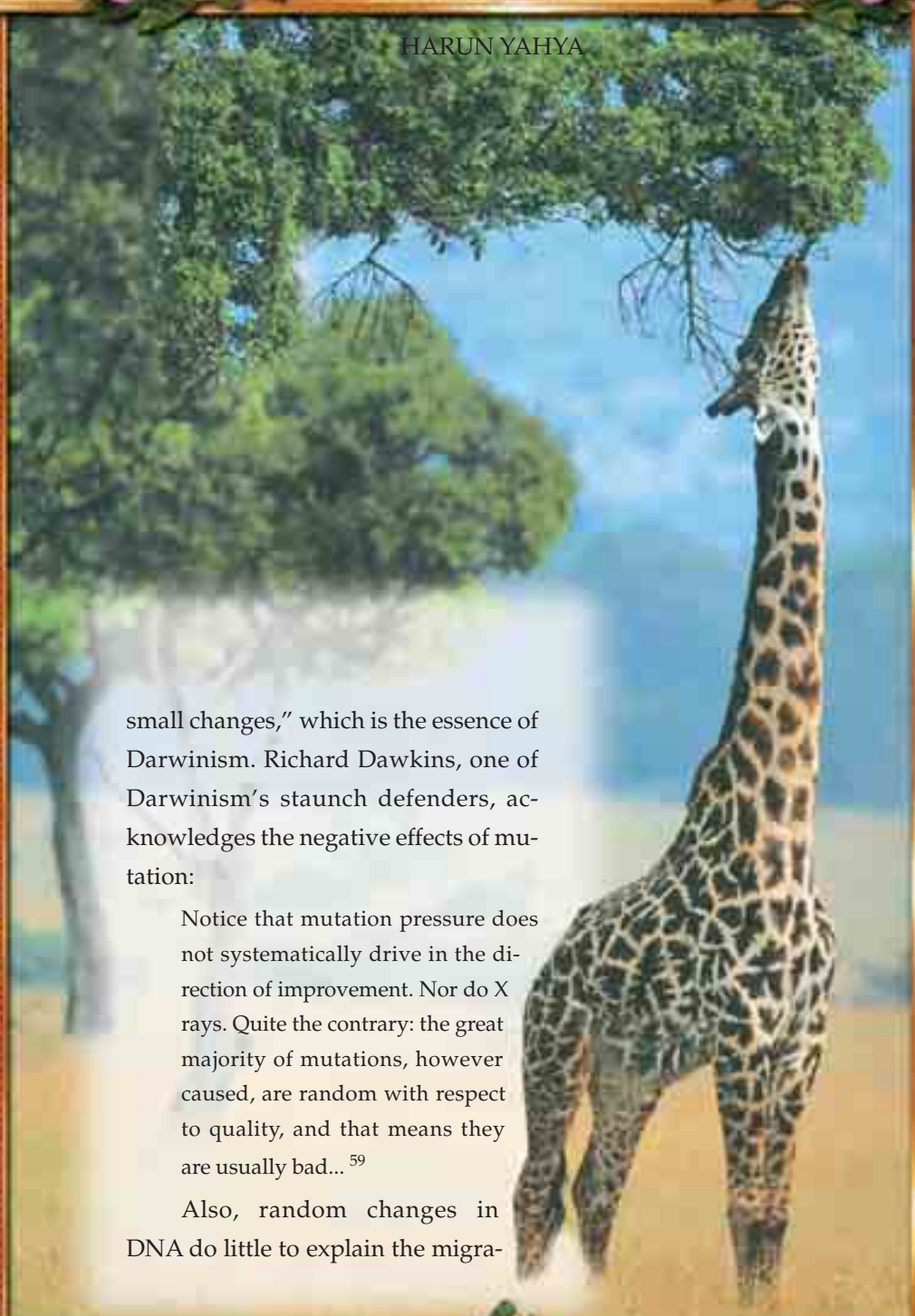
Hummingbirds beat their wings 20 to 80 times per second. That they do this without harm is an indication of their bodies' perfect structure.
Even though hummingbirds flap their wings millions of times during migration, their muscles do not sustain the slightest damage.

nism created new species over the course of time, he suggested the possibility of migration creating different species. But today, even evolutionists acknowledge that natural selection has no power to make living creatures evolve.

Natural selection adds no new information to the gene pool of living creatures, and thus cannot provide them with new characteristics. Some evolutionists also claim that the characteristics that creatures acquire through natural selection are passed on to the next generation. Before Darwin, the French biologist Lamarck advanced the theory that living species evolve from one another. In his book, *Zoological Philosophy*, Lamarck asserted that creatures passed on changes they acquired in the course of their lives to future generations. In his famous example, he claimed that giraffes originally had much shorter necks, but with each subsequent generation, their efforts to reach tall trees made their necks grow longer.

Lamarck's "transfer of acquired characteristics" was invalidated with the discovery of the laws of heredity. In the mid-20th century, the discovery of DNA proved that genetic information is encoded in the nucleus of cells of living creatures and could not be changed by "acquired characteristics." Even if an animal's neck stretched by a few centimeters over the course of its life, its young would still be born with necks of the standard dimensions. In short, scientific findings disproved Lamarck's theory as a false hypothesis.

But to disguise the invalidity of this claim, some evolutionists put forward the concept of mutation. To date, however, no useful mutation for developing genetic information has been observed. Accordingly, living creatures' "irreducibly complex" structures invalidate the concept of "gradual accumulation of



small changes," which is the essence of Darwinism. Richard Dawkins, one of Darwinism's staunch defenders, acknowledges the negative effects of mutation:

> Notice that mutation pressure does not systematically drive in the direction of improvement. Nor do X rays. Quite the contrary: the great majority of mutations, however caused, are random with respect to quality, and that means they are usually bad... [59]

Also, random changes in DNA do little to explain the migra-

tion phenomenon in animals. For example, how can a bird's flying for six weeks in a southeasterly direction, then four weeks in a northeasterly direction, be programmed gradually in its DNA's amino acid chain? Or how can a gene tell a fish when to migrate and where in the ocean it should go? No rational, intelligent person could agree that unconscious molecules can direct an animal so precisely as to when it should act and what it should do. But evolutionary biologists claim that selective genetics lets animals "bequeath" useful forms of behavior to future generations. Even though he is an evolutionist, Gordon R. Taylor criticizes this claim in his book dealing with subjects that Darwinism cannot explain:

But the plain fact is that the genetic mechanism shows not the slightest sign of being able to convey specific behaviour patterns. What it does is manufacture proteins. By producing more of certain hormones it could affect behaviour in an overall way – making the animal more aggressive, more passive or perhaps even more maternal. But there is not the faintest indication that it can hand on a behavioural programme of a specific kind, such as the sequence of actions involved in nest building. If in fact

> behaviour is heritable, what are the units of behaviour which are passed on – for presumably there are units? No one has suggested an answer. [60]

In saying, "Why a particular type of organism displays the behavior components it does is a result of evolution,"[61] Darwinists lead the evolutionary scenario to an even greater impasse. According to them, all seemingly conscious behavior in animals is to be explained as instincts directed by coincidences. However much you try to explain this using a different concept such as "instinct," coincidence essentially expresses an unconscious, random intervention. From the evolutionists' perspective, the idea of an instinct making conscious precautions to ensure animals' continued existence constitutes a serious contradiction. As already pointed out, one of the first to confess the weakness of claims concerning instinct was Charles Darwin himself:

> ... so wonderful an instinct as that of the hive-bee making its cells will probably have occurred to many readers, as a difficulty sufficient to overthrow my whole theory. [62]

Darwin was also aware that evolution could not explain the conscious behaviors he observed in nature. Intelligent logic shows the truth of this. But a number of evolutionists still try to explain Darwin's long-since-discredited theory with meaningless words. In spite of being an evolutionist, the famous German biologist Hoimar Von Ditfurth admits that animal behavior is a matter of rational intelligence and consciousness:

> … when the behavior we have been describing from the outset is considered, one is struck by specific criteria regarding the way these are "regulated by intelligence" in a very special sense. If aiming towards a particular aim and objective, predicting future events, and calculating the likely behavior and reactions of living species outside oneself are not signs of intelligence, then what are they?[63]

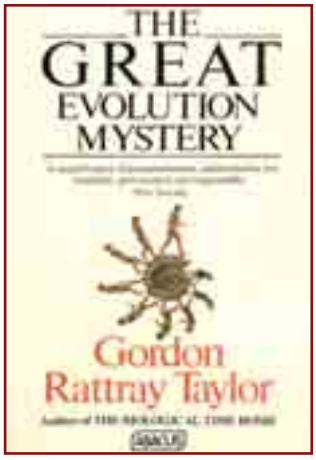
But then he resorts to demagogic methods so as not to acknowledge that the remarkable indications of intelligence are evidence of creation:

> In the past, naturalists did not content themselves with believing in a miracle when they encountered such phenomena, in other words they could not prevent themselves from thinking that God had equipped His creations with the necessary information for their protection. Yet such an explanation means suicide for the naturalist, or rather the denial of scientific truth and its existence. On the other hand, the way that modern science seeks to account for such phenomena in terms of "instinct" actually has very little meaning. That is because, contrary to what most of us think, regarding what has taken place as the work of instinct […] and this takes us very little further forward and prevents us finding an answer to the fundamental question…[64]

As the evolutionists are also aware, the word "instinct" has no elucidative meaning, but has become a refuge for those who do not acknowledge the inspiration of God. Evolutionary scientists use "instinct" to define certain innate aspects of animal behavior. Always left unanswered, however, are the questions of how animals acquire these instincts, and how instinctive behavior first emerged and was passed on from generation to generation. In *The Great Evolution Mystery*, evolutionary geneticist Gordon R. Taylor makes the following confession on this impasse:

> When we ask ourselves how any instinctive pattern of behaviour arose in the first place and became hereditarily fixed, we are given no answer…[65]

Certain evolutionists who do not admit the truth like Taylor try to get around these questions with veiled an-



swers that are really meaningless. One of the greatest mistakes is the claim that over time, instincts have been shaped into their present form and passed on from generation to generation. This is the same logic used by Lamarck, proven to be a myth more than a century ago. In fact, even evolutionary scientists acknowledge the implausibility of instinct and impulses being passed on from generation to generation. Taylor evaluates the claim that behavior can be inherited as "lamentable":

> Biologists assume freely that such inheritance of specific behaviour patterns is possible, and indeed that it regularly occurs. Thus Dobzhansky roundly asserts: "All bodily structures and functions, without exception, are products of heredity realized in some sequence of environments. So are all forms of behaviour, without exception." This simply isn't true and it is lamentable that a man of Dobzhansky's standing should dogmatically assert it.[66]

These creatures were not able to invent the extraordinary characteristics they possess, but were born with these characteristics. It is our Lord God, Whose intelligence and knowledge is supreme, Who creates them in a fashion that enables them to display these characteristics.

Evolution Cannot Explain any Aspect of Migratory Behavior

Basing the origin of animals on their so-called struggle for survival, evolutionary theory supposes that new species arise from the

gradual addition of small coincidental advantages gained in the course of this struggle over time. A small bird only a few weeks old sets off on a journey thousands of kilometers long, but its success is due to its having the necessary structure and perfect mechanisms. Accordingly, it's not possible for the necessary organs and behavior to develop in stages, because for any animal lacking the necessary equipment and skills, the chances of survival would be very slim, as an evolutionary source mentions:

> The risk of mortality during migration is great; the evolution of migration in the face of this risk is one of the aspects of this behavior that still requires explanation.[67]

But this impasse does not deter evolutionists from making fantastic speculations about migration. Their most publicized scenario is based on the retreat of icebergs, as is related in an evolutionary source:

> One widely held idea has been that glaciation explains the evolution of migration. Some believe that advancing glaciers pushed temperate zone birds into the tropics. When the glaciers retreated, the descendants of these birds returned to their ancestral homes. Others think that glaciers prevented tropical birds from spreading into temperate regions. When the glaciers retreated, these birds were able to spread into areas that had been ice-covered. Their descendants returned, however, to their ancestral homes in the tropics.[68]

There are serious contradictions in the explanations linking migratory behavior in animals to hereditary characteristics shaped by coincidental effects. Information encoded in an animal's DNA cannot create compatibility with environmental factors or be influenced by any aspect of an animal's behavior. As already explained, this unscientific logic emerged in an era before any knowledge of genetics. For example, even if migration in birds began in ancient times when moved to a different place as the icebergs retreated, that does not sup-

port the evolutionist claims of corresponding changes in genetic information. Wherever all the members of one species move, or however often they travel, it has no effect whatsoever on their DNA. In short, *migratory behavior is not added into the genes of living creatures.*

If migratory behavior is not exactly correct, it is disadvantageous to the species and can even be fatal. As evolutionists have also stated, during migration the risk of mortality is great and no living species has time to wait for random mutations to let it acquire accurate migratory behavior. It is illogical to accept that migratory knowledge, passed on genetically and which enables a bird to find a place it has never been before, has emerged as a result of mutations known for harmful effects.

The "planning" in migratory behavior is so complex that refusing to see it as the product of creation can be explained only with Darwinist dogmatism. For example, consider the preparations that start taking place prior to migration: Birds go into an accelerated feeding to store energy for their upcoming journey. Some birds double their body weight in this period of excessive eating known as "hyperphagia," which is part of the genetically controlled migration process. Interestingly, this behavior starts two to three weeks before migration, just before the food supply diminishes, which prevents the birds from experiencing lack of energy before their long journey. From the bird's point of view, this is an extremely effective precautionary mechanism. Evolutionists assert that all the mechanisms in this physiological adaptation are linked to random mutations accumulated in the bird's DNA, but they can show no evidence.

Another physiological mechanism related to migration that evolutionists cannot explain is the marked changes in birds' hormone levels. The neuroendocrinal system, responsible for nervous stimulation and inner hormone secretion, triggers diurnal changes affecting the pituitary gland and the pineal, the gland in brain for secretion of

the hormone melatonin related to sleep. The joint actions of the hormones corticosterone and prolactin are thought to stimulate nocturnal restlessness (zugunruhe), which increases during migratory times of the year.[69] The molecular structure of hormones playing a role in this complex endocrinal process is so finely calibrated that it's not possible for even one such hormone to appear by chance. Nor is there any scientific evidence of this. (For detailed information, see Harun Yahya, *The Miracle of Hormones*, Goodword Books, September, 2003.)

Another feature that cannot be explained by mutations is that some migrating birds fly at high altitudes. For example, the bar-headed goose, *Anser indica*, is known to fly over the Himalayas at an altitude of 9,000 meters (29,500 feet). At such altitudes, the atmosphere is lacking in oxygen, and the oxygen-carrying capacity in the birds' blood is increased by a high concentration of red blood cells. Unlike non-migratory birds, the hemoglobin in some migrating birds

is found in two separate forms, differing in their oxygen carrying and releasing capacities. This special creation lets the bird adapt rapidly to varying levels of oxygen availability as it moves between different altitudes.[70] This superior ability could be an advantage only if the bird's body was ideally created. Accordingly, the complex structure of living species, and the remarkably skillful behavior, are too perfect to consider the possibility of coincidence.

Evolution Cannot Explain the Root of Migration

Scientists studying and conducting experiments on migration have concluded that the mechanisms that make migration possible are genetically transferred. Two different such experiments are quite illuminating:

1) In one experiment, the eggs of the herring gull, a bird that does not usually migrate, were exchanged with the eggs of the migratory Lesser black-backed gull. Consequently, 900 hatchlings emerged in the nests of the wrong family. Even though their "adopted" families did not migrate, the Lesser black-backed gull hatchlings did!

2) Professor Peter Berthold, who has researched bird migration for some 20 years, is president of the Max Planck Research Center for Ornithology in Vogelwarte Radolfzell, Germany. Berthold and his team confined thousands of migratory birds in one place and studied their movements. The results were as follows:

a) The birds' migratory behavior showed an inner and annual rhythm. (These rhythms that organize animal behaviors which require physiological arrangements such as hibernation are based on a genetic "biological clock.") Although the birds were kept in a constant environment with fixed cycles of light and darkness, they showed a number of changes: weight gain, renewal of feathers, and

nocturnal restlessness at the appropriate times of the year—spring and autumn. Even though they had no natural environment to remind them, some program in their bodies prepared them for migration. The scientists concluded that this behavior was pre-programmed.

b) 97% of the captive birds began their activity at the same time as birds in nature set off.

c) Different bird species subjected to the experiment showed different levels of activity, appropriate to their own migratory behavior. For example, birds migrating over longer distances showed activity over longer periods.

d) Crossbreeding trials showed that the quality of migratory activity is population-specific and pre-programmed, or genetic.

Furthermore, birds in the experiment changed direction from southwest to south at the time when they would be expected do so on their normal migration crossing the Mediterranean near Gibraltar. Accordingly, birds have a mechanism that tells them not only how long the migratory activity will last, but also at what point in the migratory journey they must change direction.

Today, scientists agree that these exceptional skills are pre-programmed in birds, as is related in an article in *Science* magazine:

> There is good evidence that young birds are equipped with endogenous migratory programs, which tell them roughly how many days and/or nights that they must fly, and in what direction.[71]

Just as other researches revealed that penguins used the Sun to navigate, scientists also discovered that penguins have a biological clock that is adjusted in accordance with their original location. So the Cape Crozier penguin migrated according to Cape Crozier time. In addition, they discovered that young penguins were just as adept at navigating as the adults, meaning that penguin chicks are born with this knowledge.[72]

Although the mechanisms that play a role in migration have not been definitively brought to light, it is widely believed that they emerge at birth as pre-programmed behavior. But how can complex behavior be transferred genetically? Is there some program in the genes to direct behavior?

Even if migratory behavior in animals is transferred genetically, how is this heredity achieved? Animals display exceptionally complex detailed migratory behavior. On flights covering thousands of kilometers, do strings of amino acid in the genes determine the preparations beforehand and the directional and navigational skills during the migration?

If the answer is yes, and if a genetic program determines migration, this, too, constitutes a great impasse for evolutionary theory since the genetic encoding of such complex information cannot be explained by evolutionary mechanisms. As is the case with the origin of new organs and biological structures, this complex and detailed information cannot be explained by natural selection. Believing that information defining migration is produced by random mutations is like believing that a road map can arise from ink accidentally spilt on a piece of paper. No one of common sense could believe in such an impossibility. The logical explanation is not the work of chance, but of an almighty intellect. In other words, what is logical is to accept that our Creator gives birds their knowledge of migration.

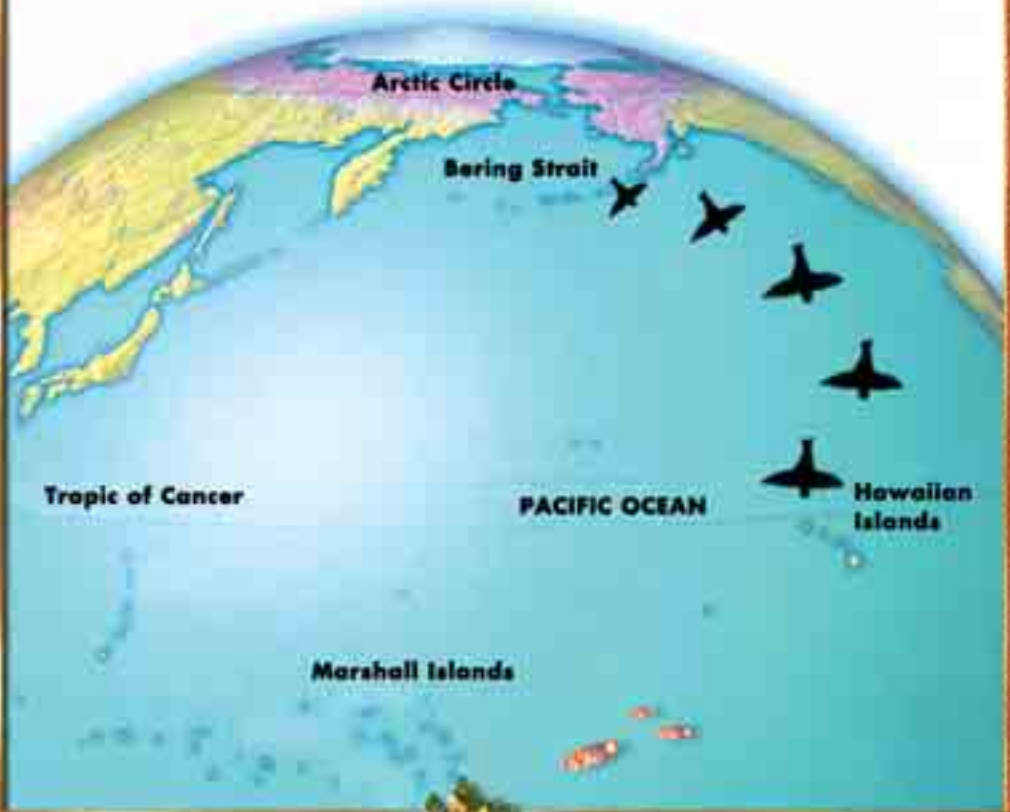
And the information coded in the cells of migrating creatures has not come into existence over time by the accretion of random atoms and molecules as a result of unconscious coincidences. This extensive knowledge is the work of the eternal power of God, the Creator of all.

The Golden Plover: A Creature to Challenge Evolutionary Theory

To spend the winter, plovers migrate from Alaska to Hawaii. They must fly non-stop over the ocean, because there are no islands on their route and they are not a species that can swim. During their 4,000-kilometer (2,400 mile) journey, which takes 88 hours, their wings beat an incredible 250,000 times. At the start of their journey, they weigh 200 grams (7 ounces), of which 70 grams (2 ounces) consist of fat to be burned as fuel. These birds consume 0.6% of their body weight every hour. By this calculation, in 72 hours—81% of the necessary flying time—they need to consume 70 grams (2 ounces) of their fat, virtually all their fuel. This should make the birds fall into the ocean some 800 kilometers (500 miles) before their destination—but that never happens.

Werner Gitt, professor and director at the German Federal Institute of Physics and Technology, gives the following explanation of how these birds manage to complete their 88-hour flight with only 70 grams of fat:

> We regard the Creator's work with amazement. He employs the fundamental theorem which states that "energy input is optimized through information." In the case of the plover this means that the bird has been given some important additional information, namely: "Do not fly *alone*, but fly in a *V formation*! In the V formation you will save 23 % of your energy and will then safely reach your destination"… After 88 hours the normal residual amount of fat is 6.8 g, which has not been carried along unnecessarily, but is a reserve to be used when headwinds are encountered. The extremely low specific rate of fuel consumption, p = 0.6 % of its weight per hour, is all the more amazing



when we compare it with that of manmade aircraft which is orders of magnitude greater (for a helicopter p = 4 to 5 %; and p = 12 % for a jet plane).[73]

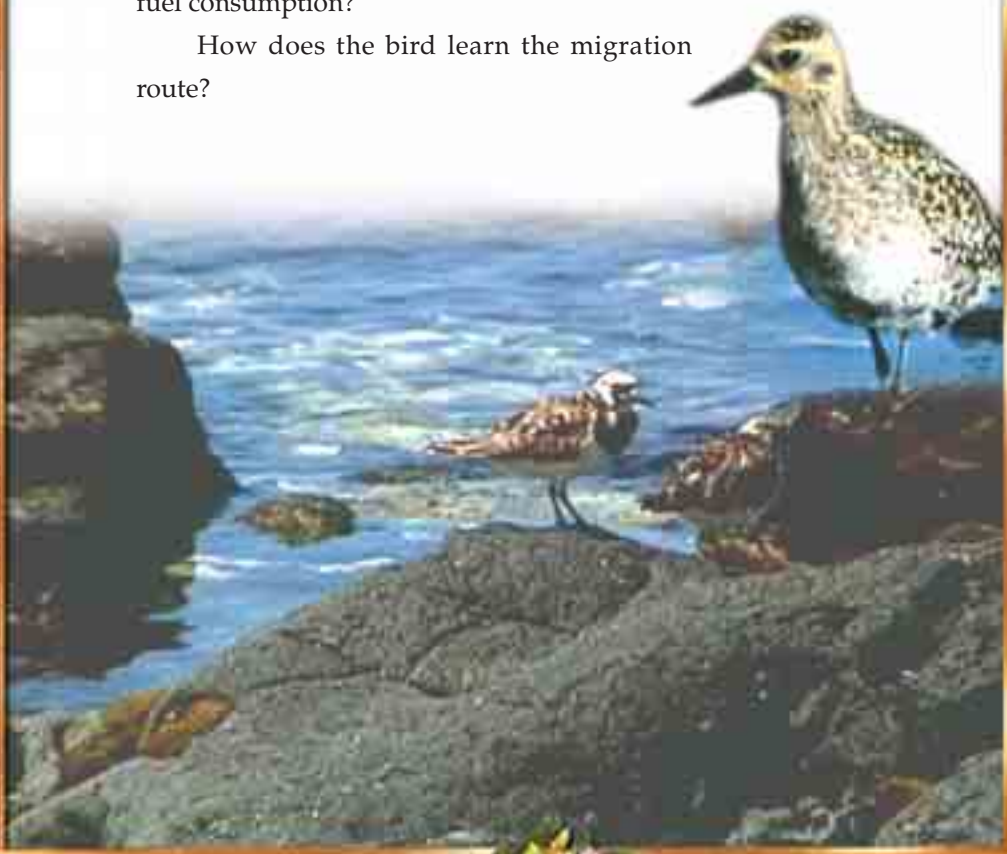
As the example of this bird shows, there is no room for coincidences in migratory flight. On the contrary, there are fine mathematical calculations that we have not included here. This efficient way of flying, which even man has not yet succeeded in duplicating, raises a number of questions:

How does the bird know the exact energy requirement?

How is it possible for the bird to accumulate the exact amount of required fat before the journey?

How does the bird know the distance and the specific rate of fuel consumption?

How does the bird learn the migration route?



How does it navigate to reach its destination promptly?

How does it know to reduce fuel consumption by flying in a V formation with other birds?

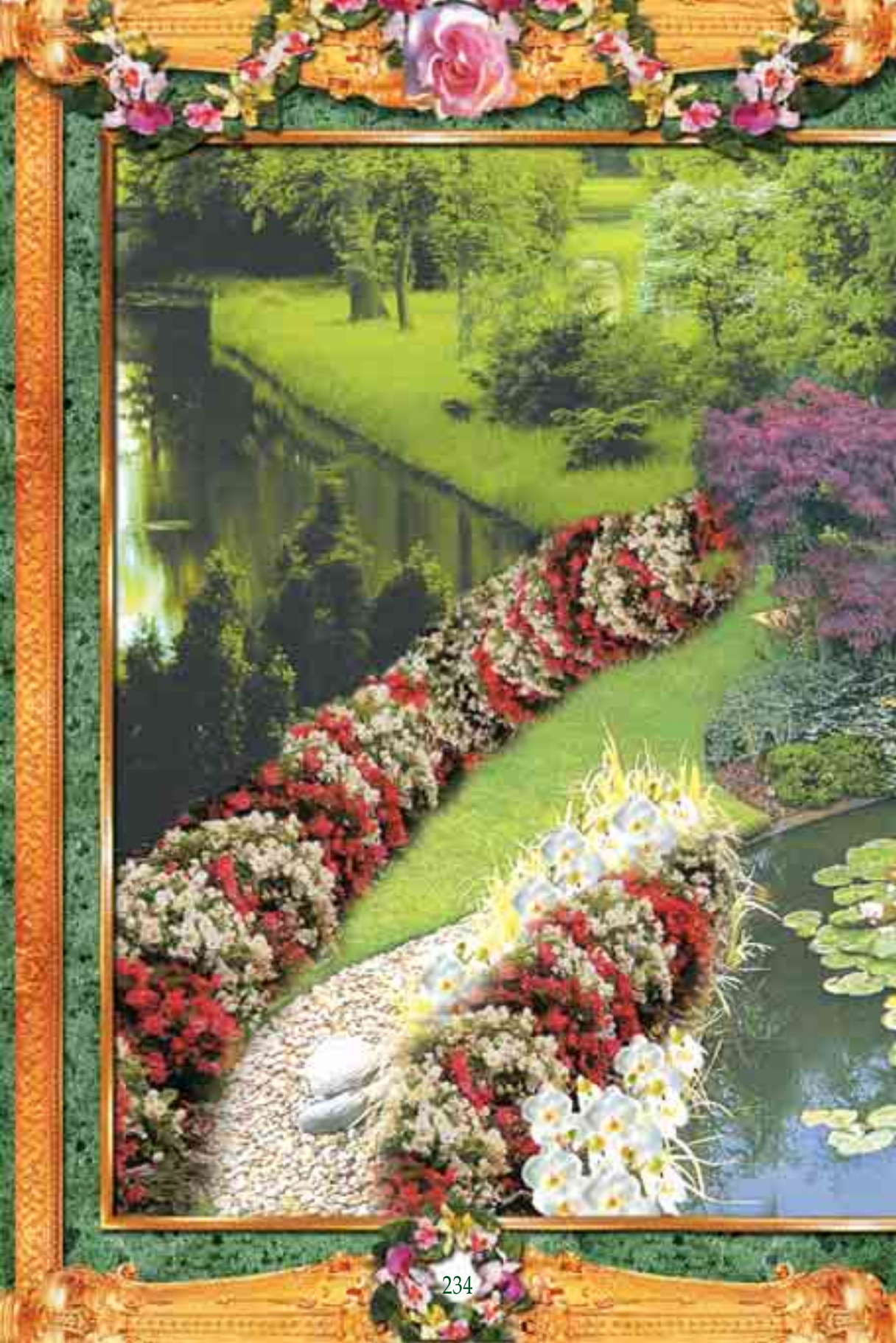
The clever planning and techniques of these creatures devoid of conscious intelligence, with no decision-making or judgmental ability, and with bodies perfectly suited to this purpose, can only be explained by one truth. These creatures act under the inspiration given them from the first moment of their creation. They continue their lives under the order and control of our Lord, the Creator of all things.

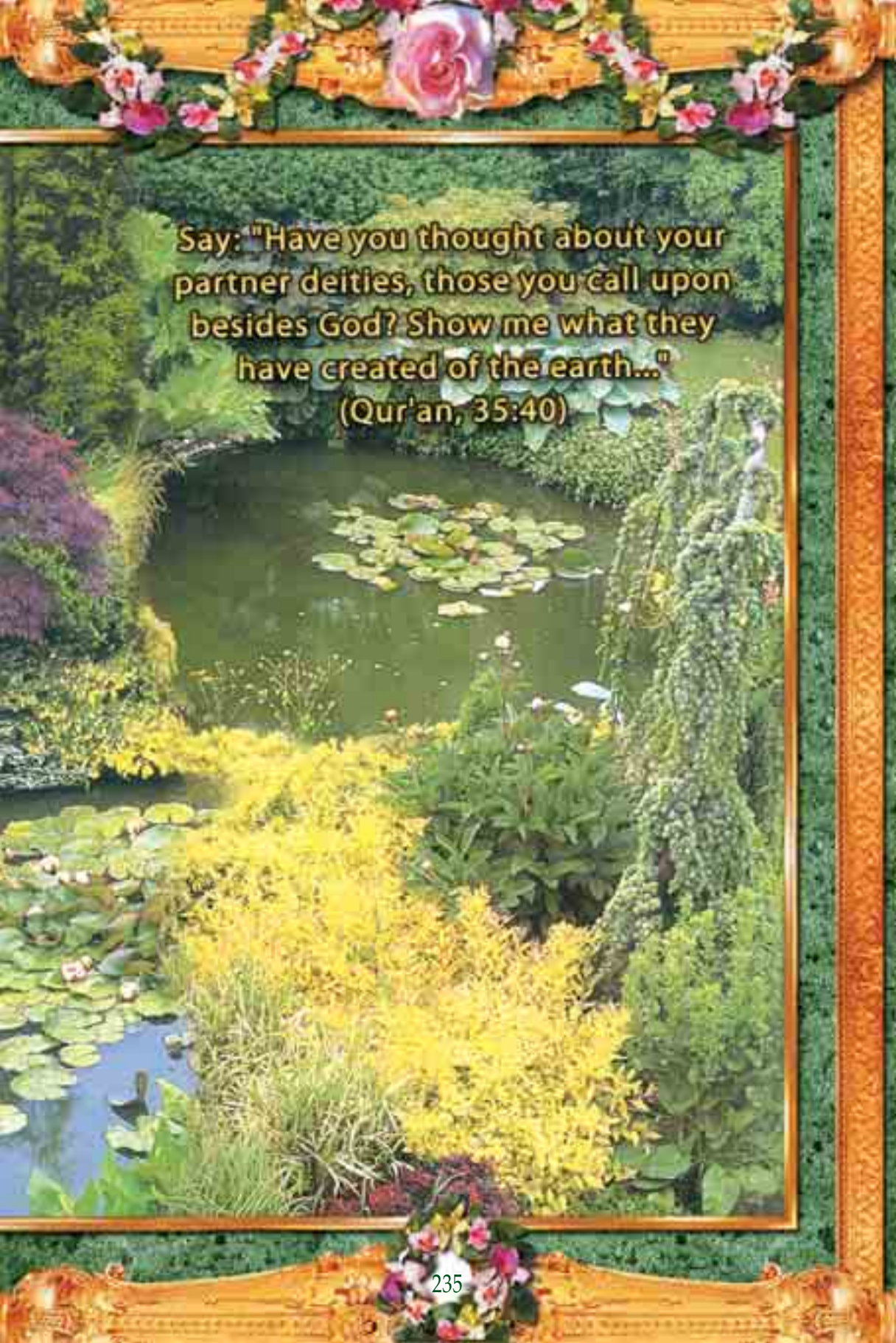
In his documentary entitled *Incredible Creatures That Defy Evolution* Dr. Jobe Martin uses the plover as an example to invalidate evolutionary theory:

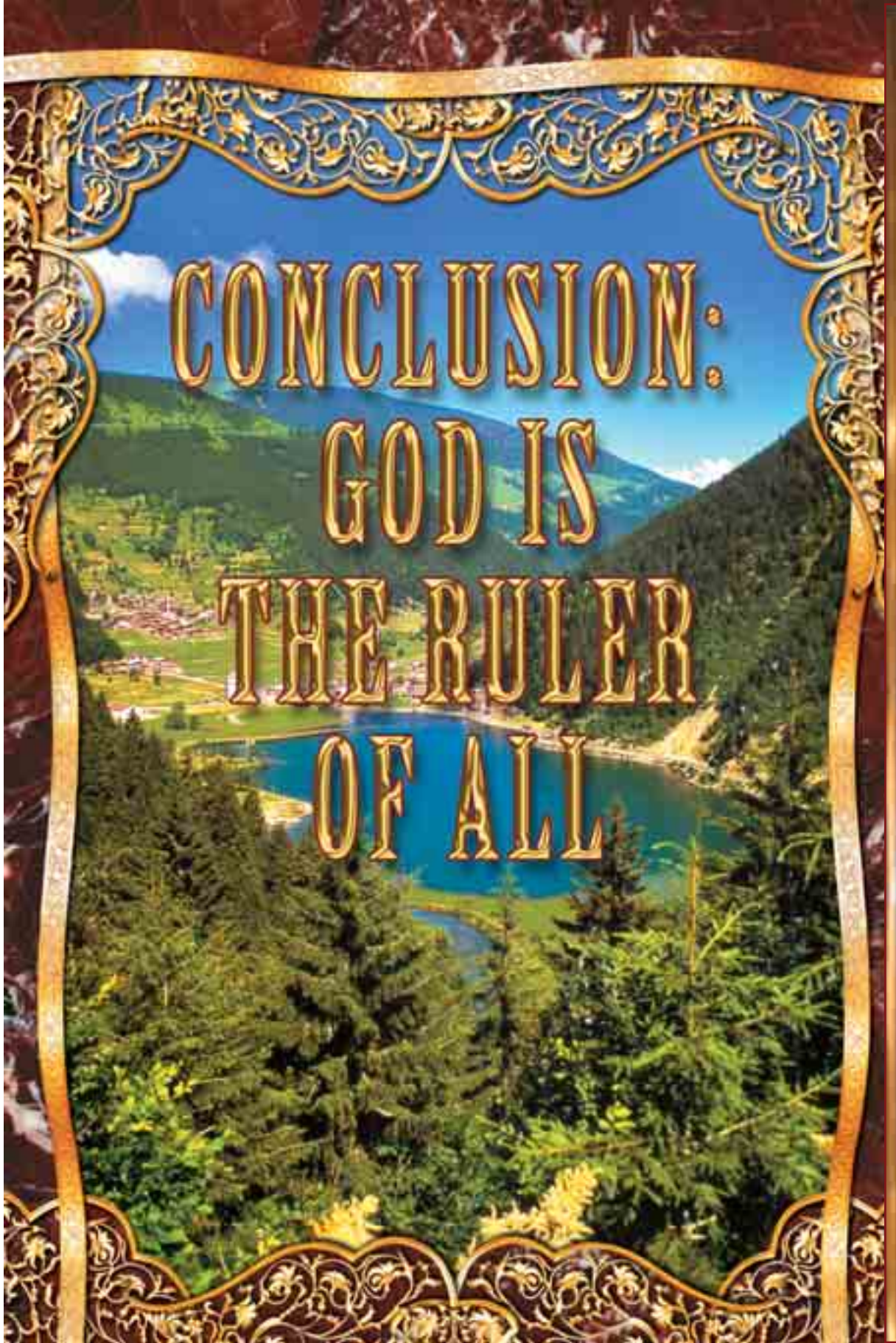
> How does evolution explain how a migratory animal gets from where he is in the summer to where he is in the winter? Usually the explanation is: "You have this certain kind of bird and he grows in Texas. And then one winter Texas has a cold winter, so he decides 'You know something? I'm heading for Mexico.' So he flies a few hundred miles south, 'Oh, it's really nice down here.' Then he comes back to Texas in the

summer. But it's an especially hot summer. So he decides 'You know, I think I'm going to go to Kansas.' So he flies north, looking for a little cooler weather. And then each year, he may go a little further south, a little further north until they get all the way up to the Arctic and all the way down to South America." Well, this little bird breaks that rule. First of all, it's a very small bird, about the size of a dove. And it's not a swimmer. And it lives up in the Arctic, in Alaska actually. They leave their young and then fly to Hawaii for the winter. Now, when it leaves Alaska, it has an 88-hour flight, nonstop because there is no land in between. Three days and four nights, nonstop. How does it do that? Well, these little birds begin to eat a lot, and they gain about 70 grams of burnable energy. Here is the problem: We've got an 88-hour flight, and they burn 1 gram per hour. That only gives them 70 hours worth of fuel. So they're going to drop into the ocean as non-swimmers, a few hours short of Hawaii. Well then, how do they get there? Well, because God made them so they fly in formation and they alternate leaders and so they break the air waves there so it makes it easy like geese fly in formation. And that cuts the energy it takes to fly... The evolutionary explanation doesn't fit because there's no way they could go a little bit each year. A little bit further south; they're fish prey. So they can't do it. So the evolutionary explanation doesn't work on that.[74]

It is not possible for this little bird to establish by trial and error what method it should use and how much fat it should burn in order to be able to migrate. Failure on any flight would mean death for the bird, and no question of it passing on its experience to future generations. It is ridiculous to assert that through some unconscious mechanism such as natural selection, a bird has learned that it is not possible to fly alone or with 50 grams (1.7 ounces) of fat. It is also beyond the realms of probability that genetic coding of finely calculated flying techniques is based on destructive influences like mutations.




Say: "Have you thought about your
partner deities, those you call upon
besides God? Show me what they
have created of the earth..."
(Qur'an, 35:40)


CONCLUSION:
GOD IS
THE RULER
OF ALL

The word "coincidence" in explaining a journey thousands of kilometers long towards a specific destination, starting and ending perfectly, is a meaningless one. Natural processes devoid of conscious purpose cannot inform a bird about the duration and direction of a migratory journey and also equip it with the physiological features it requires. There is no scientific evidence or logical reason to make us think so. Defending the so-called evolution of migratory behavior is like asserting that a short-range glider can turn into a plane with Global Positioning System, electronic radar systems and other navigational technology as a result of a series of errors in its radio system.

Giving a little thought to migratory behavior, it can easily be seen that All-Wise and Almighty God directs these living species. That a tiny creature sets out on such a dangerous journey, using the food in its habitat to give it the strength for this journey, employing navigational techniques such as using the Sun and the stars—and most important of all, that in every migratory period, millions of species set off in a programmed fashion—all goes to show that this plan is the work of a Creator.

God has created all species and has inspired in each creature the way in which it should live. As is revealed in a verse of the Qur'an, **"Don't they see the birds suspended in mid-air up in the sky? Nothing holds them there except God…"** (Qur'an, 16:79) the superior skills in living creatures, and the conscious and intelligent behavior they exhibit, show us God's supremacy over animals. God also inspires their migration:

Everyone in the heavens and Earth belongs to Him. All are submissive to Him. (Qur'an, 30:26)

People who leave aside their prejudice and think with their conscience understand this truth, that all species come into being with the wish and creation of Almighty God, Lord of the universe. The example of the eel, which travels and knows how to journey thousands of kilometers to the Sargasso Sea to lay its eggs and die, is sufficient proof to inspire faith in the existence of God, because in this behavior, there is judgment, ability and a superior intelligence. It is illogical to think that an eel has such an intelligence that even many humans could not display. God inspires it in them, and those who seek a dif-

ferent explanation cannot find one. In a verse of the Qur'an, God reveals the following:

> **Say: "Have you thought about your partner deities, those you call upon besides God? Show me what they have created of the earth; or do they have a partnership in the heavens?" Have We given them a Book whose clear signs they follow? No indeed! The wrongdoers promise each other nothing but delusion. (Qur'an, 35:40)**

In the Qur'an, God orders humanity to reflect on the creation on Earth and in the skies through the forms of existence He has created. Anyone thinking with his conscience can see evidence of God's existence everywhere. Those who persist in denying such evidence actually do so because of their self-importance. On the subject of such people, God reveals the following in the Qur'an:

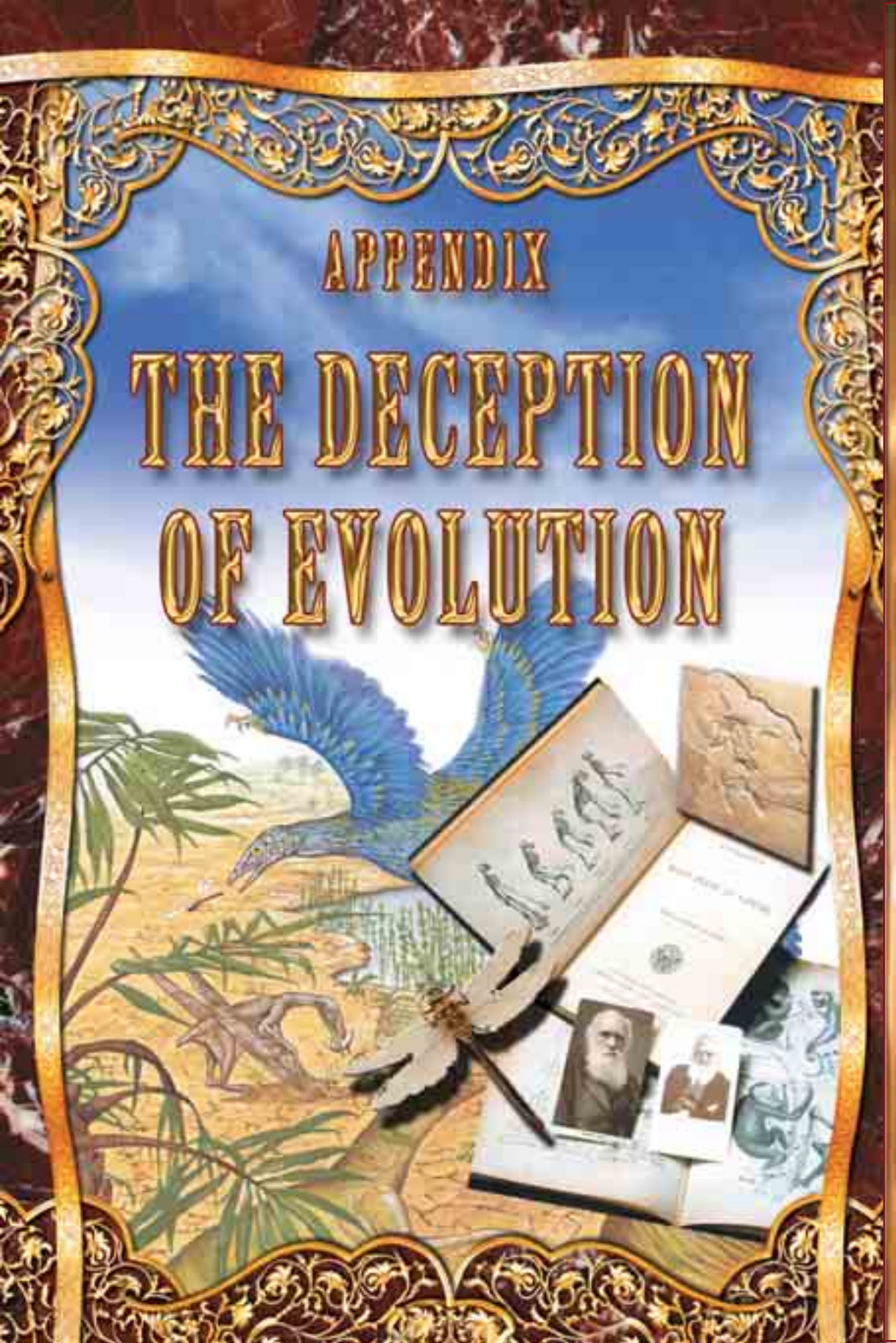
> **Certainly those who argue about the signs of God without any authority having come to them have nothing in their breasts except for pride which they will never be able to vindicate. Therefore seek refuge with God. He is the All-Hearing, the All-Seeing. (Qur'an, 40:56)**

Everything that our Lord has created, from the Earth to the skies, is a wonderful manifestation of His infinite intelligence and incomparable art.

> **What is in the heavens and in the Earth belongs to God. We have instructed those given the Book before you and you yourselves, to fear God, but if you do not believe, what is in the heavens and in the Earth belongs to God. God is Rich Beyond Need, Praiseworthy. (Qur'an, 4:131)**

APPENDIX

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 clear "design" in the universe and in living things. In this way, science confirmed the fact that God 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.

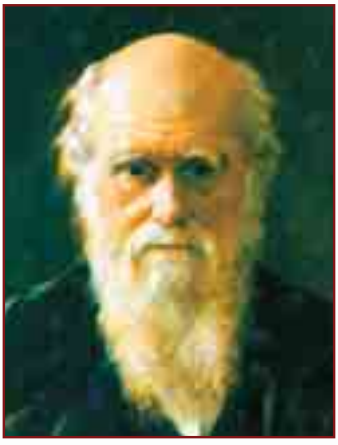
Yet this propaganda cannot conceal the truth. The fact that the theory of evolution is the greatest deception in the history of science has been expressed more and more in the scientific world over the last 20-30 years. Research carried out after the 1980s in particular has revealed that the claims of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

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:



Charles Darwin

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."[75]

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.

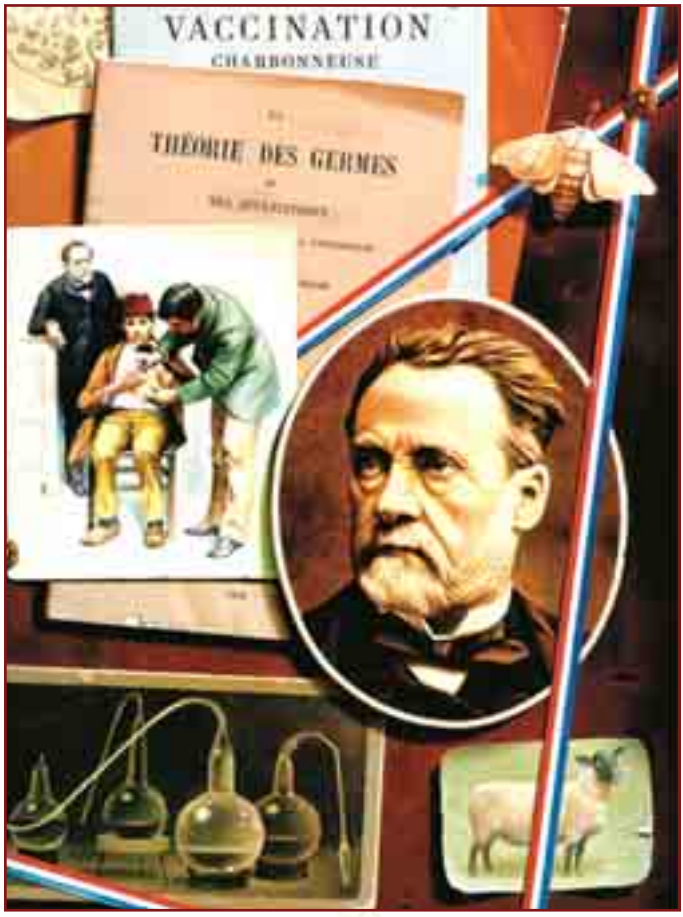
These studies, however, were doomed to failure, and Oparin had to make the following confession:

> 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.[76]

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.[77]



Louis Pasteur

After a long silence, Miller confessed that the atmosphere medium he used was unrealistic.[78]

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?[79]

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

The DNA molecule, located in the nucleus of cells of living beings, 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.

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 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.[80]

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…*

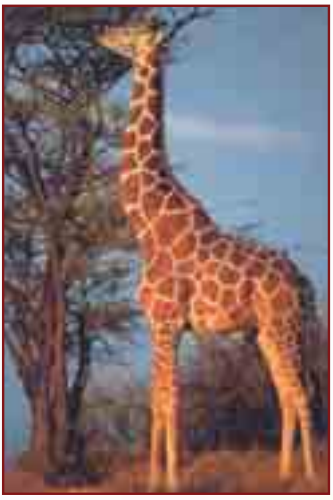
Natural selection holds that those living things that are stronger and more suited to the natural conditions of their habitats will survive in the struggle for life. For example, in a deer herd under the threat of attack by wild animals, those that can run faster will survive. Therefore, the deer herd 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.[81]

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.



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.

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.[82]

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 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

Chance mutations, which evolutionists claim to develop living things, are always harmful to humans and all other living things. Not even one beneficial mutation has been observed so far. Quite the contrary, mutations always have harmful effects on living things as seen in these pictures.

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.[83]

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 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:

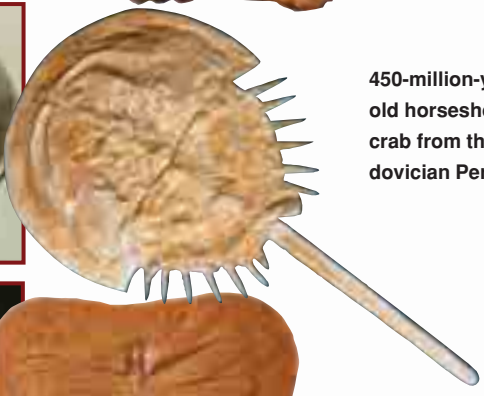
> If my theory be true, numberless intermediate varieties, linking most closely all of the species of the same group together must assuredly have existed... Consequently, evidence of their former existence could be found only amongst fossil remains.[84]

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

LIVING FOSSILS REFUTE EVOLUTION

100-150 million-year-old star-fish fossil (L. Cretaceous Age)



450-million-year-old horseshoe crab from the Ordovician Period.

150-200-million-year-old dragonfly fossil from the recent Jurassic Period.

100-150-million-year-old fossil shrimp from the L.Cretaceous Period.

Different groups of living things suddenly emerged with no similar ancestors behind them, and remained static for millions of years, undergoing no changes at all.

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.[85]

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.[86]

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.[87]

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."[88]

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.[89]

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.[90]

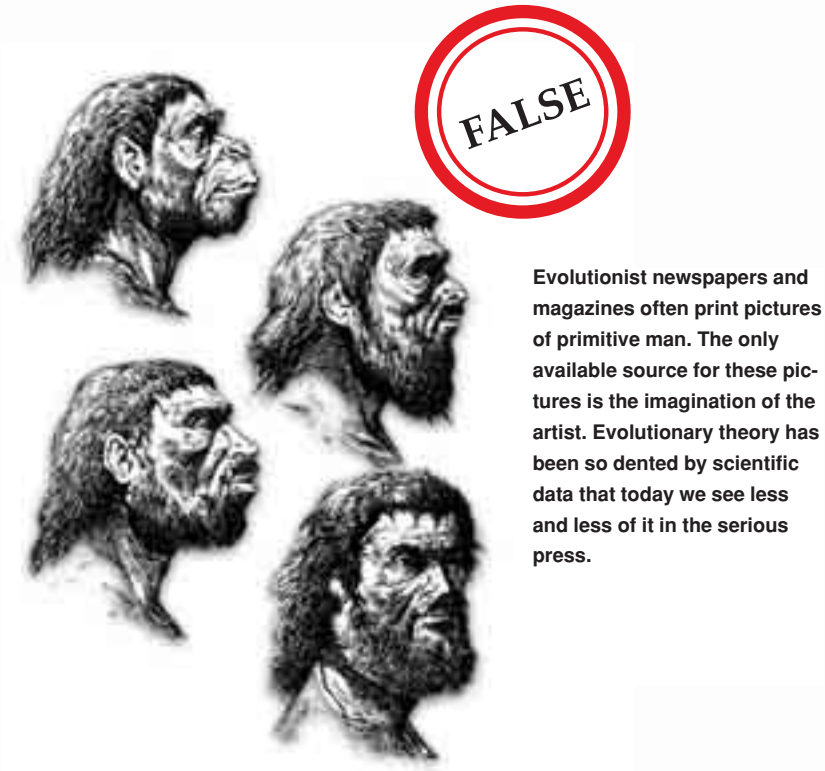
This situation apparently indicates the invalidity of the claim that they are ancestors of one another. Stephen Jay Gould explained this deadlock of the theory of evolution, although he was himself one of the leading advocates of evolution in the twentieth century:

> 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.[91]

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 percep-



Evolutionist newspapers and magazines often print pictures of primitive man. The only available source for these pictures is the imagination of the artist. Evolutionary theory has been so dented by scientific data that today we see less and less of it in the serious press.

tion"—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.[92]
>
> 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, roses, orchids, lilies, carnations, bananas, oranges, apples, dates, tomatoes, melons, watermelons, figs, olives, grapes, peaches, peafowls, pheasants, multicolored 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 God'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.

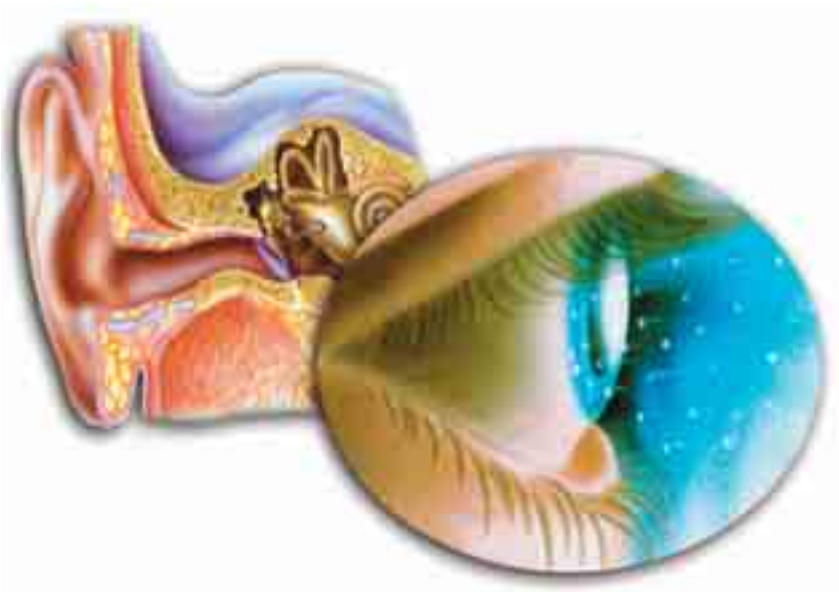
The brain is insulated from light. That means that its inside is completely dark, and that no light reaches the place where it is located. Thus, the "center of vision" is never touched by light and may

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 camera 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



Compared to cameras and sound recording devices, the eye and ear are much more complex, much more successful and possess far superior features to these products of high technology.

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 and Hears 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 God, 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 God, 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 pro-

duce 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 Foot in the door.[93]

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 Foot in the door."

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 God, 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 stu-

dents; 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 Egyptians worshipping the Sun God Ra, 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, God 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. God has sealed up their hearts and hearing and over their eyes is a blindfold. They will have a terrible punishment. (Qur'an, 2:6-7)**
>
> **... 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. (Qur'an, 7:179)**
>
> **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!" (Qur'an, 15:14-15)

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. (Qur'an, 7:116)**

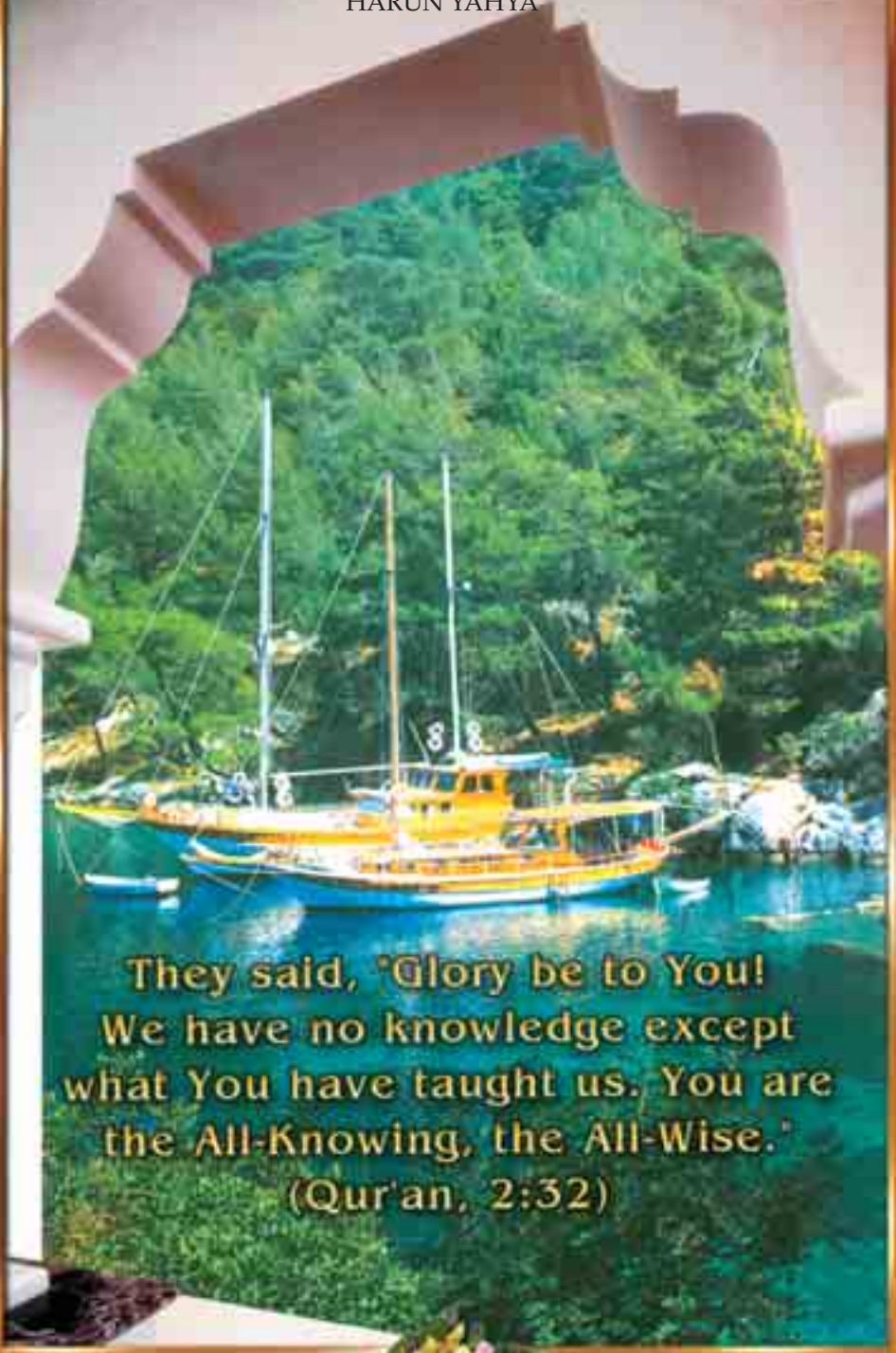
As we have seen, Pharaoh's magicians were able to deceive everyone, apart from Moses (pbuh) and those who believed in him. However, his evidence broke the spell, or "swallowed up what they had forged," as the verse puts it:

> **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. (Qur'an, 7:117-118)**

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.[94]

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.'
(Qur'an, 2:32)

NOTES

1. David Attenborough, *The Trials of Life, A Natural History of Animal Behaviour*, William Collins Sons Co. Ltd., 1990, p. 121.
2. David Attenborough, *The Life of Birds*, Princeton University Press Princeton, New Jersey, p. 67.
3. "Magnetoreception: Animal Magnetism Guides Migration," Kathryn Brown, *Science*, Vol. 294, Issue 5541, 12 October 2001, p. 364, October 12, 2001; *Bilim ve Teknik Dergisi* (Science and Technology Magazine), November 2001.
4. John Downer, *Supernature, The Unseen Powers Of Animals*, [PUBLISHER?] p. 80.
5. *Ibid.*, p. 120.
6. David Attenborough, *The Life of Birds*, p. 60.
7. "Migration of Birds," Northern Prairie Wildlife Research Center; http://www.npwrc.usgs.gov/resource/othrdata/migratio/perils.htm
8. "Migration of Birds, Stimulus for Migration," Northern Prairie Wildlife Research Center; http://www.npwrc.usgs.gov/resource/othrdata/migratio/stimulus.htm
9. David Attenborough, *The Trials of Life*, p. 126.
10. John Downer, *Supernature*, pp. 93-94.
11. *Ibid.,* 121.
12. Mary Deinlein, "Neotropical Migratory Bird Basics;" http://nationalzoo.si.edu/ConservationAndScience/MigratoryBirds/Fact_Sheets/default.cfm?fxsht=9
13. "Migration of Birds, Migratory Flight Altitude;" http://www.npwrc.usgs.gov/resource/othrdata/migratio/altitude.htm
14. John Downer, *Supernature*, p. 122.
15. John Owen, *Fantastic Journey*, A Weldon Owen Production, Fog City Press, 2000, p. 85.
16. *The Magazine of Science and Discovery, Focus*, September 2003, p. 67.
17. "Migration of Birds, Perils of Migration;" http://www.npwrc.usgs.gov/resource/othrdata/migratio/perils.htm
18. John Owen, *Fantastic Journey*, p. 36.
19. "Loxodrome", Encyclopædia Britannica, Expanded DVD Edition, 2002.
20. "Great Circle;" http://mathworld.wolfram.com/GreatCircle.html
21. "Migration of Birds, Segregation During Migration;" http://www.npwrc.usgs.gov/resource/othrdata/migratio/segregat.htm
22. "Atmospheric Flight;" http://quest.arc.nasa.gov/aero/planetary/atmospheric/aerodynamiclift.html
23. Larry Gedney, "Why Birds Fly in Vees;" http://www.gi.alaska.edu/ScienceForum/ASF5/559.html
24. "Migration of Birds, Evolution of Migration;" http://www.npwrc.usgs.gov/resource/othrdata/migratio/evolut.htm
25. "Atmospheric Flight;" http://quest.arc.nasa.gov/aero/planetary/atmospheric/aerodynamiclift.html
26. John Downer, *Supernature, The Unseen Powers Of Animals*, pp. 40-41.
27. David Attenborough, *The Trials of Life*, p. 122.
28. John Owen, *Fantastic Journey*, pp. 88-89.
29. Giovanni G. Bellani, *Quand L'oiseau Fait Son Nid*, p. 36.
30. John Owen, *Fantastic Journey*, pp. 97-103.
31. John Downer, *Supernature* p. 93.
32. John Owen, *Fantastic Journey*, pp. 98-99.
33. *Ibid.,* , pp. 46-47.
34. Bilim Teknik Dergisi, October 2003,

pp. 66-67.
35. David Attenborough, *The Trials of Life*, p.123.
36. John Owen, *Fantastic Journey*, p. 111.
37. Larry C. Boles and Kenneth J. Lohman, "True navigation and magnetic maps in spiny lobsters;" http://www.nature.com/nature/journal/v421/n6918/full/nature01226_fs.html;jsessionid=F0DE7010-FAB6BBC080CCBC79B9ECD6B7
38. John Owen, *Fantastic Journey*, p. 113.
39. Charles Darwin, *The Origin of Species: A Facsimile of the First Edition*, Harvard University Press, 1964, p. 233.
40. Francis Darwin, *The Life and Letters of Charles Darwin,* Vol.II, New York: D. Appleton and Company, 1888, pp. 111-112.
41. Charles Darwin, *The Origin of Species*, p. 208.
42. John Owen, *Fantastic Journey*, p. 121.
43. David Attenborough, *The Trials of Life*, pp. 130-131.
44. *Gorsel Bilim ve Teknik Ans.*, Vol. 5, 1784.
45. John Owen, *Fantastic Journey*, p. 128.
46. *Ibid..*, p. 161.
47. *Ibid.*, pp. 142-143.
48. David McFarland, *Animal Behavior, Psychobiology, Ethology and Evolution*, Oxford University Press, 1986, p. 253.
49. *Harika Canlılar 1* (Incredible Creatures I), Documentary Film (VCD), Okur Production.
50. "The life-cycles of an elephant can give key insights into their physical and intellectual processes;" http://elephant.elehost.com/About_Elephants/Life_Cycles/life_cycles.html
51. John Owen, *Fantastic Journey*, p. 200.
52. *Ibid.*, p. 201.
53. *Ibid.*, p. 216.
54. *Ibid.*, p. 178.
55. *Fantastic Journeys*, p. 183.
56. Dawn Chorus, "Bird Migration: Evolution ambience;" http://www.pulseplanet.com/archive/Sep99/1974.html
57. Werner Gitt, *In the Beginning was Information*, 3rd. ed., CLV, Germany: 2001, p. 244.
58. *The Marvels of Animal Behaviour*, National Geographic Society, 1972, p. 279.
59. Richard Dawkins, Climbing Mount Improbable, W. W. Norton & Company, USA, 1996, pp. 80-81.
60. Gordon R. Taylor, *The Great Evolution Mystery*, Harper & Row Publishers 1983, 221.
61. Ernst Mayr, *This Is Biology, The Science of the Living World*, The Belknap Press of Harvard University, 7th ed., 1999, p. 119.
62. Charles Darwin, *The Origin of Species*, p. 233.
63. Hoimar Von Ditfurth, *Im Amfang War Der Wasserstoff* (In the Beginning Was Hydrogen), vol.1, Istanbul: Alan Publishing, 3rd ed., 1996, p. 17.
64. *Ibid.*, pp. 15-16.
65. Gordon R. Taylor, *The Great Evolution Mystery*, Harper & Row Publishers, 1983, p. 222.
66. *Ibid.,* p. 221.
67. "Animal Behavior: Observing bird behavior", http://artemis.austincollege.edu/acad/bio/sgoldsmith/abhandouts/lab_first_birds.html
68. Ann E. Kessen, "Amazing Flight: Mysteries of Bird Migration;" http://www.bellmuseum.org/imprint_migration01.html

69. “Ornithology Lecture 3;” http://www.humboldt.edu/~tlg2/365/lecture3.html
70. Mary Deinlein, “Have Wings, Will Travel: Avian Adaptations to Migration;” http://nationalzoo.si.edu/ConservationAndScience/MigratoryBirds/Fact_Sheets/default.cfm?fxsht=4
71. Wehner, R., Bird navigation—computing orthodromes, *Science*, vol. 291, 2001, pp. 264–265; A. J. Helbig, J., [Exp. Biol.—IS THIS A TITLE? IF SO, WRITE OUT IN FULL] 199, p. 49 (1996).
72. Gardner Soule, *Strange Things Animals Do, How Scientists Probe Their Secrets?*, New York: G.P. Putnam’s Son, p. 35.
73. Werner Gitt, *In the Beginning was Information*, p. 243.
74. “Incredible Creatures That Defy Evolution”–II, Dr. Jobe Martin, Reel Productions, 2000.
75. Sidney Fox, Klaus Dose, *Molecular Evolution and The Origin of Life*, W.H. Freeman and Company, San Francisco, 1972, p. 4.
76. Alexander I. Oparin, *Origin of Life*, Dover Publications, New York, 1936, 1953 (reprint), p. 196.
77. "New Evidence on Evolution of Early Atmosphere and Life", Bulletin of the American Meteorological Society, vol 63, November 1982, 1328-1330.
78. Stanley Miller, Molecular Evolution of Life: Current Status of the Prebiotic Synthesis of Small Molecules, 1986, p. 7.
79. Jeffrey Bada, *Earth*, February 1998, p. 40.
80. Leslie E. Orgel, "The Origin of Life on Earth", *Scientific American*, vol. 271, October 1994, p. 78.
81. Charles Darwin, *The Origin of Species by Means of Natural Selection*, The Modern Library, New York, p. 127.
82. Charles Darwin, *The Origin of Species: A Facsimile of the First Edition*, Harvard University Press, 1964, p. 184.
83. B. G. Ranganathan, *Origins?*, Pennsylvania: The Banner Of Truth Trust, 1988, p. 7.
84. Darwin, *The Origin of Species: A Facsimile of the First Edition*, p. 179.
85. Derek A. Ager, "The Nature of the Fossil Record," *Proceedings of the British Geological Association*, Vol. 87, 1976, p. 133.
86. Douglas J. Futuyma, *Science on Trial*, Pantheon Books, New York, 1983, p. 197.
87. Solly Zuckerman, *Beyond The Ivory Tower*, Toplinger Publications, New York, 1970, pp. 75-14; Charles E. Oxnard, "The Place of Australopithecines in Human Evolution: Grounds for Doubt," *Nature*, Vol. 258, p. 389.
88. "Could science be brought to an end by scientists' belief that they have final answers or by society's reluctance to pay the bills?" *Scientific American*, December 1992, p. 20.
89. Alan Walker, *Science*, vol. 207, 7 March 1980, p. 1103; A. J. Kelso, *Physical Anthropology*, 1st ed., J. B. Lipincott Co., New York, 1970, p. 221; M. D. Leakey, *Olduvai Gorge*, vol. 3, Cambridge University Press, Cambridge, 1971, p. 272.
90. Jeffrey Kluger, "Not So Extinct After All: The Primitive Homo Erectus May Have Survived Long Enough To Coexist With Modern Humans", *Time*, 23 December 1996.
91. S. J. Gould, *Natural History*, vol. 85, 1976, p. 30.
90. Zuckerman, *Beyond The Ivory Tower*, p. 19.
93. Richard Lewontin, "The Demon-Haunted World," *The New York Review of Books*, January 9, 1997, p. 28.
94. Malcolm Muggeridge, *The End of Christendom*, Grand Rapids: Eerdmans, 1980, p. 43.