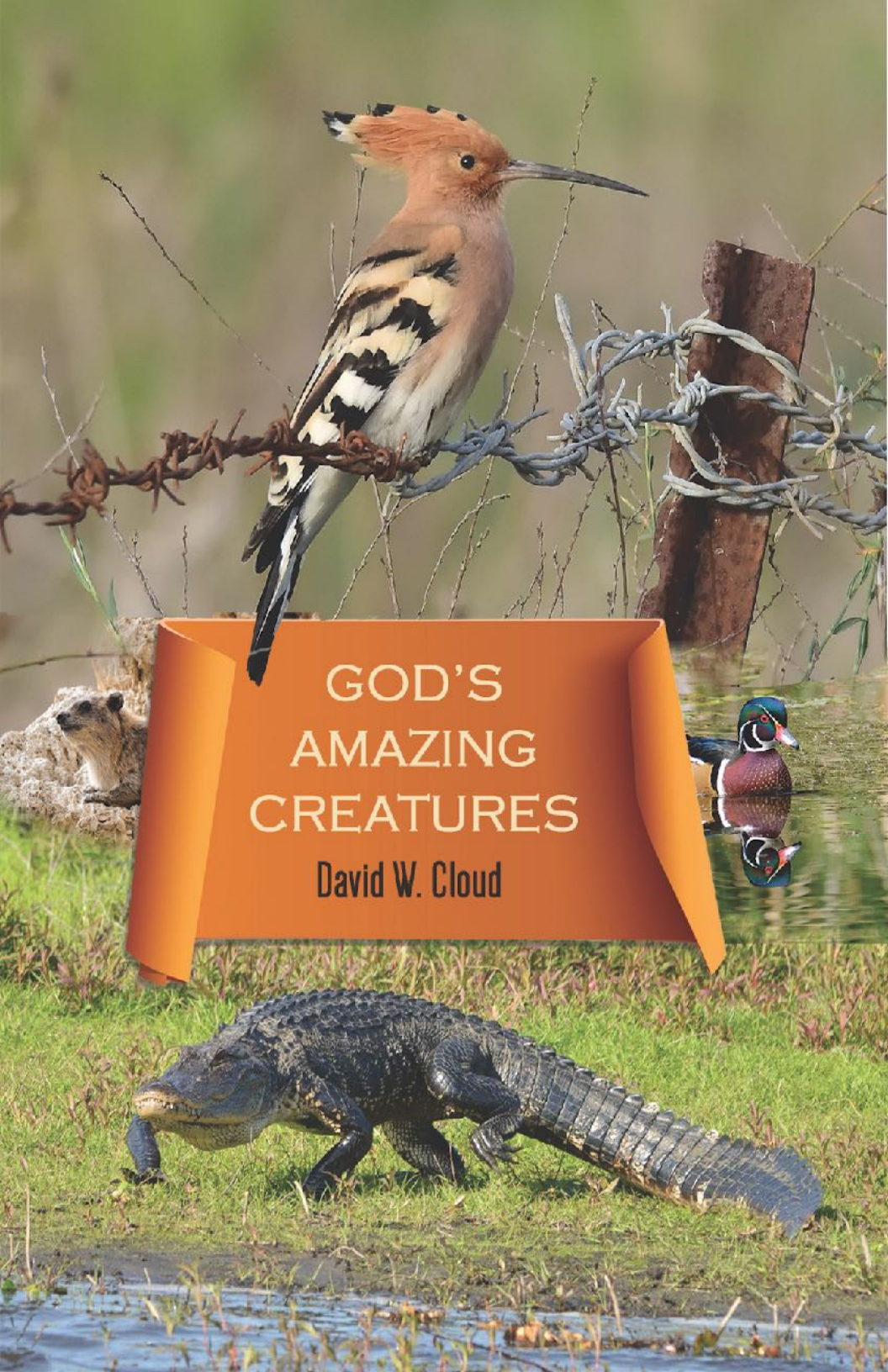

GOD'S
AMAZING
CREATURES
David W. Cloud

God's Amazing Creatures
Copyright 2018 by David Cloud
ISBN 978-1-58318-268-0



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Published by Way of Life Literature
P.O. Box 610368, Port Huron, MI 48061
866-295-4143 (toll free) • fbns@wayoflife.org
http://www.wayoflife.org

Canada: Bethel Baptist Church,
4212 Campbell St. N., London, Ont. N6P 1A6
519-652-2619

Printed in Canada by
Bethel Baptist Print Ministry

Contents

Introduction 5

God's Amazing Creatures 7

- The American Alligator 7
- The Anhinga 9
- The Bald Eagle 11
- The Bat 15
- The Bird's Flight Feather 17
- Bird Migration 19
- The Black Kite 25
- The Cheetah 27
- The Coney (Hyrax) 30
- The Cuckoo 36
- The Dragonfly 40
- The Great Blue Heron 42
- The Grizzly 45
- The Horse 51
- The Hummingbird 60
- The Leopard 62
- The Lion 64
- The Mallard Duck 66
- The Monarch Butterfly 70
- The Osprey 85
- The Ostrich 86
- The Partridge 90
- The Pelican 94
- The Pied-Billed Grebe 96
- The Saltwater Crocodile 98
- Starling Murmuration 102
- The Trilobite 104
- The Weaver Bird 109
- The Wild Ass 110

The Wild Goat.....113
The Wild Turkey.....116
The Wood Duck.....119
The Woodpecker.....121

Introduction

The creation is a divine revelation to teach men about God and about life itself.

> "Better is the poor that walketh in his integrity, than he that is perverse in his lips, and is a fool. Also, that the soul be without knowledge, it is not good; and he that hasteth with his feet sinneth. The foolishness of man perverteth his way: and his heart fretteth against the LORD" (Pr. 19:1-3).
>
> "For the invisible things of him from the creation of the world are clearly seen, being understood by the things that are made, *even* his eternal power and Godhead; so that they are without excuse" (Ro. 1:20).
>
> "Go to the ant, thou sluggard; consider her ways, and be wise" (Pr. 6:6).

Scripture is filled with lessons from creation, particularly by means of parables, similes, metaphors, and personification.

In Hosea alone we find the following examples: lion (Hos. 5:14), dove (Ho. 7:11), eagle (Ho. 8:1), wind (Hos. 8:7), grape (Hos. 9:10), fig tree (Ho. 9:10), bird (Ho. 9:11), root (Ho. 9:15), fruit (Ho. 9:16), empty vine (Ho. 10:1), foam on water (Ho. 10:7), and heifer (Ho. 10:11).

When God exhorted, reproved, and instructed Job, He used illustrations from every aspect of creation, from the light (Job 38:19) to the stars (Job 38:31-33) to the seas (Job 38:16). In Job 38-41, God mentioned eleven types of animals and spoke of their habits: lion (Job 38:39-40), raven (Job 38:41), wild goat (ibex) (Job 39:1-4), wild ass (Job 39:5-8), unicorn (possibly the extinct auroch) (Job 39:9-12), peacock (Job 39:13), ostrich (Job 39:13-18), horse (Job 39:19-25), hawk (39:26-30), behemoth (an extinct land creature) (Job

40:15-24), and leviathan (an extinct sea creature) (Job 41:1-34).

Proverbs instructs man to study nature and learn spiritual and moral lessons thereby. It mentions the roe (Pr. 6:5), ant (Pr. 6:6-11; 30:25), swine (Pr. 11:22), bear (Pr. 17:12; 26:3; 28:15), lion (Pr. 19:12; 20:2; 26:13; 28:1, 15; 30:30), horse (Pr. 21:31), serpent (Pr. 23:32; 30:19), swallow (Pr. 26:2), ass (Pr. 26:3), dog (Pr. 26:11, 17), bird (Pr. 27:8), sheep (Pr. 27:23), lamb (Pr. 27:26), goat (Pr. 27:26), horseleach (Pr. 30:15), raven (Pr. 30:17), eagle (Pr. 30:17, 19), coney (Pr. 30:26), locust (Pr. 30:27), spider (Pr. 30:28), greyhound (Pr. 30:31), and he goat (Pr. 30:31)

God's Amazing Creatures

The American Alligator

The American alligator is a large, semi-aquatic, carnivorous, fresh water reptile that lives in the warm southeastern part of the United States, with the largest populations in Florida, Mississippi, and Louisiana. The name is from the Spanish *el larato*, meaning big lizard, which is what the Spanish explorers called the creature.

The alligator can be distinguished from a crocodile by its broad, U-shaped snout as opposed to the narrow, V-shaped snout of the croc.

The alligator was endangered in the 1950s due to the market for its skin, but it has made a huge comeback since being placed under government protection. There are an estimated two million alligators in Louisiana and Florida alone.

The largest alligator on record was a Louisiana specimen over 19 feet long; the heaviest was a Florida gator weighing over 1,000 pounds. Two gators weighing about 725 pounds were killed on the same day in Mississippi in September 2013. They have been known to live more than 75 years.

The alligator's respiratory system is like that of a bird, with the air moving in a unidirectional manner through its lung system.

The alligator has a valve in the back of its throat that closes when it submerges and thus prevents the water from entering its lungs.

It is a cold-blooded creature and must sun itself to maintain proper body temperature. They remain dormant if the temperature is below 55 degrees F (13 Celsius), and during winter months they often live in underground burrows, though they emerge to bask in the sun.

Its tail forms half of its length and serves many functions, propelling it through the water, acting as a weapon, and storing fat that the alligator uses for nourishment during times when it cannot feed.

A large male alligator can bite with a massive force of more than 2,900 pounds. This is the most powerful bite force ever measured, more than the force of a mid-size car falling on top of someone. In contrast, the hyena has a bite force of 1,000 pounds; a lion, 940 pounds; a dusky shark, 330 pounds; a Labrador dog, 125 pounds; and a human, 170 pounds.

The alligator can snap its jaws shut within 50 milliseconds.

The alligator has about 80 sharp teeth, and new ones form when old ones fall out.

It has tiny bumps on its face that are ultra-sensitive to touch, even more sensitive than human fingertips.

Typically the alligator feeds on fish, birds, and smaller animals, but it can kill larger prey, such as deer and wild boars, by dragging them under the water and drowning them.



American Alligator

Gators spend much of their time floating partially submerged with just their snout and eyes showing above the water, waiting for a meal. They have excellent night vision and a keen sense of smell and often hunt at night.

The female builds a large nest of vegetation that provides heat for the eggs as it decomposes. The sex of the offspring is determined by the place occupied in the nest and the temperature at which it is incubated. If the temperature is 86 degrees F (30 degrees Celsius) or lower, the eggs produce females, and those of 93 degrees F (34 degrees Celsius) or higher produce males.

The mother lays from 20-50 eggs and defends the nest from predators during the 60 or so days of incubation. At this time she can be a great danger to those who venture near the nest, as an alligator can run 17 miles per hour for short distances, which is faster than the average human. She will warn away intruders by hissing, thrashing her tail, and chomping her jaws. After the eggs hatch (typically only about half survive), the mother takes the 10-inch-long baby alligators in her mouth and carries them to the water. Typically she stays with the young for a year.

A group of alligators is called a "congregation."

The Anhinga

Found throughout the world in warm shallow waters, the anhinga is a large bird with a wingspan of up to 4 feet and a body weight of 3 pounds. It has beautiful multi-colored wings of jet black, blue, and white. The black and white wing strips resemble a keyboard and have given the creature the nickname "piano bird." The female is distinguished from the male by its gray or light brown head, neck, and upper chest, as opposed to the glossy black of the male.

The beautiful green and blue iridescent sheen to the bird's feathers is produced by a reflective layer of melanin granules with a keratin substrate marvelously arranged to reflect a particular portion of the light wave, similar to the way that many butterflies produce reflective coloring.



Anhinga

A distinguishing characteristic of the anhinga is its habit of perching and spreading its wings for long periods. This is done to dry out the feathers, as it does not have waterproofing oil glands like most other waterfowl. This is not an "accident." It is a design feature that allows the bird to be less buoyant, as the non-oily feathers absorb water, thus enabling the anhinga to swim and hunt with its body submerged and only its long neck out of the water and to dive under water easily and stay down for long periods. It has air sacs located on various parts of its body that allow it to control its level of buoyancy in the water.

To take off from the water, the anhinga flaps its wings vigorously and "runs along the water" until it achieves flight.

The anhinga spears fish with its long sharp bill, using its long neck to strike out quickly. "The rapid stabbing motion is made possible by the anhinga's unusual arrangement of neck vertebrae. The eighth and ninth vertebrae form a kind of hinge-like mechanism that allows the head and bill to snap forward at a high rate of speed, so fast that very few fish escape" (Russ Heitz, *Krazy Kritters of Florida*).

It then brings the fish to the surface, flips it in the air, and swallows it, or if the fish is larger, the anhinga takes it to shore and pries it off by rubbing it against an object such as rock or tree.

Anhingas form lifelong mating pairs and in breeding season they have a beautiful blue ring around the eyes. They build their nests in trees, particularly on branches that extend out over water, and the male and female take turns incubating the eggs. When the chicks are three weeks old, they can drop out of the nest into the water, and by six weeks they begin their first attempts at flight.

A flock of anhingas is called a "kettle."

The Bald Eagle

The majestic bald eagle has been the national bird of America since 1782, and as the emblem of America appears on the nation's coat of arms, coins, etc.

It is a massive raptor about three feet high, weighing 9 to 14 pounds, with a wing span of six to eight feet, second in size only to the California condor. The female is one-third larger than the male.

Its habitat covers most of North America and northern Mexico.

Its head and tail feathers are brilliant white, its body and wings are chocolate-brown, and its legs and bill are bright



Bald Eagle

yellow. Young bald eagles do not develop the white heads and tails until about five years of age.

It has amazing eyesight, with the frontal setting of the eyes giving it binocular as well as peripheral vision. It can see prey from a mile and more away while soaring in the air or perching in tall trees.

It can fly at an altitude of 10,000 and more feet and often travels 100 and more miles a day, ingenuously riding air thermals.

The bald eagle can reach speeds of more than 35 miles per hour in level flight and dive at speeds of 100 mph.

The bald eagle is a masterpiece of weight reduction and micro-engineering. Its bones are hollow, with braces at certain points to increase structural integrity, the entire skeleton weighing only a little more than half a pound. This allows the bird to be light enough to take off and fly but strong enough to swoop down on prey at high speeds and carry it away, etc.

A bald eagle has approximately 7,000 lightweight but very strong feathers, all of the feathers together weighing only about 21 ounces. The flying feathers consist of amazing interlocking microscopic structures consisting of barbs and barbules (each feather held together by more than 350,000 barbule hooks), and there are four types of flight feathers, with each playing a different and essential role in the bird's ability to fly.

"Pound for pound, an eagle wing is stronger than a wing of an airplane" (*The Bald Eagle's Quest for Flight*, Zoo Books, 1985).

The feathers trap layers of air to protect the bird from heat, cold, and rain, and a perching eagle controls the air pockets in its feathers depending on the climatic conditions.

The bird has perfect control over every part of the wings and tail for maneuverability, with the tail feathers serving as a rudder and stabilizer and adding to the wing surface for soaring.



Bald Eagle

The bald eagle can fly with prey weighing half its own weight and even more. If it catches prey so large that it cannot fly off with it, it can swim to shore using its wings as paddles.

It kills its prey with its powerful talons, which are capable of creating 1,000 pounds of pressure per square inch with each foot.

The bald eagle does not have a vocal cord but makes its high-pitched shriek via the air that passes through the bones in its neck.

The bald eagle's favorite food is fish, but it will eat other birds, rabbits, other small animals, and will also eat carrion. In the Pacific Northwest, British Columbia, and Alaska, bald eagles congregate to feed on spawning salmon in the late fall and early winter. I saw probably 200 bald eagles in one 10 mile stretch of the Skagit River in Washington State in December 2012.

Bald eagles often harass the smaller osprey until it drops its prey or sometimes even snatches the prey right from the osprey's talons.

The bald eagle mates for life and the pair usually enlarge the same nest for several years. The nests can typically be up to 13 feet deep, 8 feet wide, and weigh one ton. The largest known nest, built by a pair of bald eagles in Florida, was 18 feet deep, 12 feet wide, and weighed nearly three tons.

The bald eagle was nearing extinction in 1967, with only about 400 known nesting pairs remaining, but they made a full comeback after being placed on the endangered species list.

A group of eagles riding a thermal is called a "kettle."

The Bat

The bat is so amazing that even atheistic evolutionist Richard Dawkins admits that it has every sign of intelligent design:

> "These bats are like miniature spy planes, bristling with sophisticated instrumentation. Their brains are delicately tuned packages of miniaturized electronic wizardry, programmed with the elaborate software necessary to decode a world of echoes in real time. Their faces are often distorted into gargoyle shapes that appear hideous to us until we see them for what they are, exquisitely fashioned instruments for beaming ultrasound in desired directions" (Dawkins, *The Blind Watchmaker*, p. 24).

Because of his willful spiritual blindness, Dawkins can write about sophisticated instrumentation, delicately tuned packages, elaborate software, and exquisitely fashioned instruments, and then turn around and claim that it was all evolved by blind forces of chance.

Adam Pitman remarks:

> "This sonar is a marvellous discriminator: in a bat-swarm, in cave or night air, a bat can know its own sound among thousands of mobile neighbours, detecting its own signals even if they are 2000 times fainter than background noises. It can 'see' prey, such as a fruit-fly, up to 100 feet away by echo location and catch four or five in a second. And this whole auditory system weighs a fraction of a gram! Ounce for ounce, watt for watt, it is millions of times more efficient and more sensitive than the radars and sonars contrived by man" (Pitman, *Adam and Evolution*, p. 219).

The bat's rate of pulse changes. The brown bat pulses at about 10 per second as it is cruising, but this quickens when it detects an insect and begins to intercept it. The pulses can reach 200 per second. This means that the bat's brain is



Bat

capable of performing incredible amounts of mathematical calculations almost instantly.

Some bats have muscles that enable it to dampen its ear mechanism while it is transmitting its radar pulses. "The muscles contract immediately before the bat emits each outgoing pulse, therefore switching the ears off so that they are not damaged by the loud pulse. Then they relax so that the ear returns to maximal sensitively just in time for the returning echo. This send/receive switching system works only if split-second accuracy in timing is maintained. The bat called *Tadarida* is capable of alternately contracting and relaxing its switching muscles 50 times per second, keeping in perfect synchrony with the machine gun-like pulses of ultrasound" (Dawkins, pp. 27, 28).

Many bats produce a sound that changes pitch. It is basically a high-pitched shriek that sweeps down about an octave. This technique is used in modern radar and is called "chirp radar." This gives the bat even more sophisticated ability to distinguish between returning echoes. Since its

emissions begin at a higher pitch, its brain knows that if a returning echo is a higher pitch it is from a more distant object. "When an echo from a distant object finally arrives back at the bat, it will be an 'older' echo than an echo that is simultaneously arriving back from a near object. It will therefore be of higher pitch. When the bat is faced with clashing echoes from several objects, it can apply the rule of thumb: higher pitch means farther away" (Dawkins, p. 29).

Consider the amazing intelligence, though, that is required for a bat to apply such a "rule of thumb"!

The bat is found in the fossil record perfectly formed from the very beginning. The following quotes are from scientists who were interviewed for the book *Evolution: The Grand Experiment* (volume 1) by Dr. Carl Werner:

> "There's a ten-million-year period of early mammal evolution where you would guess that there'd be some sort of bat precursor, but once again, nothing. Bingo, they just show up" (Dr. Gary Morgan, Assistant Curator of Paleontology, New Mexico Museum of Natural History and Science and a specialist in bat evolution).
>
> "We have no evidence for this evolution. The bats appear perfectly developed in the Eocene" (Dr. Gunter Viohl, Curator of the Jura Museum in Eichstatt, Germany).

The Bird's Flight Feather

Engineer Stuart Burgess says, "A flight feather is a masterpiece of design and is one of the most efficient structures known to man" (*Hallmarks of Design*, p. 38).

Jack Cohen, who is an evolutionist, nevertheless says that the flight feather is "engineered to the utmost precision" and that examining it "is a humbling process" ("Feathers and Pattern," *Advances in Morphogenesis*, edited by Abercrombie and Bracket, 1966, pp. 9, 12).

A "simple" pigeon feather is composed of more than one million individual parts made up of billions of cells perfectly organized into a marvel of design.

The flight feather has the following three major features (adapted from Burgess, p. 39):

- A hollow stem containing air or foam, which starts out as a circle near the root of the feather and changes into a rectangular shape which is structurally stronger
- Barbs angle off of the stem forming the basic feather shape
- Two sets of barbules angle off of the barbs, with one set of barbules having hooks that interlock with a set of non-hooked barbules; there can be hundreds of thousands of barbules in one feather

With the barbules hooked, the wing has a lightweight flat surface that the bird uses to push against the air. The barbules prevent air from passing through the wing on the downward motion while allowing air to pass through on the wing's upward motion.

Michael Pitman, who taught biology at Cambridge, describes the marvelous design of the flight feather:

> "Some large feathers contain over a million barbules, with hooks and eye-lets to match, in perfect order. The feather is useless without this interlocking mechanism which acts something like an automatic zip fastener whose disturbance preening rearranges. When outstretched in flight, the hooks cause the whole wing-assembly to form a continuous sheet to catch the wind. The whole feather is a cohesive, elastic and light structure, well-designed to function as an air-resistant surface. Sensory receptors record its precise position. Over both wings they effect the continuous variations and fine adjustments of more than ten thousand tiny muscles attached to the bases of the feathers. Behold the parts of a precious instrument of aerospace,

> unparalleled in design and workmanship by human technology" (*Adam and Evolution*, p. 222).

Bird Migration

Bird migration is one of the incalculable wonders of creation. The incentive and ability to migrate long distances is obviously built into the creature's genetic code. It cannot be explained by "natural selection" or mutations.

Evolutionists theorize that birds developed migration during the ice age. "[A]s the great ice sheets retreated from North America, they gradually expanded their ranges to exploit rich temperate food resources and nesting space" ("Migration Basics," hummingbird.net).

This explains nothing, really. It doesn't explain *why* the birds would continue to migrate when they could easily stay in one place. It doesn't explain *how* the birds can navigate thousands of miles across the globe to precise locations, how they developed the complex physiological changes that prepare them for long-distance migrations, how they can achieve the precise timings that allow them to arrive at breeding grounds at just the right time for breeding, etc., how they can survive the harsh conditions through which they often migrate, how the Alaskan Bar-Tailed Godwit can fly 9,000 miles non-stop, how the baby cuckoo can hatch and then fly 12,000 miles to join its parents in a place it has never been, etc.

The ice age "theory" is another "just so" story that is not proven and explains nothing.

The rapid advance in micro-technology and satellite communication since about 2010 has led to a revolution in our knowledge of the migratory habits of birds. Researchers are tagging them with geolocators weighing one-fifth of an ounce that transmit packets of information to satellites.

The bird migration award goes to the **Arctic tern** (*Sterna paradisaea*), which spends the summer in the Arctic rearing its young, then flies the entire length of the earth to the Antarctic for its winter holiday. It makes this trip annually, and with the recent advance in micro-electronics, researchers have been able to learn much more about the migration habits of this amazing bird. Previously, it was thought that the tern traveled about 20,000 miles on its journey, but actually it travels an average of 44,000 miles. Terns that breed in northern Netherlands travel 56,000 miles! Over a lifetime of 30 years, the little 3.5-ounce tern will travel roughly 1.3 MILLION miles. The terns fly from the Greenland Sea in the north Atlantic down the coast of Africa. Before they reach central Africa, the terns split into two groups, some continuing down the African coast and across the southern Atlantic Ocean to the Antarctic, others flying across the Atlantic from Africa to South America, then proceeding down the coast of South America to the Weddell Sea and the Antarctic. On the return trip north, the terns do not follow the same path. Instead, they fly a "twisted S shaped pattern" across the Atlantic Ocean. Researchers have discovered that though this adds many miles to the trip, "the birds are taking advantage of the global wind system" and "thus actually use less energy thanks to the wind currents" (Savannah Humes, "The 3.5 Ounce Bird," TodayIFoundOut.com). Do evolutionists really think that birds are this smart? The birds return to the same place and the same colony where they hatched. Though the terns are not sexually mature until three or four years old, the junior birds complete the annual migration nonetheless.

The ability to travel the full length of the globe is so amazingly complex that it requires an Intelligent Designer. "If the Arctic tern uses the stars to navigate, then it must recognize stars in both hemispheres. If the bird uses the earth's magnetic field, then it must know the difference

between the south magnetic pole and the north magnetic pole!" (Stuart Burgess, *Hallmarks of Design*, p. 42).

The **Sooty Shearwater** (*Puffinus griseus*) is a close second in distance migration. It travels up to 40,000 miles, covering 300 miles a day. It travels from the Falkland Islands off the east coast of the tip of South America to the Arctic Ocean.

The **Alaskan Bar-Tailed Godwit** (*Limosa lapponica*) is another super migrator. Unlike the tern and many other migrators, this bird makes its 7,000-mile, nine-day journey NON-STOP, without landing for rest, food, or water. One Bar-Tailed Godwit that was tracked with a satellite tag flew 6,800 miles from Alaska to New Zealand non-stop in an eight-day flight (www.plosbiology.org). "The godwits gorge themselves on shellfish, until the fat builds up into thick rolls under their skin--up to 55% of their total weight. Then they stop eating and their intestines, kidneys and liver shrivel up to a fraction of their usual size, eliminating unnecessary weight" (Jonathan Sarfati, *By Design*, p. 88).

The distance record holder among song birds is the **Northern Wheatear** (*Oenanthe oenanthe*). This tiny bird, weighing from .5 to 1.2 ounces, flies about 18,000 miles annually, from northern and central Asia, northern Europe, and Greenland to Sub-saharan Africa, crossing ocean, ice, and desert. Tagged Northern Wheatears have flown from Alaska across Siberia, Russia, Turkey, the Arabian Desert, to central Africa.

The **whimbrel** (*Numenius phaeopus*) migrates 3,500 miles non-stop from Southampton Island in Canada's Arctic to the mouth of the Amazon River in Brazil. One whimbrel that was tagged with a radio transmitter flew through Hurricane Irene when it was a category 3 storm and not only did the bird survive, it was able to make the necessary correction after being blown off course and complete its migration successfully ("Bird Migrates through Hurricane Irene," *USA Today*, August 28, 2011).

The **Bar-headed goose** (*Anser indicus*) probably wins the *extreme* migration award. It migrates from Tibet to India, crossing the Himalayan Mountains to a height of four miles where there is little oxygen, subzero temperatures, and the winds can blow with hurricane fury. A 2011 study tracked the geese flying at 21,000 feet. "Way up in the Himalayas, where thin air and low oxygen pressure hinder speech and movement, weary mountaineers have observed bar-headed geese honking away as they ascend powerfully overhead" (The Most Extreme Migration on Earth?" Sciencemag.org, June 7, 2011). Tagged geese have made the journey from India to Tibet in seven or eight hours, flying at 39 MPH (64 KPH). The southbound trip is made in about 4.5 hours. These geese have proportionally bigger lungs and better supply of oxygen to the muscles and heart than many other birds (Ibid.).

The **Pacific Golden Plover** (*Pluvialias fulva*) migrates from the Arctic tundra in Alaska and northern Canada to the Marshall Islands, Hawaii, Fiji, and other South Pacific islands, unerringly finding a tiny island in the middle of the Pacific Ocean after a journey of thousands of miles. Those that migrate from Alaska to Hawaii make the 3,000-mile journey in four to five days, averaging 39 miles per hour. The ground speed of some plovers in migration with strong tailwinds has been tracked at 103 to 114 MPH (167-185 KPH) ("Plovers Tracked across the Ocean," Phys.org, June 13, 2011). Researches using geolocators have found that the birds return to the same location each year. Professor Wally Johnson of Montana State University says, "They're so strongly site-faithful that we can predict where they will be with almost 100 per cent accuracy" (Ibid.).

The **Ruby-throated Hummingbird** (*Archilochus colubris*) migrates from northern North America to southern Mexico. On one part of this journey, some of the tiny birds fly across the Gulf of Mexico (while others fly around the southern part of Texas). The Gulf jumpers fly 450-500 miles in 18-22 hours,

often against headwinds of 20 miles per hour and more, beating their tiny wings nearly 3 million times on that amazing journey. Some rest on offshore oil rigs and fishing boats, but others make the journey non-stop. The tiny bird flies from the coast of Yucatan in southern Mexico to Texas and Florida. In preparation for the journey, it gorges itself with insects and spiders, adding a thick layer of fat that nearly doubles its weight to six grams. If a larger bird gained the equivalent of this much weight, it wouldn't be able to fly. The males and females do not migrate at the same time, with the females leaving Mexico about ten days after the males. Once arriving in America, the hummingbird's migration continues north at a rate of about 20 miles per day, as the bird follows the northern spread of spring vegetation. In late spring, the globe-hopping hummingbird arrives back in the place where it hatched. Some other Ruby-throated hummingbirds migrate from Alaska and cross the desolate Mojave Desert. The birds know how to use the winds to their advantage. "Researchers in the Appalachian Mountains of Pennsylvania found that hummingbirds will migrate in larger numbers when the winds were blowing in the direction they wished to go, and even more so when the winds were strong" ("Hummingbird Migration," worldofhummingbirds.com).

Cuckoos lay their eggs in the nest of another type of bird in England and Europe, then fly 12,000 miles to Africa, crossing the Mediterranean Sea and the Sahara Desert in the process. After the baby cuckoo hatches and is raised by an adopted parent, it flies 12,000 miles to join the parents it has never seen at a place it has never been ("Cuckoos," *The Atlas of Bird Migration*). One cuckoo that was tagged with a solar-powered satellite tracking device in 2011 flew 45,000 miles in three years, migrating from England to Angola. The birds usually spend only a few weeks in Africa before heading north again.

The **Manx Shearwater** (*Puffinus puffinus)*, a seabird that nests around Great Britain and Ireland, migrates over 6,200

miles *(10,000 kilometers) to South America in winter. One bird that was tagged in 1957 and still breeding on Bardsey Island off Wales in 2002 has been estimated to have flown five million miles (eight million km.) in its lifetime. A Manx Shearwater was taken to Boston, tagged, and released, and in 12 days it returned to its nest off Wales 3,200 miles away (*A Closer Look at the Evidence*, May 6).

The **common swift** (*Apus apus*) migrates at night, flying at up to 10,000 feet high and sleeping during flight. One tagged common swift flew more than 3,100 miles from Africa to the United Kingdom in five days. It maintained an average of 25 miles per hour. Its round-trip migration totaled 12,400 miles. The swift spends most of its life on the wing, eating, sleeping, and mating in flight. Its Latin name is from the Greek word *apous*, meaning "without feet," which refers to the fact that it has short legs that are used only for clinging to vertical surfaces. Johan Backman, who has studied swift flight with radar, says, "We found that swifts have an extraordinary ability to perform orientations in relation to wind. Even the most advanced planes, with good navigational instruments, would probably be unable to judge the wind drift like this. The remarkable thing is that they do all this while flying through the night and sleeping on the wing at these very high altitudes" ("How the Swift Keeps to Its Course," *Sunday Telegraph*, March 14, 2004, cited from Jonathan Sarfati, *By Design*, p. 91).

Evolution did not produce bird migration. It is another irrefutable evidence for the existence of an Almighty God who loves beauty and variety and who filled the world with wonder for man's instruction and delight.

"Praise ye the LORD. Praise God in his sanctuary: praise him in the firmament of his power. Praise him for his mighty acts: praise him according to his excellent greatness" (Psalm 150:1-2).

The Black Kite

The Black Kite (*Milvus migrans*) is another of the wonderful creatures that God made for His glory and man's pleasure. It is a medium-size bird of prey that occupies a wide range of territory throughout the temperate and tropical parts of Europe, Asia, Africa, Australia, and Oceania.

The name would suggest that it is black in color, but actually it is predominantly various shades of brown, with dark brown or black feathers toward the edges of its wings, a black beak, yellow legs, and black talons. There are some white markings under its wings and on its belly, and its head and neck tend to be paler than its body.



Black Kite

It glides effortlessly on air thermals searching for food with its excellent eyesight, soaring 1,000 feet and more above the ground.

Its magnificent eyes set into a head that can swivel 180 degrees gives it full awareness of its environment.

The Black Kite is an aerial acrobat, maneuvering quickly and easily in any direction, soaring, wheeling, diving. It swoops down on its prey with legs lowered, grabbing it with its powerful talons.

It eats fish, rodents, insects, reptiles, and other small creatures, as well as household refuse and carrion. It likes to fly above garbage dumps and along the edges of fires to catch escaping prey. The natives of Australia believed that the bird would start fires for this purpose by transporting burning branches and dropping them on dry brush.



Black Kite

Black Kites usually stay near bodies of water, such as rivers, ponds, or lakes. They are gregarious birds and can form huge flocks. I have seen probably 100 or more soaring above dumps in Kathmandu, Nepal.

They issue a fascinating shrill cry that ends with an extended warbling effect that varies considerably in speed and intensity.

European Black Kites generally migrate to Africa in the winter.

The Black Kite is believed to be monogamous, perhaps even pairing for life. They have a ritualized aerial courtship during which they "perform a dangerous display known as grappling, where they lock their feet together in mid-air and begin to spiral towards the ground" ("Black Kite," University of Michigan Museum of Zoology). The eggs are incubated by the female while the male feeds her. The chicks are cared for by both parents until the young are self-reliant.

Everything about this beautiful creature shouts "divine design," from its DNA and its reproductive system to its brain and its incredible flying feathers. Each feather is composed of more than one million individual parts (including interlocking barbs and barbules) made up of billions of cells perfectly organized into a marvel of design.

The Cheetah

The cheetah (*Acinonyx* jubatus), member of the cat family (*filidae*), is the fastest land animal on earth, capable of running about 70 miles per hour. It can accelerate from zero to 40 miles per hour in three strides!

It was one of the many exciting creatures I saw on a three-day photo safari to Kruger Park in South Africa in 2015. The cheetah is one of Kruger Park's Super Seven (elephant, rhinoceros, leopard, lion, cape buffalo, cheetah, wild dog), and we saw six of the seven each of the three days--something almost unheard of!

"Once abundant all over African and Indian savannas and grasslands, this magnificent animal is now rare and only found in Africa and the Middle East" ("Cheetah," animalcorner.co.uk).

Hunted almost to extinction for its beautiful skin, the cheetah was put on the Critically Endangered Species list by

the IUCN. There are an estimated 10,000-12,000 cheetahs left in the wild today, mostly in Africa. In Asia, there are only about 100 cheetahs remaining. There are 680 cheetahs in zoos worldwide, 227 of them in the U.S.

It is a beautiful creature with a tawny, buff, or golden coat sprinkled with evenly spaced black spots. Its handsome head is set off with black stripes running from below each eye to the corners of its mouth. (In contrast, the leopard is lighter colored and lacks the black stripes on its face.) The spots on the cheetah's tail merge to form four to five rings at the end.

From its head to its tail, it is built for speed. It has a long, lean body (five and a half to seven feet long, weighing 85-145 pounds, and standing about 32 inches tall), large chest and narrow waist, a small, streamlined head, a lightweight skeleton, large muscles, a springlike spine that flexes and straightens to allow its hind legs to achieve huge strides, large nasal passages to take in huge amounts of air, long legs, and large, powerful lungs, liver, and heart. It can produce four strides per second, and each stride can reach an amazing seven to eight meters. After a chase, the cheetah's heart rate is 200-250 beats per minute, and its breaths are 150-200 per minute (as contrasted to its resting breath rate, which is 20-30 per minute).

Its long tail (28 inches) acts as a counterweight and rudder, enabling the cat to keep its balance and to make sudden, sharp turns at high speed.

The cheetah's claws are semi-retractable (not fully as some other cats). This assists in taking off quickly and maintaining traction.

The cheetah is largely a day hunter that uses its sight to find prey. Unlike other large cats, such as lions, the cheetah does not have good night vision, but its large, forward-looking eyes provide binocular vision so that it can see details at a distance of five kilometers. "The retinal fovea of the eye is of



Cheetah

an elongated shape, giving a sharp wide-angle view" ("Cheetah Facts," bigcatrescue.org).

The cheetah's hearing is also excellent, and it can pick up higher frequencies than humans.

The black marks beneath its eyes shield them from daylight glare. Some sports players imitate this with black eyeliner. The cheetah's eyes have a stabilization feature to keep them in sharp focus while the creature is running at high speeds ("Cheetah," animalcorner.co.uk).

Though the cheetah is blazing fast, it is limited to a high speed run of about 300 yards. Thus, it creeps as close to its prey as possible to begin the chase. It depends on its agility as much as its speed to catch its prey. The chase is as much a dance as a race.

It trips its prey by hooking the back legs with a swipe of its front paw. "There is a large curved dewclaw on this paw, which helps to trip prey up" (Charlette Guillain, *Cheetahs*, p. 18). It kills its prey by gripping the throat with its teeth and jaws and strangling it.

The cheetah needs to drink infrequently (every three or four days), as it gets most of its water from its prey.

The cheetah is not an aggressive animal like a lion, leopard, or tiger and is rarely dangerous to humans.

In fact, cheetahs are smart animals that respond well to human training. They have been used as hunting animals by Egyptians, Babylonians, Assyrians, Persians, Chinese, Indians, and others. For example, cheetahs were used by Akbar the Great, third ruler of the Mughal dynasty in India. He moved around his empire with a large army, "holding court in a splendid camp laid out like a capital city but composed entirely of tents." On these journeys he engaged in hunting, using cheetahs to pursue deer and other prey.

Unlike a lion or tiger, the cheetah doesn't roar (lacking a floating hyoid bone in its neck). For this reason it is labeled a Lesser Cat rather than a Great Cat. It purrs, hisses, chirps, and growls. The chirps are used to communicate with other cheetahs.

It can even mimic some bird calls, an ability it uses to attract unsuspecting birds.

The baby cheetah grows a mantle on its back that acts as protection against the weather. It disappears after three months. The cubs are constantly in danger to predators such as lions, jackals, hyenas, even large birds. The baby cheetah learns to hunt from its mother for about two years and doesn't become fully proficient until about three years.

The Coney (Hyrax)

The coney is a small mammal that is mentioned four times in the Bible. It was unclean for eating because it chews the cud (Le. 11:5; De. 14:7). It is said to live in the rocks for protection (Ps. 14:18; Pr. 30:26).

The name "coney" means rabbit, and the creature looks a lot like a fat rabbit. It is also called the rock rabbit, rock badger, and dassie. The modern name for the coney is *hyrax*, which means mouse. The Latin name for the coney family is *Procavia*.

The Hebrew word is "shaphan" (shaw-fawn) which means hiding. The Hebrew root *saphan* is translated "treasure" in De. 33:19 *Shaphan* was also the name of a scribe in the days of King Josiah who participated in the revival (e.g., 2 Ch. 34:8, 15, 16, 18, 20). Four of Shaphan's sons are mentioned in Jeremiah and Ezekiel. *Ahikam* protected Jeremiah (Jer. 26:24). *Elasah* carried Jeremiah's letter to the captives in Babylon (Jer. 29:3). *Jaazaniah* was one of the 70 men Ezekiel saw sacrificing to idols in the temple (Eze. 8:11). *Gemariah* is mentioned in Jer. 36:11. Two of Shaphan's grandsons are also mentioned in Scripture. *Micaiah*, son of Gemariah, told the other princes of the words of Jeremiah's prophecies that had been written by Baruch the scribe (Jer. 36:11-14). *Gedaliah*, son of Ahikam,



Coney

was made the governor of Judah after the destruction of Jerusalem (Jer. 39:14).

In addition to Israel and Lebanon, the coney inhabits a large portion of Africa and the western and eastern coasts of Arabia.

The coney resembles a large guinea pig or ground hog. It ranges in size from 12 to 23 inches long, 8 to12 inches high, and weighs 4 to 13 pounds (1.8 to 5.4 kilos).

Scientists divide hyraxes into rock, tree, and bush varieties, but they are closely related. The main difference is their living habitat. The rock and tree conies are so alike in appearance that "it is sometimes difficult to differentiate among them." The tree coney is nocturnal and more solitary and bears one to two pups rather than two to four as the rock coney.

The rock coney is covered with thick brown and buff/gray fur with lighter colored fur on its chest and underside. The color of its fur varies from dark brown to light grey and almost orange, depending on its habitat.

It has short rounded ears, a stubby tail, and short legs. Extra-long hairs that stick out of its body called guard hairs "help the hyrax feel its way around, the same way a cat uses its whiskers" ("Rock Hyrax," San Diego Zoo).

Its feet are designed for climbing. Its soles are made of soft, elastic rubbery pads that are kept moist by sweat glands and are controlled by specialized muscles to act like suction cups. Its rounded toes are also covered with rubbery skin that enables it to grip slippery rocks and branches. It has four toes on its front feet and three on the back. The inside toe on each hind foot has a clawlike nail that is used for grooming and scratching.

It has excellent eyesight and can spot a predator over 1,000 yards away.

It has large incisors that have enamel on only one side, creating a self-sharpening cutting edge.

It has a complex, multi-chamber stomach that uses symbiotic bacteria to break down tough plant materials ("Hyrax," *New World Encyclopedia*).

In the desert, the coney gets most of its water from the plants it eats. It also has specialized kidneys that "retain water so that they can better survive in arid environments."

With its deep black eyes and black nose, it has an interesting face when viewed from the front. The shape of its mouth, with its cleft under the nose, gives it an inquisitive and harmless appearance.

Rock conies are social creatures that live in colonies of up to 50 individuals. One male rock coney tends to dominate a large group of females. They stay close together and often feed together in a circle formation, with their heads pointing to the outside for mutual protection.

The coney is not a very active creature. It spends a large part of its time sunning and basically doing nothing. Radio-tracking of 10 tree conies in Rwanda found that they are active only 16% of the time ("Activity patterns and feeding behaviour of the tree hyrax," *African Journal of Ecology*, Dec. 13, 2002). Rock conies are thought to be even less active.

Colonies of rock conies use one rock face as a latrine which can be easily identified as their urine forms white deposits.

The rock coney bears two or four pups, which are born with their eyes and ears open and can run, jump, and climb soon after birth. The colony congregates the pups into "nursery groups," with the mothers taking turns watching them.

Rock coneys are noisy creatures with at least 21 different vocalizations, "including trills, yips, grunts, wails, snorts, twitters, shrieks, growls, and whistles." The male rock coney can sing complex songs that last several minutes ("10 Fun Facts about the Rock Hyrax," *Wired*, Jan. 2, 2014). The tree coney has "an unearthly scream." It "starts as a squeak or

whistle, then rises to a piglike squeal and finally to a child's scream."

In areas where there are a lot of people, such as the Ein Gedi National Park, coneys are not very skittish and you can get fairly close to them. The dominant male is always on guard and when it gives a shrill shriek of alarm, the members of the colony scurry to shelter within the rocks and stay perfectly still until the danger has passed.



Coney

It is commonly stated that the coney is kin to the elephant and manatee (a sea creature), but this is evolutionary nonsense. Though the coney might share some features with elephants and manatees, they are really *nothing at all* like elephants and manatees. The coney did not evolve from any other creature.

Many varieties of conies are extinct. Some were as large as a small horse!

Reports about conies or hyraxes typically take the opportunity to take a pot shot at the Bible's accuracy, claiming

that the Bible is wrong when it says that the coney chews its cud (Le. 11:5).

The following is from "Do Rabbits Chew Their Cud? by Jonathan Sarfati, creation.com:

> "In modern English, animals that 'chew the cud' are called *ruminants*. They hardly chew their food when first eaten, but swallow it into a special stomach where the food is partially digested. Then it is regurgitated, chewed again, and swallowed into a different stomach. Animals which do this include cows, sheep and goats, and they all have four stomachs.
>
> Rock badgers and rabbits are not ruminants in this modern sense.
>
> "It is not an error of Scripture that 'chewing the cud' now has a more restrictive meaning than it did in Moses' day.
>
> "However, the Hebrew phrase for 'chew the cud' simply means 'raising up what has been swallowed'. Coneys and rabbits go through such similar motions to ruminants that Linnaeus, the father of modern classification (and a creationist), at first classified them as ruminants.
>
> Rabbits and hares practise *refection*, which is essentially the same principle as rumination, and does indeed 'raise up what has been swallowed'. The food goes right through the rabbit and is passed out as a special type of dropping. These are re-eaten, and can now nourish the rabbit as they have already been partly digested.
>
> "In particular, another name for this process is called *cecotrophy*, because the material is taken in a pouch at the beginning of the large intestine called the *cecum* or 'blind gut' (Latin *caecus* = blind). In the cecum, a process called 'hindgut fermentation' occurs, where bacteria help digest the food by breaking down cellulose into simple sugars. Then the special dropping, called a *cecotrope*, is expelled and re-eaten. This cecotrope is

very different from normal feces, thus cecotrophy is very different from other forms of coprophagy (eating dung) practised by animals such as pigs and dogs.

"It is not an error of Scripture that 'chewing the cud' now has a more restrictive meaning than it did in Moses' day. Indeed, rabbits and hares *do* 'chew the cud' in an even more specific sense. Once again, the Bible is right and the sceptics are wrong.

"God, through Moses, was giving instructions that any Israelite could follow. It is inconceivable that someone familiar with Middle-Eastern animal life would make an easily corrected mistake about rabbits, and also inconceivable that the Israelites would have accepted a book as Scripture if it were contrary to observation, which it is not ... The Hebrew word in question is NOT specific to the process of regurgitation; it is a phrase of general movement. ... The mistake is in our applying of the scientific terms of rumination to something that does not require it" (Jonathan Sarfati, "Do Rabbits Chew Their Cud?" creation.com).

The Cuckoo

The cuckoo is the common name for a family of birds (scientific name Cuculidae) that has about 60 members.

There is a large variety. While most are dove-sized, they can range in size from 6.5 to 36 inches; and while the most common are blue gray and brown, some are iridescent blue and emerald green. All have long tails, usually with the individual feathers tipped with white.

The most common is the *Cuculus canorus*, known simply as the "cuckoo," the "European cuckoo," and the "common cuckoo." The male's wings, back, and tail are dark gray or bluish gray; its neck, breast, and head are light gray; its eyes are red, and its feet are orange. Its belly is white with dark stripes or bars. The female comes in two varieties. One looks

like the male, except its belly is buff colored rather than white. The other is reddish brown and often covered with dark bars.

The bird's name derives from the "cuck-oo" sound it makes. Some can drive their human neighbors near crazy with their endless cuckooing.

Cuckoos love hairy caterpillars, but before eating them they shake the toxins out of the creature.

Brood Parasitism

The most famous or infamous characteristic of the cuckoo is called brood parasitism, which means they lay their eggs in the nests of other types of birds.

This amazing process involves many things.

There is perfect timing. "A female will establish a territory encompassing a number of potential foster nests, and carefully observe activity, waiting until the nests are at the right stage. She then swiftly takes her chance, swooping down, ejecting an egg and laying one of her own" ("Cuckoo," Arkive.org). It only takes the female cuckoo 10 seconds to eat the host egg and to lay her own in its place! Obviously she can lay her eggs at will.

There is egg mimicry. The female cuckoo produces eggs that mimic those of the selected host. Thus various cuckoos are capable of producing a variety of eggs of differing appearance. The cuckoo prefers the nests of meadow pipits, dunnocks, and warblers, though 50 foster species are known. The female cuckoo will lay about a dozen eggs in different nests each season.

There is mimicry of the hawk. "Some species of *Cuculus* resemble certain bird-eating hawks (*Accipiter*) in appearance and mannerisms, apparently frightening the potential host and allowing the cuckoo to approach the nest unmolested" ("Cuckoo," *Encyclopedia Britannica*).

There is the removal of host eggs and nestlings by the baby cuckoo. The cuckoo hatches a half-day before the other eggs, and immediately after hatching, while it is still blind and featherless, the rogue baby cuckoo rids itself of competition by pushing the host's eggs and baby birds from the nest.

There is mimicry of the host nestlings chirp by the baby cuckoo. The cuckoo nestling eats four times as much as baby warblers, and it tricks the hosts into feeding it as much as they would normally feed multiple of their own chicks. Dr. Nicholas Davies of the University of Cambridge, Britain's foremost expert on the cuckoo, says, "The cuckoo chick has this amazing begging call. It sounds like a whole brood of hungry chicks" ("The secret crimes of the cuckoo," Countryfile.com, May 26, 2009). "As the chick gets older the intensity of its begging cry increases to make the hosts work harder."

Migration

After the cuckoo lays all of her eggs, it flies 12,000 miles to Africa, crossing the Mediterranean Sea and the Sahara Desert in the process. After the baby cuckoo hatches and is raised by an adopted parent, it flies 12,000 miles to join the parents it has never seen at a place it has never been ("Cuckoos," *The Atlas of Bird Migration*). One cuckoo that was tagged with a solar-powered satellite tracking device in 2011 flew 45,000 miles in three years, migrating from England to Angola. The birds usually spend only a few weeks in Africa before heading north again.

Lessons from the Cuckoo

For one thing, the cuckoo and all of its amazing attributes witness to the existence of an Almighty, all-wise Creator.

"For the invisible things of him from the creation of the world are clearly seen, being understood by the things that

are made, *even* his eternal power and Godhead; so that they are without excuse" (Rom. 1:20).

Consider the bird's living cell with its DNA and amazing biological machinery to read the DNA's information and convert it to a living, reproducing creature.

Consider the bird's ability to fly and all of the components required for that. Just one flight feather is composed of more than one million individual parts made up of billions of cells perfectly organized into a marvel of design.

Consider the bird's eyesight, hearing, digestive system, survival ability.

Consider its reproduction system, which even unsaved Darwinists call "the miracle of life."

Consider the bird's amazing environment. It is but one tiny part of a gigantic, integrated system that make's life possible on earth.

For another thing, the cuckoo testifies of man's fall.

The creation is for man's enjoyment and also for man's understanding. It is a divine revelation. The Bible says man should learn spiritual principles from the animal and plant life.

"Go to the ant, thou sluggard; consider her ways, and be wise: Which having no guide, overseer, or ruler, Provideth her meat in the summer, *and* gathereth her food in the harvest" (Proverbs 6:6-8).

Here, the lesson is the positive.

In the case of the cuckoo, it appears to be largely negative. The cuckoo is a liar!

We don't know, of course, to what extent the cuckoo's behavior has been changed by the Fall, but its actions are a loud warning to men about God's moral law and divine retribution. The Bible warns men that all liars will be punished.

> "But the fearful, and unbelieving, and the abominable, and murderers, and whoremongers, and sorcerers, and idolaters, and all liars, shall have their part in the lake which burneth with fire and brimstone: which is the second death" (Rev. 21:8)

The only place of redemption and safety is in Jesus Christ, the Creator who came to earth to save men from their sins.

The Dragonfly

The dragonfly is another amazing icon of creation. There are nearly 5,000 varieties, ranging in size from 3/4 inch to 7 1/2 inches. An extinct variety measured 30 inches from wing tip to wing tip.

Consider its life cycle. It hatches from an egg in a larval form called a nymph that lives in the water and breathes through internal gills. The nymph is ugly and colorless, but it has a "jet propulsion" system whereby it squirts water out rapidly to create fast movement when alarmed. After a few months to three years, the nymph crawls out of the water, begins to breathe air, attaches itself to the stem of a plant, undergoes metamorphosis in one night, and emerges from its larval body as a beautiful flying, air-breathing dragonfly. Though it has lived in the water all its life until this point, it is immediately an expert flyer and spends most of the rest of its life flitting through the air like an insect edition of the hummingbird.

Consider its eyes. It has two large compound eyes, each composed of up to 30,000 facets containing a lens installed at a perfect angle in conjunction with all of the other lenses. This gives it a nearly 360 degree field of vision. It also has three smaller simple eyes called ocelli on the top and front of its head. 80% of its mental processes are devoted to vision. It sees in color and can detect ultraviolet light. The dragonfly's vision is so amazing that it is being studied by the Australian

National University with the goal of improving robot flight. Dr. Richard Berry, who is in charge of this project, says, "The ocelli of dragonflies are exceptionally well tuned to provide fast, sensitive and directionally selective information about the world" ("Dragonfly Vision Could Aid Robot Flight," *Science Alert*, Jan. 28, 2009).

Consider its wings. The wing membranes are thinner than paper and very strong. They are reinforced by veins or tubes only 1/10th of a millimeter thick, which act as "spars" for the wings as well as tubes for the cables of the nervous system and for the transportation of the blood fluid.



Dragonfly

Consider its flying ability. It can fly up, down, sideways, or backwards and can change direction in an instant. It can glide. It can hover and then rapidly accelerate up to 35 miles per hour. It can beat each pair of wings together or separately; the rear wings can be out of phase with the front wings; and it can even move each wing independently, thus allowing for extreme maneuvers. It can catch other flying insects, such as

flies and mosquitoes, in the air, either with its mouth or by forming a little basket with its legs and their bristly spines.

Its amazing neck muscles allow the dragonfly to move its head sideways 180 degrees, back 70 degrees, and down 40 degrees.

Consider its beauty. Dragonflies are brilliantly colored and typically are multi-colored. They can be green, yellow, blue, red, fuchsia, maroon, orange, pink, gold, and black. The colors come in earth tones as well as metallic varieties. These are formed in three ways: pigmentation (e.g., melanin produces yellows, reds, and browns), wax coating that diffuses light (similar to the coating on some shiny fruits), and light reflecting chitin scales, which perfectly diffract various parts of the light wave to create brilliant metallic colors.

The Great Blue Heron

The Great Blue Heron (*Ardea herodias*) is a large, majestic wading bird that lives near the shores of lakes and wetlands, in both fresh and salt water habitats, over most of North and Central America and the Caribbean. Some of the birds migrate to South America in winter. It is the most common and largest of the North American herons.

Its popular name is derived from the blue-gray coloring of its wings as they cover its body when it is standing. Its head is white, and the adult has a plume of feathers that form dark blue stripes over the eyes and extend over the back of its head. The neck is light gray in the back and white in the front. Its long, sharp beak is yellow; its thighs are brown; its legs are greenish gray but become orange during breeding season; and its feet are yellow or orange. The long wings are two toned, with the feathers toward the front being light gray and the ones toward the back being darker blue-gray. Females have the same appearance as males, but are smaller.



Great Blue Heron

The Little Blue Heron is smaller and is grayish blue all over, including its neck, head, bill, and legs.

A white edition, sometimes called the Great White Heron though it is the same species as the Great Blue, is found only in southern Florida and some parts of the Caribbean and is found mainly along the coasts near salt water.

The name "great" comes from its size. It has a normal standing height of about three feet and can stretch to four feet and more, with a six-foot wingspan. In spite of its size, it only weighs 5-6 pounds due to its amazingly-engineered hollow bones, a design feature shared with all flying birds.

As the heron gets airborne, it sticks it neck straight out and then tucks it back against its body in an S-shape for flight, its long legs trailing behind the body. The upper wings are two-toned: gray blue on the outer part and light-colored toward the body. It cruises majestically at 20-25 miles an hour with unique slow, deep wing beats.

The heron's typical call is a deep, hoarse croak that sounds like *fraaaahnk* or *braaak*. In danger situations the call is a short, harsh *frank frank frank taaaaaw*.

When hunting, it stands statue-still waiting for prey to come within range or stalks with slow, deliberate steps, stunning or killing its prey with a thrust of its long neck. Special vertebrae allow the bird to curl its neck into an S-shape and to uncurl it with lightning fast speed. It eats fish as well as mice, insects, snakes, and other small creatures, swallowing its prey whole.

The Great Blue Heron has patches of down feathers on its chest that produce a special powder. After catching a fish, it rakes the down with a fringed claw on its middle toe to shake the powder onto its prey. This causes the fish slime to clump up so the bird can brush it off. The bird also applies the powder to the underside of its body to repel slime and oils.

The bird has good night vision via a high percentage of rod-type photoreceptors in its eyes.

The Great Blue Heron hunts alone but nests in colonies of from five to more than 100 pairs. The male and female work together to build, incubate, protect, and feed the young. The male brings the nesting materials and the female builds the nest. Herons add more material to existing nests; therefore, the age of an older heron nest can be determined by its size.

The female sits on the eggs at night, while the male sits on them during the day. After the chicks hatch, the female watches the nest at night, while the male guards it during the day. When bringing food to the chicks, the adult usually lights a few yards from the nest and only after a few minutes does it approach the nest.

The Great Blue Heron was nearly hunted to extinction by the early 20th century because of the value of its beautiful plumage as a female hat accessory.

A group of herons is called a battery, a pose, a rookery, or a scattering.

The Grizzly

The brown bear is also known by territorial names such as the Alaskan, the Grizzly, the Kodiak, and the Siberian, which are considered subspecies. The Latin name for the species, *Ursus arctos*, actually means *bear bear*, with *Ursus* being the Latin word for bear and *arctos* the Greek word.

Most subspecies of the brown bear are massive, with males averaging six to nine feet in length, standing five feet at the shoulder. They weigh 500 to 1200 pounds, largely depending on diet and habitat. The Kodiak rivals the polar bear as the largest member of the bear family and the largest land-based predator. It is 10 feet tall when standing on its hind legs.



Grizzly Bear

The male is about 50% larger than the female.

The brown bear can range in color from blond to gray to black.

The brown bear can be distinguished from the black bear by the following traits:

- The Grizzly has a shoulder hump.
- The Grizzly has a concave snout that is shorter than a black bear's.
- The Grizzly has a part in the hair on its head above its snout
- The Grizzly's ears are short and rounded; the black bears' are longer.
- The Grizzly's claws are much longer.

The brown bear is more widely distributed than any other bear and occupies territory from the Arctic wilderness to temperate rain forests.

The brown bear's life expectancy is about 20 years in the wild and 30 years in captivity.

It eats almost anything, from insects to moose, but plants, roots, mushrooms, nuts, and fruit form their main diet. They love fish, and those that feast on salmon put on weight



Syrian Brown Bear

quickly. A brown bear has his favorite fishing spot, and tries to "reserve" it from other bears (BearLife.org).

The brown bear is usually a solitary animal except for the female and her cubs and except for when they congregate at favorite fishing spots to feed on salmon.

The brown bear can be a fierce man killer. Tellingly, the Grizzly's Latin name is *Ursus arctos horribilis*. There are an average of two fatal bear attacks per year in North America. Attacks often occur when a bear is surprised or guarding a kill or when a female is defending her cubs. In a few cases, the bear has eaten its victim. Richard White was killed and eaten in Denali National park in Alaska in 2012. He was taking photos from about 50 yards away, when the bear charged. White actually photographed the bear turning toward him and beginning to move his way before the tragic attack. He had broken the park rule to stay at least a quarter mile away from the animals.

Grizzly Man is a documentary film about Timothy Treadwell, a young man who thought he could befriend the bears in Alaska's Katmai National Park. Ignoring repeated warnings by park rangers and others, he and his girlfriend were killed and eaten by one of his "friends" in 2003. Treadwell's own video camera recorded the audio of the attack. The only thing that was left was one of his arms bearing his wristwatch.

The brown bear can easily outrun a human. They have been clocked at 30 miles per hour and can maintain that pace for two miles. It is said that a bear equals the strength of five tall, muscular men, and an enraged bear equals more than that.

When in an aggressive mode, the bear snorts, roars, growls, and snaps its teeth.

The best defense against a bear attack is good quality bear spray. A high powered gun is good at a distance, but it can be nearly useless if the bear initiates the attack from close

quarters, as often is the case, and it is moving at the speed of a locomotive. Bear spray has been known to stop an enraged mama Grizzly in her tracks. The spray is high velocity, shooting out about 30 feet, and is highly potent. When in bear country, it is wise to have the spray gun handy for a quick draw and to be practiced in the art!

Hibernation

Except in warmer habitats, the brown bear hibernates in the winter, usually from about October to March.

In preparation for hibernation, the bear will eat as much as 90 pounds of food a day. It can lose as much as half of its body fat during the winter sleep.

The female digs her den as much as a month before hibernation. Typically, it is composed of a tunnel four feet long leading to a chamber about five feet in diameter. The den is often built on a steep or moderately steep slope.

During hibernation, the bear undergoes "profound changes in body chemistry, metabolism, breathing rate, and moderate changes in body temperature" ("Brown Bear," San Diego Zoo). The process is a biological miracle that God has programmed into the bear's genetic constitution. If a human being tried to hibernate, he would die, as he would quickly dehydrate and starve. Even if a human remains in a reclining position for long periods, though he eats and drinks, he loses muscle and bone mass and otherwise deteriorates physically.

But the bear is designed to hibernate. Though it doesn't sleep all winter, it rests and doesn't eat, drink, urinate, or defecate, yet it doesn't dehydrate or starve or suffer muscle and bone loss.

"Researchers believe that they have found the chemical in a bear's blood that prevents bone loss during long inactivity. The chemical is under study for possible use in treating human osteoporosis. Bears avoid bathroom visits by chemically changing their own waste back into proteins. The

fact that scientists study how things in the creation work to improve how we do things is a tribute to the workmanship of the Creator, even if scientists refuse to admit His existence and activity" ("The Bear Facts about Good Health," *Creation Moments*, Dec. 5, 2014).

Breeding and Cubs

The female brown bear doesn't breed until it is five-six years old. In a process called delayed implantation, the fertilized egg floats free within the uterus until "nature" activates it to attach to the uterine wall and grow. This happens after the female begins hibernation so that the cub is born at the right time. "Should the mother not gain enough weight to survive through the winter, the embryo will not implant and will be reabsorbed into the body" ("Brown Bear," *New World Encyclopedia*).

The female averages two cubs, though four is not uncommon. It is not unusual for the female to adopt stray cubs. Newborns weigh only about one pound and are blind, toothless, and nearly hairless at birth. They are born during hibernation and nurse until spring. (And they continue to nurse for the next 1.5 to 2.5 years.) The cubs spend two and a half years with the mother, learning hunting and survival skills before venturing out on their own. During those years, the female tries to avoid males, as they might try to kill the cubs. The female will defend them against the much larger male at the cost of her life.

Smell

"Grizzly bears have a sense of smell seven times greater than that of a bloodhound, and 100 times that of a human by some estimates. Grizzlies also possess a Jacobson's organ in the roof of their mouth that can detect heavier moisture-borne odors. Scientists tracked the bear as it appeared to smell an elk carcass from four miles away, follow the scent

and even wound up swimming across the lake to get to it" ("GPS Study Tracks Grizzlies as They Follow Hunters," *Fox News*, Nov. 24, 2014).

Ethyl's Amazing Trek

One Grizzly trekked 2,800 miles through Montana and Idaho over a three-year period from 2012 to 2014. She crossed high mountains, rivers, towns, even an interstate freeway. It is thought that she was trying to find her way back to the area from whence she was removed for raiding apple orchards. At that time she was tagged with a radio collar that sent weekly GPS data packets to a satellite. Agents with the U.S. Fish and Wildlife Service named the wide-roaming bear Ethyl.

Bears in the Bible

The bear is mentioned 12 times in Scripture, and the Hebrew word "dob" means to move slowly (1 Sa. 17:34, 36, 37; 2 Sa. 17:8; 2 Ki. 2:24; Pr. 17:12; 28:15; Isa. 11:7; 59:11; La. 3:10; Ho. 13:8; Am. 5:19).

The Syrian bear (*Ursus arctos syriacus*) is one of 16 types of the brown bear clan that includes the North American grizzly. While not as big as the grizzly, the Syrian bear is still a monster weighing up to 550 pounds.

This is the type of bear that David killed (1 Sa. 17:34).

The Bible teaches us to learn spiritual lessons from creation, and the mother bear's ferocity is often used as an illustration (2 Sa. 17:8; Pr. 17:12; Ho. 13:8). Few things in nature are more fearful than a mother brown bear that is defending her cubs. She lies in wait (La. 3:10) and then attacks quickly and unexpectedly, running 35-40 miles an hour (50 yards in a blazing 3 seconds), and tearing her opponents apart with her sharp claws and terrible teeth.

In Hosea 13:8, God warns Israel that He would be to her in judgment as a bear bereaved of her whelps, and in the next verse He says, "in me is thine help." Like the mother bear, God is a wonderful protector and a terrible enemy.

The Syrian bear was thought to be extinct in Lebanon, Israel, and Syria, but a mother and cub were sighted in Lebanon's Bekaa Valley in December 2016 ("Extremely rare Syrian bear and cub spotted in Lebanon," *Independent*, Jan. 13, 2017).

In Christ's kingdom, the cow and the bear will feed together (Isa. 11:7).

The Horse

The horse (*Equus ferus caballus*) is one of the most useful and beloved of God's wonderful creatures. Even in the rocket age there are approximately 60 million horses in the world. In America, horses are a $39 billion industry that employ 4.6 million people.

Humans have been interacting with horses since creation. They are used for transportation, work, sport, pleasure, meat (eaten by the French), milk, leather, pharmaceuticals, and other things.

Historically, horses were used extensively in warfare. During World War II, an estimated 6 million horses were employed. Even in the age of mechanization, horses are still widely used in agriculture and police work.

The lifestyle of many groups of people was inseparable from the horse. These include Arabian nomads and some North America Indian tribes beginning in the 16th century.

In fact, man's use of the horse is so extensive that there is a vast specialized vocabulary for describing everything from its anatomy and behavior to its color and markings. An extensive

variety of riding styles, driving techniques, and equipment have been developed.

There are more than 300 breeds of horses today.

They are loosely divided into three categories based on general temperament: "spirited HOT BLOODS with speed and endurance; COLD BLOODS, such as draft horses and some ponies, suitable for slow, heavy work; and WARMBLOODS, developed from crosses between hot bloods and cold bloods, often focusing on creating breeds for specific riding purposes, particularly in Europe" ("Horse," *Wikipedia*).

The most popular breeds of horses are the following:

Arabian: It gets its name from the Arabian Peninsula. Known for its endurance, the Arabian is capable of running over 100 miles without rest.

Quarter horse: The American quarter horse is the world's most popular breed; it is the fastest horse over short distances; it is the "cowboy horse," used for roping and cutting, barrel racing, and hunting.

Thoroughbred: A high spirited horse used for racing, hunting, and jumping, among other things.

Tennessee Walker: A horse developed in the Southern United States in the 18th century for use on farms and plantations. It was widely used by Civil War officers because of its endurance and smooth gait that makes it comfortable for riding long distances. Robert E. Lee's Traveler was part Tennessee Walker.

Morgan: The Morgan was developed in the United States as an all-around saddle/stock horse for farming and ranching, harness racing, and pulling carriages. They are still used widely in rodeo work.

Paint: This is a combination of the conformation of a western stock horse and the colors of a pinto.

Appaloosa: It was developed by the Nez Perce Native American Indians. "They are tough, independent, hardy and sure-footed."

Miniature Horse: Developed in Europe in the 1600s, the miniature horse must be under 38 inches.

Andalusian: A Spanish breed developed in the 15th century, it was used as a war horse. Most of them are grey or bay.

The draft horse is a large, powerful horse bred for heavy work. It is also called a draught horse or a dray, from the old English *dragan* meaning "to draw or haul." The **Shire**, bred in England**,** is one of the largest draft horse breeds. It can be traced to the 12th century and was known as the English Great Horse. Before the age of gun power in Europe, the great horse was popular with knights because of its great strength and bulk. At a 1924 British exhibition, a pair of Shires pulled a load equal to 45 tons. The **Belgian**, called the Belgian Heavy Horse, was bred in the Brabant region of Belgium. On average, it stands between 16.2 and 17 hands and weighs over 2,000 pounds (900 k). The world's largest was Brooklyn Supreme, weighing 3,200 pounds and standing 19.2 hands (78 inches). The **Percheron** is a smaller French-bred heavy horse that averages from 15.1 to 18.1 hands and weighs from 1,100 to 2,600 pounds. They are intelligent, willing workers, have good dispositions, and are adaptable to many conditions. They were used by armored knights for their power, size, and stamina, being able to travel 37 miles in a day at a trot.

Clydesdale is a large draft horse bred in Scotland and used for heavy work. Because of its wide use in Australia, it was called "the breed that built Australia."

The horse's normal life expectancy is 25-30 years. The oldest on record was "Old Billy," which lived to the age of 62 (died in 1822). More recently the pony Sugar Puff died in 2007 at age 56.



Horse

Horses of various ages are called by the following terms:

Colt: A male horse under the age of four

Filly: A female horse under the age of four

Foal: A horse of either sex less than one year

Yearling: A horse of either sex that is between one and two years old

Mare: A female horse four years or older

Stallion: A non-castrated male horse four years or older

Gelding: A castrated male horse

The height of a horse is measured at the highest point of the withers, where the neck meets the back. It is measured in units of hands and inches. One hand is equal to 4 inches. For example, 14.2 is 14 hands and 2 inches or 58 inches. A pony is a horse that is less than 14.2 hands high.

The largest horse on record was a Shire named Sampson (also known as Mammoth) that stood 21.2 hands (86 inches) and weighed 3,360 pounds (1,524k).

The smallest horse on record was Einstein, a 14-inch tall pony.

Horses come in a wide variety of colors and markings, such as the following:

- Black
- Bay (dark brown)
- Chestnut (sorrel)
- Grey (they usually get lighter with age; most white horses are actually light grey)

The horse's speed (gait) is divided into the following major categories: Walk, Trot, Pace, Canter, Gallop.

When a horse is galloping, all four hooves are off the ground at one point. This was proposed in 1872 by Leland Stanford, and it was proven to be correct by Eudweard Muybridge, who used an array of 24 cameras to photograph a racehorse named Sallie Gardner.

The fastest horse on record could run 55 miles per hour (88 kph). The longest jump over water was by Something, which jumped 27 feet 6 inches. The highest jump was made by Huaso, which jumped 8 feet 1 inch.

The horse has keen senses. Its eyes are the largest of any land mammal. It has a range of vision of 350 degrees and excellent night vision. A horse can look at two different things at one time, and its ears will point in those different directions. The horse's sense of smell is aided by two olfactory systems, one in the nostrils and one under the nasal cavity. These organs have separate nerve pathways to the brain to analyze different kinds of smells, including pheromones (chemicals excreted by animals and insects to trigger social responses). The horse's hearing is very keen. It can detect sounds as far as 2.5 miles (4 km). Its hearing covers a wider range of frequency than a human's (14 Hz to 25 kHz vs 20 Hz

to 20 kHz). Its outer ears (the pinnas) are capable of rotating 180 degrees for isolating sounds and sensing direction. The conical shape of the pinna acts to capture sound as well as to shield the sound from other noises. They can also pick up low frequency vibrations through their hooves and teeth.

Some other interesting facts about horses:

The underside of a horse's hoof has a triangular shaped area called the "frog," a brilliantly-designed organ that acts as a shock absorber as well as helping to pump blood back up the leg.

The horse's brain is about half the size of a human's, but its heart is about 10 times the size of a human's. A human heart weighs about 11 ounces and is the size of a clenched fist, whereas the horse's weighs 9 to 10 pounds and is the size of a basketball.

The horse is a social creature that typically lives in herds of 3 to 20, usually led by a stallion. A single horse will get lonely.

Horses love sweets.

A horse's teeth are a good indicator of its age. The saying, "Never look a gift horse in the mouth" means don't carefully examine a gift.

The horse's memory might be even better than that of an elephant.

Horses love water and will drink a minimum of 25 gallons per day. It will eat 1 to 2 percent of its body weight every day.

When a horse looks like it is laughing, it is actually engaged in a technique to enhance their smelling.

One horse can produce 15 to 30 pounds of manure daily. "In 1900, there were 15,000 horses in New York City. They produced enough manure in one year to create a pile 175 feet high, covering an acre of land, and breeding 16 billion flies" (Joel Tarr, "Urban Pollution," *American Heritage Magazine*, Oct. 1971).

Horses can sleep both standing up and lying down. When standing, it locks its leg joints. If they are in a group, at least one horse will stay awake as as a lookout.

Horses can breed with zebras and the product is called a *zebroid*. A cross between a zebra and a pony is a *zony*.

The Horse in the Bible

The horse is mentioned 213 times in the Bible.

The first mention is in Egypt during Joseph's reign (Ge. 47:17).

The Bible speaks of the horse's strength and bravery (Job 39:19-25; Jer. 47:3), stubbornness (Ps. 32:9; Pr. 26:3), ability to find its way through a wilderness (Isa. 63:13), stamina (Jer. 12:5), swiftness (Jer. 4:13; Hab. 1:8), ferocity (Hab. 1:8), even the stallion's passion for the mare (Jer. 5:8).

The horse is often mentioned in the context of war. The Bible describes vast armies with massive numbers of horses and chariots, beginning with Pharaoh's horsemen (Ex. 14:9). Joshua defeated a coalition of Canaanites "with horses and chariots very much" (Jos. 11:3-4). David defeated an army of 20,000 that was accompanied by 1,000 chariots and 700 horsemen near the river Euphrates (2 Sa. 8:3-4).

The Bible describes horse warfare in dramatic terms. It mentions the snorting (Jer. 8:16), the stamping of the hooves (Jer. 47:3), the rushing into the battle (Jer. 8:6), the dust (Eze. 26:10), the pransing (Na. 3:2).

Israel's kings were forbidden by the law of Moses to multiply horses, which is a reference to war horses from Egypt (De. 17:16). This was intended to keep Israel from trusting in horses and chariots like other nations. Compare Ps. 20:7; 33:17; Isa. 31:1. In disobedience to God's command, Solomon had 40,000 stalls of horses for his chariots and 12,000 horsemen (1 Ki. 4:26).

One of the gates of Jerusalem was named the horse gate (Ne. 3:28).

The Assyrian horsemen were clothed with blue (Eze. 23:6).

Horses will be used in end-time battles. Gog and Magog will ride horses (Eze. 38:4, 15; 39:20), and horses will be at the battle of Armageddon (Hag. 2:22; Zec. 12:4; Re. 14:20; 19:18-19).

The opening judgments of the Tribulation are described under the metaphor of horses (Rev. 6:2, 4, 5, 8).

Horses are mentioned in connection with Christ's kingdom. Converted Jews will be brought to Israel on horses (Isa. 66:20). Kings and princes will enter the gates of Jerusalem on horses (Jer. 17:25).

There are heavenly horses that are more amazing than the earthly horses. Elijah was taken to heaven in a chariot of fire, and horses of fire (2 Ki. 2:11), and Elisha saw horses and chariots of fire in the mountains around Dothan (2 Ki. 6:17). Christ will come from heaven on a white horse accompanied by the armies of heaven on white horses (Re. 19:11, 14).

Famous War Horses

There have been many famous war horses in history.

Alexander the Great's Bucephalus

Alexander's is is one the earliest horses in history whose name is known. When only 12 years old, Alexander tamed the exceptionally difficult black stallion. He rode the war horse in battles throughout most of his career, spanning from Macedonia to India. It is said that Bucephalus died of old age during the battles in the Punjab and that Alexander named a city in its honor.

Napoleon's Marengo

Napoleon was the French ruler who conquered much of Europe in the late 18th century. Marengo was a gray Arabian

imported from Egypt. He was small but strong, dependable, and courageous. He could travel 80 miles in five hours. Marengo was wounded eight times in battles.

The Duke of Wellington's Copenhagen

The Duke of Wellington was the British military leader who defeated Napoleon at the Battle of Waterloo in 1815. Copenhagen was a brown horse that stood 15 hands high (60 inches) and was very muscular. He was three quarter Thoroughbred and one-quarter Arabian. He had the habit of lying down when he ate his corn. Before he was owned by the Duke, he was a race horse. He was the fastest horse, but he had great endurance which is essential for a war horse. The Duke rode him for 17 hours during the Battle of Waterloo. He was retired to a farm and lived to the age of 28. He loved visitors and especially liked chocolate cream sweets.

Robert E. Lee's Traveller

Robert E. Lee was the general of the southern armies in America's Civil War in the 19th century. His horse Traveller was an American Saddlebred, 16 hands high (64 inches). Lee purchased Traveller for $200, which would be equivalent to about $5000 today. He was difficult to control, nervous and spirited, but Lee loved him for his strength, endurance, and courage.

Traveller was always ready to travel. Lee often rode him over 40 miles in a day. He was full of energy and loved to prance and jig rather than walk. He wanted to be in the front of every battle.

Robert E. Lee rode Traveller from 1862 until the end of the war in 1865. Traveller died soon after the death of Lee in 1871.

Ulysses Grant's Cincinnati

Cincinnati was the son of Lexington, the fastest four-mile thoroughbred horse in America at that time. He was 17 hands high (68 inches).

The Hummingbird

The 300 species of hummingbirds vary in size from the giant hummingbird, with a length of about eight inches (20 cm.), to the bee hummingbird, with a length of about two inches (5 cm.).

The hummingbird can swivel its wings through an amazing degree of angles. The wings beat a figure eight pattern which allows it to hover and fly backwards (by moving the wings in a circular path over its head), sideways, and even upside down.



Annas Hummingbird

It can beat its wings up to 200 cycles per second and reach speeds of 50 miles per hour.

The wing muscles necessary to drive this flight system represent up to 40% of the bird's total body weight.

Its long, thin beak is designed to feed on the nectar of flowers; its tongue has two furrows that it uses to store the nectar. The tongue can go in and out at a rate of 13 times per second, and is stored by being curled up at the back of the bird's head. Its tongue is also fringed so it can sweep insects from inside flowers. "It cannot survive on nectar alone, but also needs protein from eating insects. Without its special tongue it could never catch these" (*A Closer Look at the Evidence*, July 14).

One type of hummingbird is the fastest diving bird on earth.

> "A peregrine falcon diving toward its prey reaches a relative speed of 200 body-lengths per second. This is close to the 207 body-lengths that the space shuttle travels as it enters our atmosphere. Thus, the peregrine falcon was thought to easily be the fastest dare-devil bird on Earth. Scientists have now discovered that a little pink male hummingbird called Anna's Hummingbird is the real Top Gun among the birds. As part of its mating ritual, a male hummingbird will try to impress a female with his speed and acrobatics. First, the male will fly up to about 90 feet above the ground. Then, he begins a power dive. As he nears the female, he pulls up, ascending again. During that near-miss pull-up he experiences more than nine times the force of gravity. His relative speed during descent is 385 body-lengths per second. That's almost twice the peregrine falcon's relative speed, it's faster than the space shuttle entering the Earth's atmosphere and is more than twice the relative speed of a jet fighter running with afterburners" (http://www.creationmoments.com/radio/transcript.php?t=2889).

The ruby-throated hummingbird flies non-stop 450 miles across the Gulf of Mexico in 20 hours, beating its tiny wings nearly 3 million times on that amazing journey.

"The hummingbird is so different from other types of bird that it is impossible for the evolutionist to hypothesize that it could fit onto any evolutionary tree" (Stuart Burgess, *Hallmarks of Design*, p. 137).

The Leopard

The leopard (*Panthera pardus*) is mentioned eight times in Scripture. The common Hebrew word is "namer" (naw-mare), meaning spotted.

It is a medium-sized spotted wild cat that lives in Africa, the Sinai, the Judean wilderness, the Arabian Peninsula, Turkey, South Asia, Russia and China.

It is beautifully colored with dark spots on a tawny coat, but its coloring changes somewhat according to its habitat. This provides excellent camouflage, and it can become invisible in very sparse cover.

The leopard can survive from the moisture it gets from its kills.

Typically it hunts at night and rests in trees or caves during the day.

The leopard loves the water, is a good swimmer, and can catch fish and crabs.

Also called a panther, it is less bold than a lion or tiger, but it is one of the most dangerous animals. "Pound for pound, it is the strongest of the big cats." Its sense of smell is extremely keen, its night vision excellent, and it is an intelligent, quiet hunter. The leopard lurks and observes and stalks, as described by Hosea. "Therefore I will be unto them as a lion: as a leopard by the way will I observe *them*" (Ho. 13:7). "Leopards rely heavily on being able to get close enough to their prey before ambushing it" (A-Z-Animals.com).

When it attacks, it is extremely fast, able to run 60 kilometers per hour (37 mph). Its long, heavy tail provides

keen balance as it makes sharp turns. It can leap 3 meters high (9.8 ft) and more than 6 meters (20 ft) horizontally.

Its jaws are the most powerful of the big cat family (2000 psi). "During predatory attacks, leopards typically bite their prey's throat or the nape of the neck, lacerating or severing jugular veins and carotid arteries, causing rapid exsanguination. The spine may be crushed and the skull perforated, exposing the brain. Survivors of attacks typically suffer extensive trauma to the head, neck, and face. ... Before the advent of antibiotics, 75% of attack survivors died from infection" ("Leopard Attack," *Wikipedia*).

On one occasion, a leopard ripped and tore into three hunters in a matter of seconds before someone could kill it.

It is able to drag a carcass larger than itself up a tree.

"Like the tiger, the panther [leopard] sometimes takes to man-eating, and a man-eating panther is even more to be dreaded than a tiger with similar tastes, on account of its greater agility, and also its greater stealthiness and silence. It can stalk and jump, and ... can climb better than a tiger, and it can also conceal itself in astonishingly meager cover, often displaying uncanny intelligence in this act. A man-eating panther frequently breaks through the frail walls of village huts and carries away children and even adults as they lie asleep" (J.C. Daniel, *The Journal of the Bombay Natural History Society*).

Leopards were credited with more than 13,300 deaths in the Indian subcontinent between 1875-2007.

Two infamous man-eating leopards in India killed 525 people, as described in Jim Corbett's book *Man-Eaters of Kumaon*.

The leopard is one of the "Big 5" game animals in Africa. The other four are the elephant, the black rhinoceros, the cape buffalo, and the lion. On a photo safari at Kruger Park in South Africa in 2015, we sighted the Big 5 every day of the three-day journey.

In Christ's kingdom, the leopard will lie down with the lamb (Isa. 11:6).

The Lion

The lion is mentioned 150 times in Scripture.

Samson killed a lion (Jg. 14:5). So did David (1 Sa. 17:34-36) and Benaiah (2 Sa. 23:20). A lion killed the disobedient prophet in 1 Ki. 13:23-24. Daniel was thrown into the lions' den, where God protected him (Da. 6:16-23).

Satan is likened to a roaring lion that "walketh about, seeking whom he may devour" (1 Pe. 5:8).

The Bible describes the lion as brave (2 Sa. 17:10), bold (Pr. 28:1), strong (Pr. 30:30), fierce (Job 28:8), stealthy (Ps. 10:9; 17:12; La. 3:10), ravening (Ps. 22:13).

The Asiatic lion (*Panthera leo persica*) was once common in Israel but has been extinct since the end of the 19th century, due largely to unchecked hunting under Ottoman rule.

A male lion can reach 3 meters (10 feet) long and weigh 180-225 kilos (400-500 pounds).

A lion can leap as far as 11 meters (36 feet) and run up to 80 kph (50 mph), but it can only run that fast in a straight line and for a short distance.

They usually live and hunt in groups called *prides*. In Tanzania, Africa, lions have been known to form "super prides" of 22 or more animals. They hunt in packs, feeding on large herds of wildebeest and zebra. The cubs are protected by "trusted" members of the pride in a "crèche" so the mothers can leave their cubs safely behind and go out on the hunt (*Super Pride*, National Geographic).

A male lion's roar can be heard by humans up to 8 km (5 miles) away and has been measured at 114 decibels. One

Hebrew word for lion is "shachal," meaning the "roarer" (Pr. 26:13).

They are very strong and can carry off a complete buffalo carcass.

The lion's blow is one of the most powerful forces in nature. "The leg, or forearm, as it is called, measures 19 inches around, and is made up of the hardest of hard bone, with muscle and tendons as strong as the strongest wire. The foot measures 8 inches across. When this foot strikes an animal the lion shoots out its terrible claws, which are hidden, when it walks, inside the joints of the toes. These claws are like great hooks made of yellow horn. They tear the flesh off an animal as we would strip the peel from an orange. The force with which these claws are driven in is almost more than we can believe. ... The forearm of the lion is worked by great muscles at the shoulder, and the blow which it makes is really like the blow from a steam hammer. No wonder that it can kill a man or a big animal with ease" ("The Three Strongest Things in the Animal World," *The Human Interest Library*).



Lion

Interestingly, another Hebrew word for lion is "layish," referring to a crushing blow (Pr. 30:30).

In Joel 1:6, the Assyrian army is likened to the teeth and jaws of a lion. Its sharp teeth and strong jaws can rip huge chunks of meat from a carcass.

Lions are very intelligent hunters that can capture animals that are faster and more agile. Their night vision is six times better than humans.

In 1898 two lions in the Tsavo region of Africa (Kenya-Uganda) killed an estimated 135 men who were working on a British railway project as accounted in John Henry Patterson's *The Man-Eaters of Tsavo*. One of the lions was shot nine times before it died.

Jesus Christ is the Lion of the tribe of Judah (Re. 5:5), and when He reigns on earth, the lion will lie down with the fatted calf (Isa. 11:6).

The metaphor of a lion describes Christ's courage (2 Sa. 17:10), boldness (Pr. 28:1), strength (Pr. 30:30), fierce (Job 28:8), stealthy (Ps. 10:9; 17:12; La. 3:10), and ravening (Ps. 22:13).

The Mallard Duck

The mallard (*Anas platyrhynchos*), the most common and populous duck on earth, is a beautiful dabbling duck with a very wide habitat across the Americas, Eurasia, and North Africa. It thrives from Arctic tundra to the subtropics and inhabits both fresh- and salt-water regions. Being dabblers, the mallard looks for shallow bodies of water with aquatic vegetation.

"Mallards have long been hunted for the table, and almost all domestic ducks come from this species."

It is the female mallard's "quack" that is taught to children everywhere as the quintessential "duck sound." It's the "quack,



Mallard

quack here and the quack, quack there" of the nursery rhyme "Old MacDonald Had a Farm." Male mallards don't quack; their sound is more like a "kreep," and the ducklings make soft, shrill whistles.

In breeding season (from fall to spring), the males (drakes) are a riot of gorgeous color, with an iridescent green head, a white ring or collar below the neck, yellow bill tipped with black, purple-tinged brown and grey body, black tail with white borders, wings that are grey beneath and brown on top with a bright iridescent blue rectangular patch called a *speculum* fringed in white and black, and orange legs and feet. The females (hens) are less showy, but are still beautiful with striking brown-speckled plumage, an orange and black bill, and the same iridescent blue rectangular *speculum* on the top rear of the wings. Part of this blue patch is visible when the female's wings are folded. The female has black stripes on her head that begin at the bill.

The mallard's iridescent green and blue is not created by color pigment. It is created by a complex nanostructure that

reflects only a certain wavelength of light photons. It is called a "photonic heterostructure" and consists of "a thin-film of keratin and a two-dimensional hexagonal lattice of melanosomes in the feather barbules" (Chad Eliason and Matthew Shawkey, "A photonic heterostructure produces diverse iridescent colours," The Royal Society Publishing, Apr. 4, 2012).

This extremely complex, super-miniature color-producing structure is only beginning to be understood by scientists using the most advanced tools, including electron microscopy, reflectance spectroscopy, and optical modeling. Yet the mallard's "photonic heterostructure" is said to have evolved by the process of "natural selection," even though it is more complex than high-tech scientific tools which are known to be the product of intelligent design. Further, the design for the photonic heterostructure is part of the duck's DNA and is built by its protein creating cellular processes. And unlike an electron microscope, the duck is a living, reproducing creature.

The mallard is a medium-sized duck 20-26 inches long, weighing 1.6-3.5 pounds, with a wingspan of 32-39 inches.

The mallard's diet is broad and includes plants, seeds, insects, worms, crawfish, small fish, and frogs.

The mallard is a gregarious bird and "outside of the breeding season congregate in large groups known as *sords* (meaning "to rise or soar up") when they are in the air and *rafts* or *paddlings* when they on the water.

Mallards form breeding pairs in October and November and remain together until the female lays eggs in the spring, at which time the male leaves to join other males for the molt, when they lose their bright breeding plumage and look more like the female. In the fall, the males regain their breeding plumage.

Typically the female mallard lays a clutch of 8-13 eggs which she tends by herself during the 28 days of incubation.

(In 2013, a mallard laid 24 eggs and hatched all of them, *BuzzFeed Animals*, Apr. 23, 2013.) In the early stages of incubation, the female sheds fine feathers from her belly that she uses to line the nest and to keep the eggs warm in her absence.

A few hours after hatching, the mother will lead the chicks to water. They can already waddle, swim, and even find food, but the journey can be long and dangerous, as stragglers can get lost or be taken by predators. They stay with the mother for the next few weeks for warmth, protection, and instruction. At about two months, they start to fly and soon launch out on their own.

The female mallard is a good mother. "She will stop at frequent intervals to collect and brood, or warm, her young. If surprised by an intruder, she is likely to go flapping and squawking across the ground, as if injured. This feigned injury may not fool a human, but undoubtedly lures predators away" ("Mallard," *Hinterland Who's Who*).

The mallard is a dabbling duck, meaning that it tips forward and dabbles or dips its head beneath shallow water to gather food by use of its amazing bill. The top part of the bill is called the upper mandible, and the bottom is called the lower mandible. The upper mandible is fixed, while the lower mandible is moved by the duck's jaw. The bill is a complex organ that enables the duck to detect, differentiate, sift, grab, and swallow food. The edge of the bill is soft and sensitive and is used to feel for food. It has a nail at the front that is used for hooking and moving food. Along the inside of the bill are comb-like structures called *lamellae*, which the duck uses to filter out mud and other things it doesn't eat. The food is swallowed whole.

After passing through the stomach, the duck's food enters a gizzard, which squeezes and crushes it before it enters the intestines. The gizzard utilizes tiny stones that the duck swallows to act as grinders.

The mallard can sleep with one eye open to watch for predators. Half its brain is awake and half is asleep.

The mallard is a great flyer, with top speed of about 70 miles per hour. It can take off almost vertically. Sords of mallards tend to fly in V shape formations.

The Monarch Butterfly

Digital SLR photography is both a hobby and a ministry tool for me, and I enjoy the challenge of photographing butterflies and dragonflies.

The monarch butterfly lives up to its name in that it is the king of these amazing creatures and a wonderful icon of divine creation. I own many books on butterflies and have visited prominent butterfly conservatories in several countries, and in my experience evolutionists don't even try to explain how such a creature could have evolved. They merely presume that it did. They even talk about the "co-evolution" of the butterfly and the flower, as if natural selection and mutation or any other naturalistic concept could possibly explain the origin of such wonderful symbiotic relationships! How could blind evolution create such a thing? If the flower and the pollinating insect did evolve, they had to have evolved at exactly the same time--like in the same day or week--because they are dependent on one another for their very existence.

Metamorphosis

The monarch butterfly's Latin name, *Danaus plexippus*, means "sleepy transformation," referring to its amazing life cycle.

The butterfly goes through a four-stage process called *metamorphosis*: from egg, to larva, to pupa, to adult.



Monarch Butterfly

It begins life as a tiny, brilliantly-designed **EGG** that the female butterfly attaches to the exact type of vegetation needed by the caterpillar when it hatches. It is attached with a special glue that hardens rapidly and holds the egg securely in all types of weather. The egg stage usually lasts a few days, but eggs laid before winter can enter a resting stage and hatch the following spring.

Within this tiny egg is an entire world of genetic information. It contains the instructions for the construction of the caterpillar and to create the intelligence it needs to operate all of its organs (eyes, antennae, legs, etc.), to maneuver within its environment, to digest leaves, to avoid predators, to know when and how to molt, to pupate, etc. It contains the instructions for the incredibly complex process of the final molting and formation of the pupa, including the amazing cremaster mechanism. It contains the instructions for the death and dissolution of the caterpillar into a biological soup and the reformation of that soup into a beautiful butterfly. It contains the instructions not only to

construct the butterfly in all of its mind-boggling complexity (e.g., its proboscis, its compound eyes, its intricately shingled wings, its sensory organs, its reproductive organs) but also to create the butterfly's brain and the intelligence needed to thrive within its environment, to fly, to land, to avoid predators, to find the right plants and flowers, to drink and digest nectar, to keep its cold-blooded metabolism in balance, to reproduce. It contains the instructions for a bewildering multi-thousand mile migration to a place it has never been and in the absence of any earthly guide. It would seem, in fact, that the genetic code within that tiny monarch butterfly egg contains a map of a large part of the earth! And it contains the information for constructing hundreds of copies of itself.

The creature emerges from the egg as a larva or **CATERPILLAR**. It is an eating machine that increases its weight 3,000 times in 20 days, doubling in size about every 12 hours. This would be like a human baby increasing from eight pounds to 24,000 pounds in less than two weeks! The monarch caterpillar eats only milkweed, which is poisonous to other insects. It "sequesters" this substance and retains it through the metamorphosis process into the butterfly stage, thus providing protection for the flying insect.

The caterpillar has three pairs of "true legs" and up to six pairs of "prolegs." The prolegs have rings of tiny hooks called crochets that help them grip the leaves and stems of plants. The creature's brain and nervous system control the extremely complex coordinated movement of its legs. Some caterpillars can produce smelly chemicals that it uses for defense. The caterpillar weaves a mat of silk threads on the leaves on which it walks. "The silk is produced by a spinneret situated behind the mouth-parts, so the caterpillar has to move its head from side to side in order to weave the silk mat. ... This silk helps the caterpillar to hold on to the leaf. There is some evidence that the silk threads may also serve as a chemical trail to help

the caterpillar trace back its path if it has a particular hideout" (*Butterflies of Peninsular India*).

As the caterpillar grows, it casts off its outer skin layer four or five times. This is called molting, and it is necessary to accommodate its rapidly increasing size.

> "There are sensors in the skin of the caterpillar that are strain detectors, that detect the amount of pressure or strain being put on the skin and when that is too great they send a signal to the brain which then releases a hormone that causes molting" (Paul Nelson, Biola University, *Metamorphosis*, DVD, Illustra Media, 2011).

When the caterpillar molts, it sheds its entire head capsule, with its six eye lenses and spinneret. Thus, during the molting stage, "there must be four or five different head capsules made, each one being bigger to accommodate the growing caterpillar" (Jules Poirier, *From Darkness to Light to Flight*, p. 6).

Toward the end of the caterpillar stage, "imaginal cell clusters" appear at various locations in its body, and these contain the information for the future butterfly.

When it has grown to the right size, the caterpillar locates a suitable place on a milkweed leaf. It might make long journeys of 10 to 20 yards searching for the proper location. It spins a silk pad, from which it hangs by its prolegs to form a **PUPA OR CHRYSALIS**. After a day or two, the caterpillar molts the final time but this time the post molting appearance is completely different. "There is no longer any head capsule, no jaws and no legs. The new appearance is of a relaxed and wet pupa."

During the final molt, the caterpillar attaches itself firmly to the silk pad by means of **a CREMASTER** that has microscopic hooks. This is an absolutely essential step, since it has been hanging by its prolegs but these will be shed with the final molting.

> "When the skin is pushed to the top it uncovers a hole above the abdominal area, about 0.25 inches from the end of the pad. A black, stalk-like cremaster (about 0.1 inch long) protrudes through this hole. It lunges three times forward through the hole toward the silk pad. On the outer end of this cremaster is a bulb covered with hundreds of microscopic hooks of various forms. On the third lunge the front end pierces the silk pad, after which the body of the caterpillar rotates clockwise three times, thrusting the cremaster hooks deeper into the silk pad. In this position the body of the caterpillar begins to do all kinds of convulsive gyrations to remove the old outer skin from the silk pad. ... The insertion of the cremaster into the silk pad at the precise time is very critical to the survival of the butterfly ... [and] the insertion of the cremaster was accomplished by a totally blind caterpillar. Think of all the carefully coordinated design features of this transformation process" (Poirier, *From Darkness to Light to Flight*, pp. 10, 11).

The pupa must be attached securely to the silk pad. If the pupa falls at this point it ruptures, because it is full of liquid. The cremaster's microscopic hooks attach something like Velcro but "the connection is so tight that if one simply pulls at the chrysalis, the chrysalis will break before the hooks pull loose from the silk pad. This protects the cremaster from being blown loose in storms" (Edith Smith, "Meandering Thoughts," Aug. 21, 2010, Shady Oak Butterfly Farm, Brooker, Florida).

After a few hours the pupal skin hardens.

Butterfly pupae come in a wide variety of shapes and sizes. Some are cleverly camouflaged. The pupa of the tailed jay looks like a new bud, while that of the giant owl butterfly looks like a dead leaf.

During the pupa stage, the creature's body and organs and even its very cells dissolve into a cellular liquid referred to as "**SOUP**."

"Cell death is programmed. If you kill the wrong cells, you are in deep trouble. It's very carefully engineered. You're going to save some of the cell population so you have to know where you're going to end up before you start" (*Metamorphosis*, DVD, Illustra Media, 2011).

This "soup" reorganizes itself into a beautiful butterfly!

Dr. David Stone observes:

> "This is so far beyond the best of human technology, that words fail. Hire the brightest scientists and engineers on the planet, give them an unlimited budget, even unto trillions of dollars, and an open-ended schedule, and how likely is it that they could generate such a 'soup'? Zero. This is yet another example that there is no theory of evolution, or even a wild speculation, to account for such an ubiquitous little creature as a butterfly."

When it is ready to emerge, the butterfly taps onto the front of the pupa with its legs and the pupal skin breaks and opens in front like a door. The butterfly exits and suspends itself in order to pump the veins of its wings full of fluid to unfold them. This takes about 15 minutes. It also joins the two segments of its proboscis to form one sucking tube. It knows how to do all of this, though it has never existed in this form before.

The caterpillar has 16 short legs, a chewing mouth, six simple eyes that see only in black and white, eats leaves, and crawls. The butterfly has six long articulated legs, a sucking mouth, antennae, a proboscis, four wings, reproductive organs, two complicated compound eyes that can see in color, drinks nectar, and it can fly!

The change has been likened to a Model-T Ford forming its own garage and then within that garage disassembling itself and then reassembling itself into a high-tech helicopter and flying off. Even this would not be nearly as dramatic, though,

as the real change that occurs through butterfly metamorphosis.

Metamorphosis is described even by secular biologists as a "miraculous change of form." They admit that "there is no evidence how such a remarkable plan of life ever came about" (Peter Farb, *The Insects*, Life Nature Library, p. 56).

Science journalist Richard Milton says, "To say that this process is not understood ... means that no stage or aspect of this physical process can be accounted for or even guessed at with our current knowledge of chemistry, physics, genetics, or molecular biology, extensive though they are" (*Shattering the Myths of Darwinism*, p. 220).

Michael Pitman, who taught biology at Cambridge, asks how it would be possible for metamorphosis to have evolved:

> "Within this dry shell the organs of the caterpillar are dissolved and reduced to pulp. Breathing tubes, muscles and nerves disappear as such; the creature seems to have died. But processes are in operation which remould that pulp into different, coordinating parts, and in due course the insect, which has not grown up or developed in any normal sense, re-emerges as a beautiful, adult butterfly. It is a kind of resurrection. Certainly it demonstrates the absurdity of invoking natural selection by successive mutation to explain such an obviously, yet subtly programmed, process. Why, on that basis, should the ancestral insect have survived the mutations that projected it into the chrysalid stage, from which it could not yet develop into an adult? Where was natural selection then? How could pre-programmed metamorphosis, in insect, amphibian or crustacean, ever have evolved by chance? Indeed, how could development have evolved piece-meal? The ball is in the evolutionist's court, tangled in a net of inexplicability" (*Adam and Evolution*, p. 71).

Even if we assume that a caterpillar could evolve from something else, how could evolution proceed beyond that to

the pupa and the butterfly? Why would a happy little "evolved" caterpillar, merrily eating its way through succulent leaves, decide to spin a silk pad and form itself into a pupa? And if somehow this came into its thinking process, how could it learn to do such an amazingly complicated thing? And why? And even if this somehow happened, and the caterpillar mysteriously dissolved into a biological soup, that would be the end of it. *How would the dissolved caterpillar ever rearrange itself into a different creature unless this entire process was already programmed in its genetic makeup? Genetic mutations and natural selection stand mute before metamorphosis.*

Furthermore, the caterpillar cannot reproduce. It has no sex organs. If it does not go through the death and rebirth of metamorphosis and become a butterfly, it has no way to perpetuate itself. It had to have had the ability to undergo metamorphosis from the very beginning in order to exist!

The metamorphosis process had to have been perfect from the beginning. A partial metamorphosis would mean death to the creature. The process *must* form a perfect butterfly that can carry out the complicated mechanism of reproduction.

> "By its very nature, metamorphosis is an all or nothing proposition. And throughout biological history, its success has hinged upon the immediate availability of a full set of instructions, including genes, proteins, and the developmental program required to integrate them. It all has to be in place ahead of time. It needs to have the genes in place, the regulatory elements that are going to turn the genes on and off; it has to have all the cells preprogrammed to do what they are going to do so they respond to the signals they get in the right way. The larval cells have to know they are going to die. ... [The process] has to happen rapidly and in a coordinated fashion. Once you're committed to the chrysalis stage, there is no going back. You have to complete the transition. A caterpillar that is equipped to go 10

> percent, 25 percent through metamorphosis is *no way* through metamorphosis. Part way in a process that requires getting out the other side as a fully formed adult doesn't work. You have to recreate adult legs, adult antennae, adult eyes; you have to change the shape of the brain and the connections to the organs; you have to reformat the gut so that it switches from eating plant material to eating nectar. How many mutations does it take? And how do you coordinate all of that? If you get the eyes right but the gut wrong it's a failure as a butterfly. If you get the wings right and the legs right but the muscles don't attach, that butterfly is going nowhere. It's dead. You begin to see the depths of the problem. So for evolution to have created this sort of pathway, gradually, it would take a miracle. Metamorphosis, if it came into existence at all by an undirected process, had to have done so in one fell swoop. Natural selection, by definition, cannot build that kind of process. To create a process like metamorphosis, you'd need a totally different type of cause, something that could see a distant target, keep that target in focus, and provide all the resources necessary to hit the bull's eye on the first shot. The only cause that could accomplish that is an intelligent agent" (*Metamorphosis*, DVD, Illustra Media, 2011).

Biologist Richard Stringer, who has captured this transformation through magnetic resonance imaging, says:

> "You have a great big orchestra in there, and you have a conductor, some conducting force, that's responsible for it all. I can say without any doubt that it was the most amazing thing I've ever seen" (*Metamorphosis*, DVD).

Migration

In September and October one variety of the monarch flies 2,500-3,000 miles from Canada and the northern USA east of the Rocky Mountains to locations it has never seen in

mountain forests in central Mexico. It even flies to the very same tree where its forebears overwintered! The exact hibernation sites were not discovered until 1975 when Dr. Fredrick Urquhart of the University of Toronto developed a method of tagging and tracking the butterflies. Hundreds of millions of butterflies find their way unerringly to these remote locations each year.

The generation that flies to Mexico is called the "**Methuselah Generation**" because it is genetically programmed to live for six to eight months rather than the few weeks that is typical for monarch butterflies. This allows it to complete the first part of the massive migratory movement and is necessary for the monarch's survival. (Some of them actually make the entire migration and return to their starting place in the north.)

The migration to Mexico takes about two months, with the insect averaging about 30 miles a day, and the butterflies hibernate over winter in small concentrated areas, with millions congregated in a few acres. Some of the butterflies actually cross the Gulf of Mexico.

In mid-March the females fly north for some distance, lay eggs, and die. The caterpillars hatch, go through metamorphosis, then continue the migration north. The new butterflies that hatch on the way, though they never meet their parents, know where they are on the migration route and exactly where to go and how to get there. It is the second, third, or even fourth generation that arrives back in the northern areas from where their forebears originated!

> "There are butterflies that are programmed to fly back in two generations, and perhaps some in four or five generations, but all are programmed to go to a definite site in the Neovolcanic Mountains and to return to where their forefathers started in the north. There are more butterflies that make it back to their northern fall sites in multiple generations than in a single generation. ... Monarchs migrating in the fall are

> programmed to travel to specific sites on certain mountains, even to the same trees used by their forefathers. During the spring migration they return to their original homes directly, or by multiple generations. Their offspring, from eggs deposited enroute by spring migrant, follow the same migration route as their forefathers and arrive in the same general area as their migrating parents" (Poirier, *From Darkness to Light to Flight*, p. 44).

"This means that a remarkable system of information is bound up in the genetic coding of each butterfly, such that it 'knows' at what stage of the migrating cycle the group of butterflies is in. Such a delicate mechanism shouts intelligent design!" (Dr. Andrew McIntosh, Reader in Combustion Theory, Department of Fuel and Energy, University of Leeds, U.K., *In Six Days*, edited by John Ashton, p. 167).

A seven-year study of the migration of butterflies and moths using sophisticated radar found that the silver Y moth travels only on nights when the wind blows in the right direction. "On such nights, silver Ys, for example, can hit speeds over the ground of 90 kilometres per hour by finding the fastest-flowing high-altitude airstream and angling their flight to correct for any crosswind drift" (Bea Perks, "Long Haul: How Butterflies and Moths Go the Distance," *New Scientist*, June 8, 2010). The research was done by a UK team of entomologists led by Jason Chapman at the Rothamsted Research in Hertfordshire. Monarchs have been seen as high as 12,000 feet.

Scientists are beginning to learn some of the biological secrets that enable migration. They have found that the butterfly uses a combination of a sun compass, skylight cues, a circadian clock, and magnetic sensing to maintain its direction ("Brain 'GPS' Illuminated in Migratory Monarch," *Science Daily*, Jan. 27, 2011; "Monarch Butterflies Reveal a Novel Way in Which Animals Sense Earth's Magnetic Field," *Science Daily*, Jan. 27, 2010).

They have also learned that the butterfly's antennae have an essential role in migration ("Migrating Monarch Butterflies 'Nose' Their Way to Mexico," *Science Daily*, Sept. 24, 2009).

The antennae have "timekeeping clock" neurons and the compound eyes have azimuth neurons. These coordinate to monitor the position of the sun ("Great monarch butterfly migration mystery solved," *BBC News*, Apr. 14, 2016).

Reports such as these claim that monarch migration is being "solved" and "demystified," but this is patent nonsense. First, only the very rudiments of migration are currently known. Further, understanding the biological fundamentals of migration does nothing to explain such truly mystifying things as how such an incredibly complex mechanism and process could have evolved or how it could be created through the process of metamorphosis or how an insect could know where it happens to be on earth in a migration journey (e.g., the generations that are hatched in the midst of the migration process) and where it needs to go from there.

"Imagine finding a tiny GPS unit that could navigate 3,000 miles with a destination accuracy of ten feet. Would you believe someone who claimed it had developed itself by random changes over millions of years? What if this GPS was found, not on a street, but inside the pinhead-sized brain of a monarch butterfly? Does the place where the unit was found, whether street or butterfly brain, alter the obvious conclusion that such an instrument must have been designed by a master intelligence?" (William Pelletier, Ph.D., "Insect GPS," *Bible-Science Guy*, Jan. 1, 2010).

Beauty

Butterflies are so beautiful that they have been called "flying flowers." There are thousands of different amazing color patterns and wing shapes.

> "Every one of these 20,000 species have different color patterns, and every one of them have different shaped wings. The diversity is so magnificent. If I was the greatest artist in the world there is no way I could come up with all of these patterns. It would be absolutely impossible" (Ronald Boender, Butterfly World, Fort Lauderdale, *Metamorphosis*, DVD).

The butterfly's colorful wings are covered with millions of shingle-like, overlapping scales, which create the color and patterns. (*Lepidoptera*, the Latin term for the butterfly order of insects, means "scaly.") Solid colors derive from pigmented scales, while the iridescent colors derive from reflective scales that ingeniously refract a particular wavelength of light. The biophotonic crystal cells are designed and arranged perfectly to absorb certain wavelengths of white light and reflect only that part of the light that is red or blue or whatever. There are tens of thousands of scales for every square centimeter of wing, and each scale was a living cell until a day or two before the butterfly emerged from its pupa. "The scales have tiny lattices and ribbed walls that are designed to cause interference patterns in light waves within the 300 to 700 nanometer range--exactly the range humans see as color."

"We have found by using the electron microscope that there are structures there that can have no more variation than .00004 millimeters, a wonderful testament to God's design" (Frank Sherwin, zoologist, *God of Wonders*, DVD).

Wings

The butterfly's wings are covered with approximately one million scales brilliantly arrayed like shingles, which not only assist in the creature's aerodynamic efficiency and provide color patterns, but also act as tiny solar panels to provide heat to warm the flight muscles of the cold-blooded creature. "The scales are filled with air, giving them a low density, which enables the insect to fly more easily" (Poirier, p. 33).

The monarch can fly as fast as 30 miles per hour in still air and has been clocked at 50 miles per hour soaring along with thermal updrafts.

Egg

"The eggs are remarkable in themselves. They have species-specific architectures, some of which are just astonishing. The monarch egg has a beautiful symmetrical structure. It looks like a little miniature dome or cathedral" (Paul Nelson, Biola University, *Metamorphosis*, DVD). Jules Poirier, an electronics engineer, says that under a microscope the monarch egg "looks like a multifaceted diamond gem."

The egg adheres to the leaf by a powerful adhesive produced by the butterfly, and it is coated with a wax layer that protects from moisture.

Each type of butterfly lays its eggs on a specific host plant, on which the caterpillars are dependent for food. They can't survive on the wrong type of plant. The female butterfly is equipped to find the host plant from miles away through its incredible sense of smell, and as it gets closer it can identify the right leaf from its shape. It also tests the leaf with its feet and proboscis and antennae.

Pollination

The butterfly pollinates the milkweed plant when the pollen attaches to its legs. Once removed from the flower the pollen re-orients itself in preparation for depositing on another flower. As it dries, its little arms bend so that they fit perfectly into a stigmatic groove.

Miscellaneous Facts

The monarch butterfly has two compound **EYES**, each with 6,000 perfectly shaped and arranged lenses connected to the optic nerve, and a brain that can decipher 72,000 nerve

impulses from the eyes (James Perloff, *Tornado in a Junkyard*, p. 37). "The eyes of the monarch butterfly can see every color a human can see, plus ultraviolet light. ... Flowers that reflect ultraviolet light attract monarchs more frequently than other flowers" (Poirier, *From Darkness to Light to Flight*, p. 35). The round shape of the eye and its protrusion from the butterfly's head provides a field of view that exceeds 180 degrees. The monarch's eyes, by an incredibly complex mechanism, can also detect light polarization and is thought to use this ability to determine the direction of the sun, even on cloudy days, during migration.

The butterfly has a **PROBOSCIS**, which is a double-tubed feeding "straw" that it uses to suck nectar from flowers. It is an amazing organ. After the butterfly emerges, it unerringly knits the two tubes together by microscopic hooks. The proboscis can be rolled up for flight and extended at will. Muscles in the butterfly's head create suction to draw up the liquid. There are smell and taste sensors at the tip of the proboscis that guide it to the nectar.

The butterfly's **ANTENNAE** are delicate and complex sensor organs. The female's are tipped with red smell sensors that can sense the male's perfume from as far as two miles away. The antennae are also used to smell flowers for food and to locate the right milkweed leaves for laying eggs. The butterfly uses this sensory equipment to analyze the chemical makeup of a leaf. The antennae are also used for balance; if one is removed, the insect flies in circles. And as we have seen, the antennae are also used for migration.

The female butterfly uses six sharp microscopic needles on her **FORELEGS** to test for the chemical composition of food. She also uses her feet which are clawed **tarsi**. "Butterfly tarsi possess a sense similar to taste: tarsai contact with sweet liquids such as nectar causes the proboscis to uncoil, and females often scratch plants with the tarsi to find the proper

host plant on which to lay eggs" (*Audubon Society Field Guide*).

If the butterfly came about by evolution, then evolution is miraculous and has all of the attributes of Almighty God!

The Osprey

The osprey is a magnificent fish-eating raptor that is found on every continent except Antarctica. A full grown bird is about 24 inches in length with a six-foot wing span and weighs between two to four pounds.

With its amazing eyes, this bird of prey can see a fish swimming underwater from 130 feet in the air. Like the bald eagle, the osprey's eyes face forward, giving it binocular vision and great depth perception. Its sharp eyes correct for the refraction caused by the bending of the light in the water.

When it sights a target, it hovers, folds its wings and dives feet first with its talons ready to grab the prey, sighting



Osprey

straight along its talons. Its outer toes are reversible, allowing it to grasp its prey with two talons in front and two behind or three talons in front and one behind. Its talons have a rubber-like texture, and its feet have backwards-facing scales which act as barbs to help grip the slippery fish. The osprey's nostrils are closable to keep out water during dives, and it has a membrane that covers the eye and acts as a contact lens when it is under water.

When flying with its catch, it carries the fish head-forward to reduce wind resistance. Typically it captures fish weighing 5-11 ounces, but it can capture fish weighing up to 2.5 pounds.

After feeding, the osprey sometimes flies low, dragging its feet in the water, apparently to wash them.

The birds usually mate for life, building a large nest that is renovated each season. The male provides the nest-building materials for the female to do the actual construction, and the male brings food to the nest while the female incubates the eggs. A pair of nesting birds and their chicks will eat six pounds of fish per day.

Most ospreys migrate for the winter, with European ospreys wintering in Africa and American and Canadian ospreys wintering in Florida, California, and South America. They travel an average of 160 miles per day during migration.

The Ostrich

The ostrich and other non-flying birds are used by evolutionists as evidence of the doctrine of "vestigial organs." The wings are said to be vestigial from a time when the bird could fly.

But apart from evolutionary assumptions, there is no evidence that the ostrich evolved. Every part of this amazing creature points to perfect design. The evidence shows that it is not a bird that evolved from a flying bird and "lost" the ability

to fly. Rather, it is a bird that is designed from the ground up for land living.

With its massive body and huge neck, legs, and feet, it could never have flown! A male weighs an average of 250 pounds and stands seven to nine feet high.

It can't fly, but it is a magnificent runner. It is the fastest creature on two legs. The ostrich can run 43 miles per hour in bursts and can maintain 31 miles per hour for a half hour. By then, it can be more than 15 miles away! A single stride is up to 16 feet when running. Even ostrich chicks can run at more than 3 miles per hour.

The ostrich's design is obvious in that "its legs are perfectly placed so that the body's center of gravity balances on top of its legs" (Livescience.com).

The ostrich foot is beautifully designed for running. It has only two toes rather than four as most birds have. Its long toe has a strong nail that is used for gripping the ground.

In a race between a female ostrich and Dennis Northcutt, a professional football player and one of the fastest men alive, the ostrich won hands down. "It was no contest. The ostrich left Dennis in the dust without even trying. Here's why. Speed is a product of downforce in stride length. With each step, the ostrich produces an explosive 1900 pounds of force to propel it forward. That's more than twice as much as the 900 pounds that a human can generate. David Sandler of strengthpro.com says, "The ostrich's ability to produce force rapidly was remarkable. We're talking the fastest numbers we have ever seen and over two times faster than the best athletes we have seen." https://www.youtube.com/watch?v=2WcMRpozO4s

The ostrich wings are not like the wings of a flying bird. They are not made for flying but for other purposes.

Sibbele Hietkamp, an ostrich farmer in South Africa, lists some of the purposes as follows ("Letters to Editor," *New Scientist*, June 21, 2008):

- Thermoregulation

- Stability in running
- Enabling rapid right angle turns
- Courtship displays
- Stability while mating
- Warning signals
- Nest Building
- Shade and shelter for young

The wings are used to regulate body temperature. The skin under the feathers is bare, and the creature expertly controls its internal temperature by covering and uncovering this skin with its wings.



Ostrich

The ostrich uses its wings as rudders when it runs. It can make quick turns, using the wings as counter balances.

Ostrich feathers aren't flight feathers with the complex interlocking hook system composed of barbs and barbules. Ostrich feathers are soft and fluffy and act as perfect insulation.

The ostrich doesn't have a keel on the breastbone (sternum) like flying birds. The keel is a large ridge on the breastbone to which the bird's powerful flight muscles are attached. Since the ostrich doesn't fly, it doesn't need a keel.

The ostrich doesn't have hollow bones like a flying bird. Many of its bones are solid to provide strength for running and kicking and other aspects of land living.

The scientific name *Strothio camelus* means "camel-like." Like the camel, the ostrich can go long periods without water. But it loves water and can even swim well.

Its eye is bigger than that of any other land animal. The massive number of photoreceptor cells and the large size of the image allow it to see in great detail. It can see long distances with telescopic sight. By day, it can identify moving objects the size of a dog up to 2.2 miles (3.5 km) away. At night, it can see a small creature 50 meters away. The ostrich usually lives in a very dusty environment, and it has a membrane that moves like a windshield wiper to keep the eye clear and moist.

The ostrich and the zebra often graze together in a symbiotic relationship. The ostrich's keen eyesight combined with the zebra's keen hearing provides protection for both creatures.

The ostrich fights with its feet, kicking forward because that is the way its knees bend. It can kill a lion with its powerful kick. Before attacking, it will perform a "dance of fury." Its neck turns red, it squats low with its neck tucked in its wings, stretches out and swings rhythmically from side to side in harmony to the click-clack-click-clack sound it produces.

The female is called a hen and the male is called a cock or rooster. The hen is gray colored and the cock is mostly black with some white. One cock lives with a herd of up to seven females, one of which is dominant. The ostrich egg is six inches long and weighs as much as three pounds (equal to 24

chicken eggs). All of the females in a herd lay their eggs in one big nest called a dump nest, but each hen can recognize her own eggs. Only the dominant hen and cock incubate the eggs, the hen sitting on them in the day and the cock, at night. This provides good camouflage to protect the birds, since the light-colored hen blends in with the environment in the day and the dark-colored cock is nearly invisible at night.

Of the ostrich female, the Bible says, "She is hardened against her young ones, as though they were not hers: her labour is in vain without fear; because God hath deprived her of wisdom, neither hath he imparted to her understanding" (Job 39:16-17).

There are many ways that the female ostrich evidences her ignorance pertaining to and lack of concern for her offspring. "Several ostrich hens lay their eggs in one nest, but if there is no more room in the nest they deposit their eggs outside the nest in the sand. There other brooding hens, in the confusion of getting in and out of the nest, often crush these eggs. Hens may desert the nest if they are overfed, or if impatient they may leave the nest before all the chicks are hatched. If a human disturbs a nest, an ostrich may trample the eggs. Or a hen may sit on eggs in another nest, forgetting her own" (*Bible Knowledge Commentary*, referencing George Howe, "Job and the Ostrich: A Case Study in Biblical Accuracy" *Journal of the American Scientific Affiliation, Dec. 1963).*

It is the male that raises the chicks, teaching them how to feed and protecting them from predators. He shelters them from the sun with his wings.

The Partridge

The partridge that is mentioned in the Bible is of the pheasant family (*phasiandae*). There are two varieties in Israel today, the see-see partridge (*Ammoperdix griseopularis* or

Ammoperdix heyi) and the chukar (*Alectoris chukar*). They are similar in appearance, and both are similar to the rock partridge (*Alectoris graeca*). In this study, we will focus on the chukar, which is the most beautiful of these partridges.

We must understand that modern taxonomy is based on evolutionary thinking. The Bible says that God divided the animals and plants into "kinds" (Ge. 1:11, 12, 21, 24, 25). God built into the general kinds genetic diversity so that they can produce a wide variety of plant and animal life (e.g., the dozens of breeds of dogs, endless varieties of corn and wheat). Modern taxonomy focuses on minute differences, such as that between various types of partridges, whereas the Hebrew lumps all of them into one category (*qore*). When Noah took the "kinds" of animals into the ark, he didn't take several varieties of partridges and dogs and sheep but took one basic kind (Ge. 6:20; 7:14).

The Hebrew word for partridge, *qore*, means "a caller." It refers to the male's intensive cry, especially in the mating season. In modern Israel, *qore* is only applied to the see-see partridge, but its meaning is appropriate to both types of partridges. The modern name *chukar* also comes from the male's call, which is a loud repeated "chuck" or "chuker."

Partridges are found throughout Israel, particularly in rocky mountainous slopes, valleys, and cultivated farm land, from the Negev in the south to Galilee and the Golan in the north. They thrive in a wide variety of altitudes, from 1,400 feet (430m) *below* sea level (the Dead Sea) to 11,800 feet (3600m) *above* sea level.

The chukar is called *hajel* in Arabic, which is *Hoglah* in Numbers 26:23, the name of one of Zelophehad's daughters ("Partridge," Jewish Virtual Library). It is also the name of the Judean town Bethhoglah (Joshua 15:6).

In the Talmud, the chukar is mentioned with the pheasant and the quail as kosher game birds, the chukar being the most desirable of the three for taste.

The chukar is a large bird, 13-14 inches (32-35 cm) long, and is beautifully colored. It has a light brown or brownish-gray back with gray and buff breast and belly. Its face and the front of its neck are white, with the white set apart by and highlighted by a black band (a *gorget*). The gorget runs across its eyes so that it appears to be wearing a mask. Its side has a large rectangular white patch decorated with black stripes. Its legs and beak are bright orange, and its striking black eyes are surrounded with bright orange rings.

Partridges are "highly social birds" and in non-breeding season, they congregate in *coveys* of 10 to 50 birds consisting of two or more broods (breeding pairs and their offspring).

They roost on the ground under shrubs or small trees such as the juniper or even on open ground. Often they will roost in a tight circle with their heads pointed outwards to conserve heat and to keep a look out for predators (*Grouse and Quails of North America*).

They do not migrate and seldom move far from where they hatched.

When disturbed, they tend to run rather than fly, though they sometimes fly for short distances.

In breeding season, beginning in February to March, depending on the latitude, they separate into monogamous pairs and remain together until autumn.

The nests are shallow scraped-out areas on the ground, thinly lined with nesting material. Usually they are built under small shrubs or overhanging rocks and are well camouflaged.

The female lays 7-20 eggs, one per day, which are called a *clutch* and which hatch together in 23-25 days. The female incubates the eggs, and the male stays nearby. He often abandons the brood after the chicks hatch and rejoins them when they congregate as coveys.

The young chukars can fly in about three weeks, but before that they run down slopes with their wings out. It is called

"wing-assisted incline running," and evolutionists have studied this, thinking it might be "a model to explain the evolution of avian flight" ("Chukar partridge," *Wikipedia*). By evolutionary thinking, little dinosaurs learned to fly by growing wings and running around with the wings spread. It is a ridiculous fairy tale. Wings and flying feathers are incredibly complex organs that are products of biological programming, and the ability to use them to fly is complex behavior of a mind-boggling level, and none of this came to be in a happenstance way by "natural selection" or "genetic mutations."



Partridge (Chuckar)

Jeremiah 17:11 says, "As the partridge sitteth on eggs, and hatcheth them not; so he that getteth riches, and not by right, shall leave them in the midst of his days, and at his end shall be a fool." This is explained by the fact that the partridge loses her eggs in a variety of ways. The tasty eggs are often taken for food by man and animals. Being on the ground, the eggs are often spoiled by inclement weather. Further, sometimes

two females lay eggs in the same nest. The dominant one will drive the other away, but many of the eggs will not be properly incubated and will not hatch ("Partridge," Jewish Virtual Library). The Bible is saying that as partridges tend to lose many of their eggs, so those who seek riches in unlawful, unrighteous ways lose their riches. Even if the riches do not "fly away" (Pr. 23:5), the rich man himself will "fly away" to his eternal destiny and leave all of his riches behind. We think of Christ's parable of the rich man in Luke 12. He planned to build many barns for his great produce and then retire to "eat, drink, and be merry." "But God said unto him, *Thou* fool, this night thy soul shall be required of thee: then whose shall those things be, which thou hast provided?" (Lu. 12:20). This is what the Word of God says to every rich man who "layeth up treasure for himself, and is not rich toward God" (Lu. 12:21).

The Pelican

The pelican is another one of God's amazing creatures. It is a large waterfowl that comes in seven or eight varieties. It has webbed feet, large wings, a long bill, and a bag of skin below its beak called a gular pouch. It varies in size from about six pounds to 30. Its wonderfully-designed skeleton weighs less than 10% of its body weight.

The pelican cannot straighten its neck, because its eighth vertebra is joined with the seventh and ninth.

Pelicans live in every continent except Antarctica and build their nests in colonies.

The brown pelican fishes by plunge-diving headfirst into the water. The accompanying photo taken from a bridge in Florida captures a brown pelican in a dive. Its sharp eyes can see the fish from 60-70 feet in the air, in spite of the glare of the water, and it has the amazing ability to time its plunge and judge its angle perfectly to capture prey. It hits the water with



Brown Pelican

such force that fish under the surface are momentarily stunned, and when its bill touches the water, the pelican pushes its legs and wings back to create more force (Elise Willitt, "The Biogeography of the California Brown Pelican," San Francisco State University, 2001). There are air sacs under the bird's skin to cushion the impact, to help it swim back to the surface, and to help keep it afloat. The pelican's bill is sensitive and helps the bird locate fish in murky water.

The most distinctive feature is its pouch. A famous limerick says, "A wonderful bird is the pelican, his bill can hold more than his 'belican,'" referring to the fact that its pouch holds about three gallons of water, whereas its stomach can hold only one gallon. The amazing bird uses the pouch as a net to catch fish. After scooping up its prey, it contracts the pouch to empty the water, then jerks its head back to slide the prey down its throat. A hook at the end of its upper bill helps it grip slippery food. The second photo accompanying this article shows a pelican swallowing a fish.

The opening and closing of the pouch is controlled by a complex set of tongue muscles. By contracting and relaxing the muscles, the bird can flutter its pouch at a rate of 200 times a minute as a cooling mechanism.

The pelican has a gland at the base of its tail that produces waterproof oil that it uses to coat its feathers to keep them from becoming waterlogged.

The pelican is a great flier and can float beautifully on thermals that rise from the water.

To fly from a sitting position on the water, the bird must flap its large wings and literally pound the surface of the water with both its feet in unison to gain enough speed to lift off.

A group of flying pelicans is called a "squadron."

The pelican sleeps by turning its head backwards and laying the long beak on its back.

During courtship, the pelican's bill and pouch becomes multi-colored, part bright salmon pink, part yellow, part cobalt blue, with a black diagonal strip appearing from base to tip of the bill. The eggs are incubated on the parents' feet, and the unborn chicks communicate with their mothers as to whether they are too hot or cold.

The Pied-Billed Grebe

Grebes float on water like ducks and have the general appearance of small ducks, but they are diving birds. Well are they called "part bird, part submarine."

They have many features which enable them to be expert diver hunters. For one, their feet are located near their rear ends, which helps them propel themselves under water. (The Latin genus for "grebe" (podiceps) means "feet at the buttocks.") Their feet are lobed rather than webbed like a duck's, further assisting with swimming. They can trap water

in their feathers to control their buoyancy, enabling them to dive deeply or stay just beneath the surface. They can stay submerged with just their eyes and nostrils above the surface.

They can dive out of sight amazingly fast when alarmed.

The pied-billed grebe (Podilymbus podiceps) is so named for the black stripe on its beak. It is also called a dabchick or a dipper. It is a small bird, 12-15 inches long with a wingspan of 18-24 inches. It is various shades of brown, has black eyes surrounded by a white circle and a white bill, which turns silver in the summer. Its breast is speckled with gray and it has a white patch on its undertail.



Pied-Billed Grebe

Its stout pointed beak and strong jaws enables it to kill and eat large crustaceans along with a great variety of fish, amphibians, and insects. It has a special love for crayfish, but it will eat crabs, shrimp, snails, mussels, beetles, dragonfly nymphs, salamanders, leeches, frogs, tadpoles, and any type of small fish.

It makes "bizarre whinnying, gobbling, cooing noises."

It spends most of its time in the water, rarely flying.

It even builds a floating bowl-shaped nest using materials from aquatic vegetation. The nest is anchored to standing vegetation. The male and the female both participate in selecting the site and building the nest. They favor a location with water deeper than nine inches so they can approach the nest underwater, feed nearby, as well as escape predators. The male and female also participate in incubating the eggs. The chicks leave the nest the first day after hatching and can already swim but not very well. They spend much of the first one to four weeks riding on their parents' backs. They sleep like this and even stay on their backs during underwater dives.

The Saltwater Crocodile

On a recent visit to Queensland, Australia, near the Great Barrier Reef, I visited a saltwater crocodile farm and learned some fascinating things about this fearsome reptile. I wouldn't want to be near a grown croc without a fence or wall between us, but they are indeed amazing creatures, and when Christ establishes His kingdom and the wolf lies down with the lamb (Isaiah 11:6), we will be able to play with all of God's creatures.

Crocodiles are large reptiles that are members of the Crocodila order, which includes caimans, gharials, and alligators. The word "crocodile" comes from the Greek *crocodilos*, meaning lizard.

> "Crocodiles and alligators are not the same. Crocodiles are larger, have V-shaped jaw and some of their teeth can be seen even when the jaw is fully closed. Alligators are smaller, they have U-shaped jaw and their teeth are not visible when jaws are closed" ("Crocodile Facts," SoftSchools.com).

There are 13 species of crocodiles, ranging in size from the dwarf crocodile (growing to 5.6 feet and weighing 13 pounds) to the saltwater crocodile (found in southeast Asia and northern Australia). The salty can be a real monster, growing to more than 20 feet long and weighing up to 2,000 pounds, and it is the most aggressive of the crocodiles.

They are cold-blooded and regulate their temperature by sunning, "mouth gaping," which can cool them down, and other things. They hibernate during cold months and can go dormant during droughts.

They are flesh-eating carnivores that clamp down on prey with their massive jaws, crush it, and then swallow it whole. Having the strongest bite of any animal, the saltwater crocodile can apply 5,000 pounds of closing pressure per square inch. (A human jaw produces 100 pounds, a great white shark 670 pounds, the American alligator 2,200 pounds.) But the croc's jaw has very little opening power and can be held shut with a large rubber band.

They are fearsome "ambush predators" that usually wait for the prey to come near. They have excellent night vision and a keen sense of hearing and smell. "They can detect both air-borne and water-soluble chemicals." Their jaws and even their individual scales have sensory pits known as Domed Pressure Receptors (DPRs) that allow them to detect the slightest disturbance in surface water, "detecting vibrations and small pressure changes as small as a single drop." (Alligators have DPRs only in their jaws.) They can swim up to 25 mph by use of their powerful tails and stay under water for an hour. A croc has 24 sharp teeth and can grow 8,000 new teeth in a lifetime.

The crocodile's highly acidic stomach can "easily digest bones, hooves, and horns."

The crocodile female builds a nest and lays 20-80 eggs, which she "fiercely guards" for three months. It is not wise to mess around with a nesting mama crocodile. "Temperature of

the nest determines the gender of the baby. When temperature is 31.6 degrees Celsius - males will develop. Temperature below and above 31.6 degrees induces development of females." At the time of hatching, the young start calling within the eggs. "They have an egg-tooth at the tip of their snouts, which is developed from the skin, helps them pierce out of the shell. Hearing the calls, the female usually excavates the nest and sometimes takes the unhatched eggs in her mouth, slowly rolling the eggs to help the process. The young is usually carried to the water in the mouth. She would then introduce her hatchlings to the water and even feed them herself."

The saltwater crocodile is a highly intelligent creature.

It has an amazing homing ability. When a problem Australian croc was flown 250 miles away by helicopter and released, it returned within three weeks ("Relocated 350kg crocodile swims 400km to return to home in North Queensland," *Brisbane Times*, Dec. 20, 2015).



Saltwater Crocodile

Satellite tracking devices have shown that the crocs make intelligent use of water currents and tidal movements.

"In one study by Vladimir Dinets of the University of Tennessee, he observed that crocodiles use twigs as bait for birds looking for raw materials in nesting. The sticks are placed on their snouts and submerge themselves, and when the birds swooped in to get them, the crocodiles would then catch them. Crocodiles only do this in spring nesting seasons of the birds, when there is high demand for sticks to be used for building nests" (*Wikipedia*, citing "Crocodiles are cleverer than previously thought," *ScienceDaily*, Dec. 4, 2013).

The Crocodile's Eyes

The crocodile's eyes, together with its ears and nostrils, are located on top of its head, allowing it to lie nearly submerged in the water and thus hidden from prey.

An opaque nicitating membrane protects the eye while allowing vision.

New research has found that the croc's eyes are perfectly designed for their environment and habits.

"The 'fovea', a patch of tightly packed receptors that delivers sharp vision, forms a horizontal streak instead of the usual circular spot. This allows the animal to scan the shoreline without moving its head, according to Australian researchers. ... [PhD student Nicolas Nagloo of the University of Western Australia says,] 'In the case of crocodiles [the fovea] is spread across the middle of the retina, and it gives them maximum clarity all along the visual horizon.' This arrangement reflects the predator's iconic ability to lurk with just its eyes above the water, waiting motionless for prey to wander too close to the river's edge" ("Crocodile eyes are fine-tuned for lurking," *BBC News*, May 4, 2016).

The crocodile can sleep with one eye open, probably using one brain hemisphere at a time, as some other animals do, including birds while flying long distances.

"Consistent with this idea, the crocs in the study were more likely to leave one eye open in the presence of a human. They also kept that single eye trained directly on the interloper, said senior author John Lesku. 'They definitely monitored the human when they were in the room. But even after the human left the room, the animal still kept its open eye… directed towards the location where the human had been - suggesting that they were keeping an eye out for potential threats'" ("Crocodiles sleep with one eye watching," *BBC News*, Oct. 22, 2015).

Starling Murmuration

Murmuration describes the swarming behavior of a flock of European starlings. They fly in groups of hundreds and even thousands, maneuvering and swirling, twisting and turning across the sky in perfect synch as if putting on an aerobatic display. I have stopped my automobile on two occasions to watch them.

Grainger Hunt of the Peregrine Fund describes a murmuration as follows:

"A dazzling cloud, swirling, pulsating, drawing together to the thinnest of waists, then wildly twisting in pulses of enlargement and diminution, a fluid choreography of funnels, ribbons, and hourglasses, spills and mixing, ever in motion. Dense in one moment, diffuse in the next" ("In Murmurations, Starlings Have a Darwinian Dance Partner," *Living Bird* magazine, Jan. 15, 2013).

That's a great description of a murmuration, but sadly, the author is blinded to the testimony of the display by his evolutionary bias.

The testimony of a murmuration is that there is an all-powerful, all-intelligent, very interesting God!



Starling

Murmuration is so amazing that Darwinists become almost beside themselves trying to figure it out by evolutionary terms.



Starling Murmuration

Hunt says the synchronized flock's exquisite coordination is "as if orchestrated, as if ordered by an unseen, absurdly creative hand."

Indeed, why not stop right there? When we are observing a murmuration of starlings, we are observing intelligence upon intelligence, which is obvious evidence of a Creator. There is the intelligence of the DNA that makes up the bird and the intelligence of the bird's behaviour, the intelligence that enables it to live and survive and fly (I repeat, fly!) and reproduce itself and a thousand other things.

And let's not forget the intelligence of the creature observing and analyzing the murmuration.

As far as I am concerned, to believe that such things blindly evolved is nonsense. Nonsense!

If a man wants to look at "nature" and see blind evolution at work, that is his business, but as for me, I see the hand of God everywhere.

And I want to know that God, and I am thankful that He has revealed Himself, not only in creation but in Scripture, and that revelation says,

"For God so loved the world, that he gave his only begotten Son, that whosoever believeth in him should not perish, but have everlasting life. For God sent not his Son into the world to condemn the world; but that the world through him might be saved. He that believeth on him is not condemned: but he that believeth not is condemned already, because he hath not believed in the name of the only begotten Son of God" (John 3:16-18).

The Trilobite

The Bible does not waste time proving the existence of God, because the evidence for Him is everywhere. The apostle Paul wrote that "the invisible things of him from the

creation of the world are CLEARLY SEEN, being understood by the things that are made, even his eternal power and Godhead; so that they are without excuse" (Romans 1:20).

Consider the lowly trilobite, one of the many icons of evolution that defies evolution.

The trilobite is an extinct arthropod, a hard-shelled, segmented creature that "lived in the Earth's ancient seas." The name "trilobite" means "three lobed" and refers to the fact that the creature had three *longitudinal* lobes. They existed in a bewildering number of varieties, with 15-20,000 known species, ranging in size from one millimeter to over two feet in length.



Trilobite (Fossil)

Evolutionists place the trilobite in the earliest stages of life, in the so-called Cambrian layer. The earliest trilobites supposedly lived 570 million years ago and the creature is thought to have gone extinct 240 million years ago. It is considered one of the signature creatures of the Paleozoic Era. (All of this is evolutionary myth with no scientific proof.

The Bible says the trilobite populated the earth from the creation week.)

Even some evolutionists admit that the trilobite "defies the theories of evolution" ("Trilobites," Paleodirect.com).

The trilobite defies evolution in that it appears suddenly in the fossil record with no evidence of having evolved from anything else.

Evolutionary writings are filled with accounts of the trilobite, of how it "evolved," "modified," "developed eyes," and such, but there is no evidence for this. The scientific evidence that it evolved from some other creature or that its complex eyes and other organs evolved is non-existent. This proposition is based upon evolutionary assumptions and wishful thinking and not on the actual evidence.

Evolutionists admit that it "appeared suddenly" in the "Cambrian explosion."

Dr. Andrew Snelling comments on this:

> "There are no possible evolutionary ancestors to the trilobites in the rock layers beneath where the trilobites are found, for example, in the Grand Canyon. In fact, the trilobites appear in the geological record suddenly, fully formed ... There is absolutely no clue as to how the amazing complexity of trilobites arose, and thus they quite clearly argue for design and fiat creation, just as we would predict from the biblical account in Genesis" (Andrew Snelling, Ph.D. in geology from the University of Sydney, *In Six Days*, edited by John Ashton, pp. 294, 295).

The trilobite defies evolution in that it was a highly complex creature.

The trilobite had retractable antennae, multiple, jointed legs, and gill structures. It is thought to have had a set of gills associated with every leg. It would have had complex muscle systems to move the legs. It is thought to have had a circulation system, including a heart and lung, and a complex

nervous system, as indicated by the antennae which probably had a sensory function. It had a complex brain to control all of these systems. The trilobite also underwent a series of life stages.

And it had a compound eye that gives every evidence of being a marvelous design.

> "Clarkson and Levi-Setti (1975) of the University of Chicago have done some spectacular work on the optics of the trilobite eye lenses. It turns out that each lens is a doublet, that is, made up of two lenses, while the shape of the boundary between the two lenses is unlike any now in use--either by animals or humans (Shawver 1974). However, the lens shape and the interface curvature are nearly identical to designs published independently by Descartes and Huygens in the seventeenth century. Their design had the purpose of avoiding spherical aberration and was known as the aplanatic lens. Levi-Setti pointed out that the second lens in the doublet of the trilobite eye was necessary in order that the lens system could work under water where the trilobites lived. Thus, these creatures living at the earliest stages of life used an optimal lens design that would require very sophisticated optical engineering procedures to develop today" (Ian Taylor, *In the Minds of Men*, p. 164).

Some of the trilobites had 15,000 lenses per eye, and all of these worked together in perfect harmony to provide exceptional vision for this "simple" creature.

In spite of evolutionary claims that "trilobites developed one of the first sophisticated visual systems in the animal kingdom," there is no evidence that the trilobite eye or any other eye evolved. The eye is found intact on countless fossilized creatures reaching back to the supposed earliest stages of the fossil record, and the eye appears fully formed in countless varieties, but there is absolutely no evidence that one type of eye evolved from another. To lay out a display of

eyes from "simple" to more complex is not evidence for evolution. It could just as well prove that each particular eye was designed by God for that particular creature.

In the "Cambrian layer" there are many types of creatures with many different types of eyes, and there is zero scientific evidence that any of the eyes evolved from something "simpler." The only "evidence" is speculation and evolutionary assumptions.

Those who claim that the trilobite eye "evolved" provide no scientific method whereby such a miracle could occur by "blind" chance. Not only would it be necessary for the bewilderingly complex physical mechanism of the eye itself to have evolved, but it would also have been necessary to have evolved also the accompanying complex wiring in the brain with its mysterious ability to receive and interpret visual signals. And all of this had to "evolve" at the DNA level.

The mind-boggling complexity of creatures at every level of the fossil record disproves evolution.

In fact, modern biology has taught us that there is no such thing as a "simple creature" even at the most microscopic level, but this was evident in the fossil record all along.

The trilobite gives evidence for the Biblical Flood.

The trilobite provides evidence for the Flood, first, through its rapid fossilization. The incredible detail of the fossils, even to the retention of microscopic detail in the compound eyes, proves that the creature was subject to a catastrophic process of fossilization as opposed to a uniformitarian one. The fossils demonstrate that living trilobites were fossilized so quickly that they were still moving! The fossil trilobite that I own, a Hollardops from the Atlas Mountains of Morocco, was fossilized while swimming. The fossil is fully inflated, meaning it died and was fossilized in an instant.

The trilobite provides evidence for the Flood, second, because even though the trilobite was a sea creature it has been found in mountains and deserts throughout the world,

on every continent, including the Sahara Desert, mountains in Morocco, in Nevada, Arizona (the Grand Canyon), Indiana, New York, Oklahoma, Ohio, Ontario, South America, England, Czechoslovakia, Germany, Spain, Russia, Siberia, and China--proving that the earth was once covered by the sea!

Only a worldwide catastrophe of biblical proportions can explain the trilobite fossils.

In the trilobite God's existence is indeed "clearly seen" -- unless one is willfully blind.

The Weaver Bird

The weaver bird (genus *Ploceus*) is a type of thrush that weaves an elaborate nest. There are dozens of varieties of weavers, but here we will focus on the Southern Masked Weaver (*Ploceus velatus*), native to Africa.



Weaver Bird

The male, a beautiful bird with bright yellow feathers and a black head and beak, builds about 25 nests each season (September to January) from reeds, grass, and twigs. He is capable of tying complex knots such as the half-hitch, overhand, and slipknot. The globe-shaped nest has an entrance hole near the bottom.

He builds the nest with an eye on attracting a finicky female of the species. If she doesn't like the nest, he will tear it down and build a new one. When a female finally approves his nest, she lines it with soft grass and feathers in preparation for laying the eggs. Some weavers are monogamous, but the Southern Masked Weaver seeks to attract a harem of females.

The eggs are of various colors and markings. This assists the weavers against invasion by cuckoos, which lay their eggs in the nests of other birds. Eggs of the wrong color are ejected by the nest owners.

The Wild Ass

The wild ass is mentioned in five passages of Scripture, three times in Job (Job 6:5; 11:12; 39:5-8; Jer. 2:23; Hos. I 8:9). The wild ass is the Hebrew pereh, which is from a word meaning to run wild.

There are multiple modern candidates for the wild ass that inhabited Israel in ancient times.

Evolutionary thinking divides creatures into distinct subgroups even when these are obviously minor derivatives of the same stock. This is true for the various kinds of wild ass. Variety within kind is not "evolution." For a wild ass to become a bear would be evolution. For an African wild ass to become a Nubian or Somali wild ass is not evolution.

There are three general varieties of wild ass. There is the Equus africanus, the African wild ass (which is divided into four subgroups: Nubian, Somali, Donkey, and Atlas wild ass). There is the Equus hemionus, the onager or Asiatic wild ass

(which is divided into the Indian, Mongolian, Persian, Turkmenian, and Syrian). Finally there are is Equus kiang or Tibetan wild ass (with four subgroups).

The wild ass that habited Israel was probably the Asian wild ass (Equus hemionus onager), a member of the horse family and kin to the donkey.



Asian Wild Ass

The Yotvata Hai-Bar Nature Reserve has reintroduced about 40 Persian onagers into the Negev, and they are surviving and reproducing.

The wild ass is about seven feet long and weighs about 600 pounds when fully grown. Its coat is reddish-brown in the summer and yellowish-brown or grayish-brown in the winter. Its belly, rump, and muzzle are white. It has a coarse-haired black mane that stands straight up from the top of its head to the end of its neck, and a black stripe extended down the middle of its back. Its pointed ears stand nearly straight up.

The wild ass thrives in deserts, semi-deserts, grassy savanna's, and mountainous environments. It can survive in a

wide variety of altitudes and temperatures. Its digestive system can break down tough desert vegetation (such as thorny acacia bushes) and extract moisture from food efficiently. It can survive the loss of 30% of its body water, going as many as three days without drinking. Its large ears provide an excellent sense of hearing for defense and help in cooling its body by radiating excess heat.

The wild ass's independent spirit and wilderness terrain is emphasized in Scripture.

"Who hath sent out the wild ass free? or who hath loosed the bands of the wild ass? Whose house I have made the wilderness, and the barren land his dwellings. He scorneth the multitude of the city, neither regardeth he the crying of the driver. The range of the mountains is his pasture, and he searcheth after every green thing" (Job 39:5-8).

The Asian wild ass or onager fits this description. Unlike some types of wild ass, it is "notoriously untamable." It "doesn't tolerate the presence of people" ("The Secret lives of the wild asses of the Negev," Washington University in St. Louis, Mar. 27, 2013).

Unlike horses, the male wild ass often lives a solitary life except during breeding season, though some do run in small "bachelor" herds. With their loud bray, they can communicate with one another over a distance of about two miles.

The wild ass tends to feed mostly at night and seek a shady place to rest in the daylight hours.

It can run at speeds up to 43 mph. It has nimble footing and its strong hooves grow very quickly.

The Royal Standard of Ur, dating to about 2,000 BC, near the time of Abraham, depicts asses pulling war chariots.

The Wild Goat

The wild goat is mentioned three times in the Bible (1 Sa. 24:2; Job 39:1-4; Ps. 104:18). This is the small mountain goat or rock goat. It is the Hebrew yael, which is derived from a word meaning "to climb." It is the modern genus Capra ibex, and the one that lives in Israel is the Numbian ibex, Numbia being a region of Africa south of Egypt.

In Job 39:1-4, God mentions the ibex's birthing. Since they live in the rocks on the sides of steep mountains, their habits were not closely studied by man. When and where do they bring forth their young? How long is the female's gestation? What happens to the young after they are born? Job didn't know the answers to any of these questions. He didn't live with the goats in their inhospitable habitats. He didn't create them or know their ways or provide for them. God is teaching Job (and mankind) that He is the Creator and Sustainer of all things. He knows all things He is intimately involved with the creation, providing for every creature.

The Numbian ibex has a deer-like face with bright orange and black eyes, a black nose, a black-tinted mouth, and black markings inside of its large ears. Its coat changes color from darkish brown in winter to light brown or reddish or brownish gray in summer. It coat changes from more woolly in the winter to shorter and fuzzier in the summer. It has a white or cream underbelly, a short black or dark brown tail, and its legs have white and black markings. It blends in well with its rocky habitat.

Both the male and the female ibex have gray horns that appear at birth and grow throughout its life, curving back to form a semi-circle, but the male's horns are much larger, sometimes three feet long or more. The horns have knobby cross-ridges on the front curve.

The ibex lives in herds. The males and the females (and their offspring) live in separate herds, usually meeting only

during breeding season. The male herd is called a bachelor herd. Female herds are typically larger, being from 10 to 20 members, and the males will sometimes wander without a herd.

They graze mostly in the early morning and evening, taking naps on rocks during the day.

The male ibex's beard is used to spread a scent that attracts females during breeding season. The males butt heads in battle over the females, running and leaping and crashing into each other's horns. The mother ibex bears one to three kids, and after four weeks they are ready to move around with the herd. Female kids remain with their mothers for at least a year.

The ibex is amazing in its agility. It can jump six feet straight up without a running start. It can bound down a steep rocky cliff in a way that seems impossible. The ibex can even climb trees if the branches are strong enough to support its weight.



Wild Goat (Ibex)

Alpine ibex climb the nearly vertical faces of dams to obtain the leached salts and minerals. They have been observed at the Cingino dam in northern Italy, the Barbellino dam in Lombardy, and the Lago della Rossa dam in the Piemonte.

Every aspect of the animal is designed by its Creator for its habitat and habits. It has large lungs and extremely strong legs. It can push its body weight up with only one leg. Its hooves are composed of two split toes which act like suction cups to enable the creature to grip the sides of steep rocks and cliffs. The outer part, or "wall," of each toe is hard, while the inner part, or sole, is soft and rubbery. The hoof can "deform to absorb irregularities in the terrain," and each toe can operate independently. "The goat can use just one to gain purchase on extremely narrow surfaces, or splay the toes to gain more contact area" ("Biomimetic Designers Take Note: Goat Hooves," Core77, Mar. 23, 2011). "When these animals are walking across steep rocky terrain, the sole indents and conforms to the shape of the rock. Any bump in the rock is entrapped by the hard edge that surrounds it. It's nearly impossible for the hoof to slide. The hoof is locked in place. We have the textured, indented sole providing traction, and the cupping action of the hard edge around. In addition, we have two independent toes that can be spread apart as needed for placement, and also squeezed together, further enhancing the grip of that particular foot. Once in place, this foot is practically glued to the rock surface. It doesn't matter how small the irregularity in the rock is. This system takes advantage of any edge" ("Why Are Mountain Goats Such Effective Climbers, Forbes, May, 26, 2017). The soft, rubbery flesh of the ibex's soles give immediate sensory feedback pertaining to the surface on which he is walking.

The ibex instinctually knows how to use this amazing equipment because of his God-given intelligence. When jumping down from rock to rock, it tends to make a slightly lateral jump, as opposed to straight down. "This decreases the

vertical stress on the rock somewhat. If they are jumping sideways to any degree, this sends the energy of their movement and weight in a direction other than straight down. It dissipates sideways" (Ibid., Forbes).

The ibex's front legs are shorter than the rear, allowing it to climb up more easily. The Numbian ibex's shiny coat reflects sunlight to keep it cool in the hot regions where it typically lives, such as on the shores of the Dead Sea.

The wild goat is mentioned with the coney in Psalm 104:18, and both can be found in the Ein Gedi National Park on the western shore of the Dead Sea, which is the place where David fled from Saul. The wild goat is mentioned in the context of Ein Gedi in 1 Samuel 24:2.

The Wild Turkey

The wild turkey (*Meleagris gallopavo*) is the largest game bird in North America. There are six sub-species showing minor differences: Eastern, Florida (Osceola), Rio Grande, Merriam's, and Gould's. There is a smaller Ocellated turkey that has rainbow-like iridescent feathering on his wings. It is only found on the Yucatan Peninsula in Mexico.

The North American turkey gots its name by mistaken identity. The Spanish discovered it more than 400 years ago and took it back to Europe. There the English mistook it for an African guinea fowl they called a "turkey" because it came to England by way of Turkey. Thus, the North America turkey isn't from Turkey, and the native American Indian isn't from India.

Adult males weigh 18-30 pounds, and females, 8-12 pounds.

The tasty bird was hunted almost to extinction in the 19th century, but conservation efforts have brought the population back to about 7 million.



Wild Turkey

Turkeys congregate in flocks and inhabit forests that have plenty of their favorite foods: nuts, seeds, insects, and wild berries. For this reason they are sometimes called forest turkeys. They spend their days on the ground hunting for food and their nights perched in branches of trees.

The wild turkey's dark coloring provides camouflage in shady forests. The female is fairly unremarkable in subtle brown, black, gray, and tan coloring, though there is a green iridescence or sheen to her feathers in bright light.

It's the male that is particularly striking when strutting his breeding plumage. He does this to seek a mate and also to warn away interlopers. The flesh on his head and neck turn bright iridescent blue and red. Peacock style, he fans a display of 18 chestnut-brown tail feathers with bold black and white and tan bars. His body inflates, showing off bronze-green iridescent wing feathers with white bars, displayed in fascinating layers. He also struts a little dance.

The male gets his name "gobbler" from the strong gobbling sound he makes. He is also called a tom. His gobble can be heard by females a mile away.

Both males and females communicate with a variety of cackles, purrs, yelps, and whistles.

The male has a **beard** of a stringy black feather hanging down from his chest.

The male also has a long protuberance hanging down in front of or to the side of its beak that is called a **snood**. It fills with blood during courtship and turns bright red. Dominant males tend to have longer snoods and can get quite snoody.

Both males and females have a flap of skin called a **wattle** or dewlap hanging from the chin and connected to the neck.

The bags of skin hanging from the turkey's neck are called **caruncles**. When engorged with blood, the male's caruncles turn vivid shades of red, white, or blue, as does the wattle. This is thought to play a role in attracting a mate.

Turkeys generally meander around searching for food, but they can be fast when they want, both on land and air. They can run up to 25 miles per hour and fly up to 55 miles per hour for short distances.

The turkey's eyes are powerful. The eyes are spaced far apart on both sides of the turkey's head and give it a visual field of 270 degrees (humans have 180 degrees). The turkey can focus clearly throughout its field of sight. It can see predators a mile or more away. And it can see ultraviolet light.

The female does all of the work of incubating the eggs and raising the chicks (called poults). She lays 8 to 15 eggs and sits on them for 25 days until they hatch. Until the poults can fly, which is about two weeks, the mother hen roosts with them on the ground. After that they roost in trees, but the chicks stay with the mother through the first year.

Studies by Richard Buchholz at the University of Florida have found that the unfeathered skin of the turkey's head and

neck has an important role in regulating body temperature. The skin allows for heat dissipation and thermal conductance. This allows the bird to live in regions of more extreme temperature.

Benjamin Franklin told his daughter in a letter that the turkey would be a better symbol for America than the bald eagle, since it is "a much more respectable bird." He didn't like the fact that the bald eagle will steal food from other birds, such as the osprey, and can be driven away by smaller birds.

The commercial turkeys are bred for weight and are too large and fat to fly or even to mate. They are artificially inseminated.

The record wild turkey weighed 17 kilograms (37 pounds), while the record commercial turkey was a tom weighing 40 kilos (86 pounds). Its name was Tyson, and when he was auctioned off for charity in England he sold for $6,692.

The Wood Duck

The stunning wood duck (also known as the Carolina duck or the "woodie") gets its common name from the fact that it nests in trees and, unlike most ducks, is equipped with claws that can grip bark and perch on branches.

Few things in creation are more beautiful than the male (drake) wood duck in full breeding plumage (from autumn to early summer). His plumage is a riot of deep red, black, iridescent green and blue, brown, tan, chestnut, orange, and purple set off by white stripes. His eyes are bright red with black pupils, and the back of his bill is also bright red. His crested head looks like a fancy hat. He looks like a brilliant painting, but he is a living, breathing, flying creature.

The female is less showy, but she is beautiful in a demure way, with multiple shades of brown, a white-speckled breast, a white eye ring, black eyes fronted by a yellow stripe, and a slight crest on the back of her head. The chestnut brown

feathers on her back are oval shaped and look almost like the seeds of a pine cone. Like the female mallard, she has an iridescent blue rectangular *speculum* on the top rear of the wings. Part of this blue patch is visible when the female's wings are folded.

Wood ducks are smaller than mallards, 19-21 inches in length with a wingspan of 26-29 inches.



Wood Duck

They can fly 30 miles an hour and are very agile, able to fly through woods by means of its broad tail and short, broad wings.

The wood duck is a dabbling duck, meaning that it dips its head under water in search of food.

The male courts the female in January by swimming in front of her with its wings and tail elevated, thus showing off his colorful plumage. If she likes him, she will follow him and they will pair up until spring.

Some of females lay their eggs in the nest of another female or even lay them in a place where no incubation takes place. This is called "nest dumping."

The wood duck is a cavity nester. It likes to nest in cavities in trees within one mile of water. Usually the cavity is formed when a large branch breaks off and the place becomes rotten. They will also readily nest in manmade boxes. The female plucks soft down feathers from her belly to line the nest. The male stays with the female during incubation and leaves just before they hatch.

The day after hatching, the ducklings must jump to the ground and follow the mother to water. They jump from heights of up to 65 feet without injury! By this time the ducklings can swim and feed. The mother stays with the ducklings for 5-6 weeks but leaves before they can fly at 8-9 weeks.

The Woodpecker

The woodpecker is a bird that has the ability to drill holes in wood to search for food, store food, and build nests.

Some woodpeckers work together to stash acorns into trees. One such "granary" tree created by some very busy birds contained *50,000 acorns*.

More than 180 species of these amazing pecking machines are found throughout the world (except Australia, New Zealand, and Madagascar).

Some types of woodpeckers, called sapsuckers, extract sap and eat insects attracted by sap.

The largest extant woodpecker is the great slaty of South and Southeast Asia, which can reach 23 inches in length. It is various shades of gray set off by bright orange coloring on its cheek and neck.

The smallest woodpecker in North America is the downy, which is five to seven inches long. The downy is the most common backyard woodpecker in North America. It has a white body, black wings with white splotches, and a black and white head set off with a bright red spot on the back of the head.

The smallest woodpecker in the world is the piculet, which is a minuscule 2 to 4 inches in length. It lives mainly in tropical South America, though there are some in Southeast Asia. They have a very small tail.

Many woodpeckers are beautifully colored. Several have bright red heads. These include the gorgeous red-headed woodpecker (*Melanerpes erythrocephalus*). With its brilliant red head, snowy white body and inky black wings, it has been called a "flying checkerboard." It is adept at catching insects on the wing.

Another red-headed beauty is the pileated woodpecker (*Dryocopus pileatus*). It has a black body and black and white stripes on its face and neck, yellow eyes, and a flaming-red crest and cap. One black stripe crosses its eyes like a bandit's mask. The male has a bright red stripe called a mustache. The female lacks the red mustache, and the juvenile has a shorter crest and brown eyes. At 16-19 inches high, the pileated is the largest woodpecker in North America, after the nearly extinct Ivory-billed Woodpecker (which is similar in appearance). Its pecking is a very loud drumming that can sound like a hammer and can be heard nearly a mile away. With its long, sharp, chisel-like beak, the big woodpecker knocks large rectangular holes into trees in search of ants and beetle larvae. It uses its long, barbed, sticky tongue to capture the insects. It also excavates cavities for its nest with multiple escape routes for safety. Other animals, including the Wood Duck, use the cavities built by the Pileated Woodpecker.

The most famous woodpecker is the animated Woody Woodpecker, created by Ben Hardaway in 1940. Hardaway also created Bugs Bunny and Daffy Duck.

Woodpeckers do not sing, though they can make "chirps, chatters, and other alarm calls." They seem to use drumming as a communication tool.

The woodpecker has "zygodactil" feet, with two toes facing forward and two facing backward that allow it to grip tight to a tree. (The exception is the three-toed woodpecker.) This is unlike the songbird which has "anisodactyl" feet, with three toes pointing forward and one pointing backward. The woodpecker's feet are especially tough and strong.

The tail of most woodpeckers has specialized sharp spikes that dig into the tree's bark. In combination with its feet, the tail spikes form a tripod for stability.

This "tripod," together with its perfectly distributed body and feather weight, means it can stand comfortably in an upright position while hammering away at the tree.



Pileated Woodpecker

The woodpecker has a specialized tongue that is up to four inches long and wraps around the skull when retracted. Many have barbed tongues to better extract bugs from holes.

The woodpecker is monogamous, mating for life.

Most woodpeckers fly in an undulating manner, flapping a few times with its wings, then gliding.

Though the woodpecker has many other wonderful features, we want to focus on its pecking.

It is able to peck 20 times *per second* and can do this *12,000 times* in a day. These are not gentle pecks. The creature's beak strikes the tree at a speed of 15 miles per hour and produces an incredible G-force of 1,200. This "is the equivalent of going from 26,000 miles per hour to a complete stop every second" ("Bird Brains," *Forbes*, Jan. 6, 2016). A human, on the other hand, can sustain *a maximum* G-force of 100, and brain injury and death often occur at much lower forces. So the little bird can sustain G-forces on its brain of more than 100 times that of a human.

In recent decades, the woodpecker has been the object of much scientific study, and it turns out that it has the following design features ideally suited to its business:

First, its brain is much smaller than a human brain. Dr. Lorna Gibson, a materials science professor at MIT who has studied woodpeckers, says, "A human brain has a mass of 1,400 grams. A woodpecker's brain is only 2 grams. That's the mass of two paperclips. It is a scaling phenomenon. While this might seem like a highfalutin concept, this is something that we instinctually understand. If you dropped your cellphone from your nightstand, it would survive. But if you dropped your laptop from the same height, you might have to take a trip to the Apple store. The same goes for brains: The smaller the brain, the better its chance of surviving an impact" ("Why Don't Woodpeckers Get Concussions?" *Huffington Post*, Nov. 25, 2013).

Second, its skull is made of plate-like bones with a "spongy" structure at strategic locations to protect the brain. "At a microscopic level, woodpeckers have a large number of trabeculae, tiny beamlike projections of bone that form the mineral 'mesh' that makes up this spongy bone plate. These trabeculae are also closer together than they are in the skylark skull, suggesting this microstructure acts as armor protecting the brain" ("Why Don't Woodpeckers?" *LiveScience*, Apr. 10, 2012).

Third, the woodpecker's brain fits tightly into the skull (unlike the human brain) so that it doesn't "slosh" around and cause damage.

Fourth, the woodpecker's brain is oriented differently than the human brain so that the force is distributed over a greater area. It is "longer top-to-bottom than front-to-back, meaning the force against the skull is spread over a larger brain area."

Fifth, the woodpecker has a hyoid bone that wraps around the entire brain cage to form a "safety belt."

Sixth, the woodpecker's beak is cleverly built to absorb energy while still allowing the little creature to punch holes in wood. "The upper and lower halves of the birds' beaks were uneven, and as force was transmitted from the tip of the beak into the bone, this asymmetry lowered the load that made it as far as the brain" ("How Woodpeckers Avoid Head Injury," *BBC News*, Oct. 27, 2011).

Seventh, the woodpecker changes the direction of its pecking attack by moving its head and beak around in just the right way as it hammers. By this means, woodpeckers "minimize the number of times in a row that the brain and skull make contact at the same point" ("Why Woodpeckers Don't Get Brain Damage?" *Mental Floss*, Nov. 24, 2014). Smart!

Eighth, the woodpecker uses its entire body to absorb the energy of the pecking. They "hit their targets in a straight, consistent line" and "with each hit, the entire body of the bird knows what motion will take place, which muscles will be

used and any rotation that would cause strain is avoided" (*Forbes*).

Researchers have found that through these mechanisms, "99.7 percent of the impact energy from striking a tree is absorbed by the body" (*Mental Floss*).

Other design features include a *nictitating membrane* that closes over the eye a fraction of a second before its beak strikes wood, thus protecting the eye from debris, cleaning it, and conveniently keeping it from popping out of the creature's head!

The woodpecker also has bristles on its nostrils and special air sacs to prevent inhalation of wood particles.

The Woodpecker's Evolution?

In spite of the discovery of all of these complex biological engineering marvels, evolutionists persist in the delusion that such things were formed by blind evolution. One report says, "In an average day, a woodpecker does this around 12,000 times, and yet they don't seem to hurt themselves or be the least bit bothered by it. This is because, after millions of years of this type of behavior, they've evolved some specialized headgear to prevent injuries to their heads, brains, and eyes."

This is a ridiculous statement from every perspective. How could a creature survive to "evolve" something that is necessary for its very existence? And *how* could such things evolve? Evolutionists have proposed zero scientifically-supported evolutionary mechanisms that could *build up the vast and mind-bogglingly complex DNA sequences necessary to create complex organs*. "Natural selection" is not creative. It can only select from existing genetic code. "Mutations" aren't creative; they are overwhelmingly destructive. Believe me, you don't want to pass on mutations to your offspring.

I'm glad that I can be my own scientist and weigh the facts for myself. I accept the fascinating true science that has enabled the discovery of these things about the woodpecker

(e.g., scanning electron microscopes, CT scanners, force/torque sensors, high-speed cameras, computer simulations, 3D modeling), but I reject the "philosophy pretending to be science" that is haphazardly tossed into these reports.

For those who have eyes to see, the woodpecker is irrefutable evidence of an Almighty, all-wise Creator. To know Him personally, I recommend my favorite book, the Bible, which is the gracious revelation of God's character and plan of salvation to mankind through Jesus Christ.

"For God so loved the world, that he gave his only begotten Son, that whosoever believeth in him should not perish, but have everlasting life. For God sent not his Son into the world to condemn the world; but that the world through him might be saved. He that believeth on him is not condemned: but he that believeth not is condemned already, because he hath not believed in the name of the only begotten Son of God" (John 3:16-18).

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