








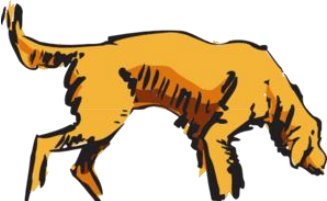










Animals in “Light, Energy, and the EM Spectrum” Comic




<i>Found on which page?</i>	<i>Species</i>	<i>Information</i>
22	<p>Bald Eagle</p> 	<p>The Bald Eagle has been the national emblem of the United States since 1782 and a spiritual symbol for native people for far longer than that. These regal birds aren't really bald, but their white-feathered heads gleam in contrast to their chocolate-brown body and wings.</p> <p>Look for the constellation Aquila to see an eagle in the sky. The stars are actually full of birds! Can you find Apus (the Bird of Paradise), Columba (the dove), Corvus (the crow), Cygnus (the swan), Grus (the crane), Pavo (the peacock), Phoenix (the mythical phoenix), and Tucana (the toucan)?</p> <p>Some birds navigate by the Sun, some by the stars, and others by the Earth's magnetic field. http://www.birds.cornell.edu/allaboutbirds/studying/migration/navigation</p>
3, 4, 12, 22	<p>Butterfly</p> <p>Monarch</p>  <p>Swallowtail</p> 	<p>Monarch butterflies are amongst the most beautiful of all butterflies and considered the “king” of the butterflies, hence the name “monarch”. These butterflies undertake a unique and miraculous migration every year. After wintering in Mexico or Pacific Grove, California, they begin a summer migration of 2500 miles. 2 additional generations are born, mate, lay eggs, and die during the migration, with a 4th generation hatching in Canada. This special 4th generation will spend the summer in Canada, then return to Mexico in the fall, flying the entire 2500 miles themselves. There they will winter-over, mate, lay eggs, and die. Their eggs will begin a new migration at the beginning of the next summer.</p> <p>These miraculous animals use the Sun and the Earth's magnetic field to navigate. http://www.monarch-butterfly.com/ http://www.pbs.org/wgbh/nova/nature/journey-butterflies.html http://www.usatoday.com/story/news/nation/2014/06/24/monarch-butterflies-migration-patterns-research-steven-reppert/11267655/</p>




		<p>There is no butterfly constellation. However, the Butterfly Cluster (M6) is an open cluster of stars in the constellation Scorpius. https://en.wikipedia.org/wiki/Butterfly_Cluster</p> <p>And there is a beautiful nebula (NGC 6302) nicknamed the Butterfly Nebula. https://www.nasa.gov/multimedia/imagegallery/image_feature_2526.html</p>
<p>22</p>	<p>Chameleon</p> 	<p>The color of the common chameleon is variable, between yellow/brown through green to a dark brown. Whatever the background color is the common chameleon will have two light colored lines along its side. It has a small beard of scales and some small hard scales on the top of its back. Many assume the color changes undergone by the chameleon are a result of its attempting to camouflage itself, when in reality the chameleon changes its color as a response to light and temperature stimuli and as an expression of its emotions (like chameleon body language). Often when caught for analysis, the chameleon may turn a dark color. Their colors are also important for interspecies communication, especially during the mating season. https://en.wikipedia.org/wiki/Common_chameleon</p> <p>If you can see the southern sky, look for the Chamaeleon constellation, though it won't be as colorful as the chameleons on Earth.</p>
<p>14, 15</p>	<p>Chicken</p> 	<p>The chicken is a domesticated fowl, a subspecies of the Red Junglefowl. As one of the most common and widespread domestic animals, there are more chickens in the world than any other species of bird. Chickens were domesticated by humans sometime between 8000 and 4500 years ago. http://en.wikipedia.org/wiki/Chicken</p> <p>There used to be a constellation named Gallus, the rooster. However, it is no longer recognized by the International Astronomical Union. This disappoints Camilla.</p>






9	<p>Coelacanth</p> 	<p>The coelacanths are a rare order of fish, the most endangered order of animals in the world. They follow the oldest known living lineage of lobe-finned fish and tetrapods, which means they are more closely related to lungfish, reptiles, and mammals than to the common ray-finned fishes. Coelacanths originated 400 million years ago, and were thought to have gone extinct in the Late Cretaceous (~66 million years ago), but were rediscovered in 1938 off the coast of South Africa. http://animals.nationalgeographic.com/animals/fish/coelacanth</p> <p>Fish are represented in the sky by the constellations Pisces, Pisces Austrinus, Volans (the flying fish), and Dorado (the swordfish).</p>
9	<p>Crab</p> 	<p>Crabs live in all the world's oceans, in fresh water, and on land. https://en.wikipedia.org/wiki/Crab</p> <p>Imagine a crab in the sky by looking at the constellation Cancer. Cancer is one of the 12 (actually 13) zodiacal constellations. https://en.wikipedia.org/wiki/Cancer_%28constellation%29</p>
4	<p>Crow</p> 	<p>Some crow species are capable of both tool use and tool construction. They play, show some linguistic capabilities and the ability to relay information over great distances, and live in complex, hierarchic societies involving hundreds of individuals with various "occupations". Crows and ravens may be amongst the most intelligent of animals, and Aesop's fable of <i>The Crow and the Pitcher</i> shows that humans have long viewed the crow as having remarkable intelligence. Perhaps that's why the ancients memorialized the crow in the constellation Corvus. http://en.wikipedia.org/wiki/Crow http://www.allaboutbirds.org/guide/american_crow/id</p>
4	<p>Dog</p> 	<p>Sometimes the night sky goes to the dogs! Sirius, the "Dog Star" is the brightest star in our sky except the Sun. Find Sirius in the constellation which bears the Latin name Canis Major, Big Dog. Nearby, you can also see Canis Minor, Little Dog, with only 2 stars. The brighter of these two stars is the "little Dog Star," known as Procyon. The name Procyon has been in use since the days of ancient Greece. It is the equivalent of the Latin word "Antecanis" or "Before the Dog," since Procyon rises about 20 minutes before Sirius (at midnorthern latitudes), and thus heralds the appearance of the great Dog Star.</p>



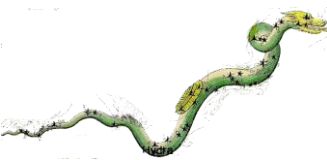
		<p>And don't forget the Hunting Dogs, Canes Venatici. Located about a third of the way from the end of the Big Dipper's handle and below it, these dogs were placed in the sky to assist Boötes, the Bear Driver, in his daily task of pursuing the Big Bear (Ursa Major) around the pole of the heavens.</p>
8	<p>Dolphin</p> 	<p>Dolphins, whales, and porpoises are closely related cetacean mammals. <i>Cetus</i> is Latin and is used in biological names to mean 'whale'. Its original meaning, comes from an ancient Greek word meaning 'whale' or "any huge fish or sea monster". In Greek mythology, Perseus defeated a sea monster named Ceto, which is depicted by the constellation Cetus.</p> <p>http://www.defenders.org/dolphin/basic-facts</p> <p>In addition to Cetus, the whale, dolphins are represented in the sky by the constellation Delphinus.</p>
4	<p>Dung Beetle</p>  	<p>Dung beetles feed on dung or feces (poo). In one night, a dung beetle can bury dung that is 250 times heavier than itself. The Egyptian scarab represented the dung beetle and was linked to Khepri, the god of the rising Sun, because the scarab rolls balls of dung across the ground, an act that the Egyptians saw as a symbol of the forces that move the Sun across the sky, as Khepri did. Young dung beetles, having been laid as eggs within the dung ball, emerge from it fully formed. Therefore, Khepri also represented creation and rebirth,</p> <p>There used to be a constellation named Scarabaeus, the beetle. But it is no longer recognized by the International Astronomical Union.</p> <p>Scientists recently discovered that dung beetles navigate by the Milky Way!</p> <p>http://www.livescience.com/26557-dung-beetles-navigate-stars.html http://kids.nationalgeographic.com/animals/dung-beetle.html http://en.wikipedia.org/wiki/Dung_beetle</p>
4	<p>Earthworm</p> 	<p>Earthworms are metamerically segmented, meaning not only is their body divided into a series of segments, but those segments are a repetition of one another such that each segment contains about the same anatomical systems. Each segment has its own muscle systems, its own nerve center, its own excretory organs, its own main body cavity, and segmental blood vessels.</p> <p>http://en.wikipedia.org/wiki/Earthworm</p> <p>There used to be a constellation named Lumbricus, the earthworm, but it is no longer recognized by the International Astronomical Union.</p>

<p>9</p>	<p>Electric Eel</p> 	<p>Every muscle cell in living beings has electrical potential. But muscle cells in electric eels, which are actually fish, have evolved into electrolytes, which produce dramatically higher voltages than ordinary muscle cells. A 6-foot long electric eel is actually a 6-inch fish. The remaining 5½ feet is cattle prod, a full-blown electric organ. Its intestine, stomach, and all other stuff are situated within 6” of its head. Its cells have every necessary feature to pump out high voltage electricity without shocking the fish.</p> <p>http://www.valuewalk.com/2014/06/findings-about-the-electric-eel-shock-evolutionary-biologists/</p> <p>There used to be a constellation named Anguilla, the eel. However, it is no longer recognized by the International Astronomical Union. We’ll just have to include our eel under the “fish constellations” like Pisces!</p>
<p>23</p>	<p>Emu</p> 	<p>A constellation used in Aboriginal culture in Australia is the “Emu in the sky”, a constellation made not of bright stars, but of dark nebulas, opaque clouds of dust and gas in outer space that are visible against the Milky Way background.</p> <p>https://en.wikipedia.org/wiki/Australian_Aboriginal_astronomy</p>
<p>4</p>	<p>Fly</p> 	<p>Flies are found everywhere and have been buzzing around since about 240 million years ago. Flies have been depicted in mythology and literature. In the Biblical 4th plague of Egypt, flies represent death and decay. In Greek mythology, Myiagros was a god who chased away flies during sacrifices to Zeus and Athena. Zeus sent a fly to bite Pegasus, causing his rider Bellerophon to fall back to Earth when they attempted to ride to Mount Olympus. In the traditional Navajo religion, Big Fly is an important spirit being.</p> <p>There is even a constellation dedicated to the fly – Musca, in the southern sky.</p>
<p>9</p>	<p>Flying Fish</p> 	<p>Not only can mammals fly (bats), and reptiles fly (pterosaurs), but fish can fly as well! Flying fish make powerful, self-propelled leaps out of water into air, where their long, wing-like fins enable gliding flight for considerable distances above the water's surface. This uncommon ability is a natural defense mechanism to evade predators. http://en.wikipedia.org/wiki/Flying_fish</p> <p>The constellation Volans, in the southern sky, celebrates the flying fish.</p>

<p>3</p>	<p>Flying Fox Bat</p> 	<p>Bats are essential to the health of our natural world. They help control pests and are vital pollinators and seed-dispersers for countless plants. They are the primary animal able to restore tropical rainforests, by dropping seeds, after they are cut down. Bats range from the world's smallest mammal, the tiny bumblebee bat that weighs less than a penny, to giant flying foxes with six-foot wingspans. Bats are very intelligent, much like primates. They will adopt orphans and help other bats in danger. Bats are the only flying mammals that have ever lived. Bats navigate by the Earth's magnetic field.</p> <p>There is no bat constellation, but some bats are called "flying foxes" because of their similarity to foxes. There is a constellation in the sky called Vulpecula, the little fox. Maybe you could pretend it means a little <i>flying fox</i>. http://batcon.org https://www.nwf.org/Kids/Ranger-Rick/Animals/Mammals/Fruit-Bats.aspx</p>
<p>18</p>	<p>Honey Bee</p> 	<p>Honeybees represent only a small fraction of the roughly 20,000 known species of bees. These are the primary producers of honey (most other bees do not make honey). Beekeepers in Western countries have been reporting declines of bees for many years. Pesticides are a key factor in explaining these declines, especially neonicotinoid and fipronil pesticides. Scientists are trying to ban these.</p> <p>http://en.wikipedia.org/wiki/Honey_bee http://www.colostate.edu/Depts/CoopExt/4DMG/Pests/bees.htm http://www.cnn.com/2014/06/22/politics/honey-bees-protection/</p> <p>There used to be constellations named Apis, the bee, and Apes, the bees. However, they are no longer recognized by the International Astronomical Union.</p>
<p>4</p>	<p>Lizard</p> 	<p>Lizards typically have feet and external ears, while snakes lack both of these characteristics. However, because they are defined negatively as excluding snakes, lizards have no unique distinguishing characteristic as a group. Many lizards can detach their tails to escape from predators. Color vision is particularly well developed in most lizards, and many communicate with body language or bright colors on their bodies, as well as with pheromones (chemicals used in animal communication).</p> <p>http://en.wikipedia.org/wiki/Lizard</p> <p>Lizards are represented in the sky by the constellations Lacerta and Chamaeleon.</p>

3	<p>Horse</p> 	<p>Horses are represented in the sky by the constellations Pegasus (the flying horse) and Equuleus (the foal).</p>
22	<p>Passenger Pigeon</p> 	<p><i>Extinct.</i> Once the most abundant bird in the world, Passenger Pigeons accounted for more than a quarter of all birds in North America. The species lived in enormous migratory flocks -- one flock in 1866 in southern Ontario was described as being 1.5 km (1 mi) wide and 500 km (300 mi) long, took 14 hours to pass, and held in excess of 3.5 billion birds. In the early 20th century, hunting and habitat destruction led to the passenger pigeon's extinction.</p> <p>http://en.wikipedia.org/wiki/Passenger_pigeon</p> <p>There is currently a project to reanimate/restore/clone this extinct pigeon using genetic engineering:</p> <p>http://www.technologyreview.com/news/512416/an-unlikely-plan-to-revive-the-passenger-pigeon/</p> <p>Pigeons navigate by magnetic fields. Perhaps they are trying to fly up to see their representation in the sky, the constellation Columba, the dove.</p>
16	<p>Peacock</p> 	<p>A peacock is the male version of a peafowl. A female is a peahen, and their offspring are peachicks. Peahens choose their mates by the size and shape of his tail. Ancient Greeks believed that the flesh of peafowl did not decay after death, and it so became a symbol of immortality. This symbolism was adopted by early Christianity, and thus many early Christian paintings and mosaics show the peacock.</p> <p>http://en.wikipedia.org/wiki/Peafowl</p> <p>The peacock can also symbolize the cosmos if one interprets its tail with its many 'eyes' as the vault of heaven dotted by the Sun, moon, and stars.</p> <p>Look in the southern sky for the constellation Pavo, the peacock. This is Colours' favorite!</p>
23	<p>Phoenix</p>	<p>Made popular as Fawkes in <i>Harry Potter</i>, the mythical phoenix obtains new life by arising from the ashes of its predecessor -- and has been associated with the Sun for centuries.</p>

		<p>https://en.wikipedia.org/wiki/Phoenix_%28constellation%29</p> <p>https://en.wikipedia.org/wiki/Phoenix_%28mythology%29</p>
12	<p>Protozoa</p> 	<p>Protozoa are one-celled animals found worldwide in most habitats. Most species are free living, but all higher animals are infected with one or more species of protozoa. Some protozoa have structures for propulsion or other types of movement.</p> <p>http://www.ncbi.nlm.nih.gov/books/NBK8325/</p>
9	<p>Rubber ducky</p> 	<p>A rubber duck is a toy shaped like a stylized duck, generally yellow with a flat base. It may be made of rubber or rubber-like material such as vinyl plastic (polyvinyl chloride) or latex.</p> <p>http://nasawatch.com/archives/2008/09/nasa-duck-flotilla-deployed.html</p>
3	<p>Scorpion</p> 	<p>The constellation Scorpius is one of the few that actually looks like the animal it portrays! In Greek mythology the myths associated with Scorpio almost invariably also contain a reference to Orion. According to one of these myths it is written that Orion boasted to goddess Artemis and her mother, Leto, that he would kill every animal on Earth. Although Artemis was a hunter herself, she offered protection to all creatures by sending a scorpion to deal with Orion. The pair battled and the scorpion killed Orion. However, the contest lively caught the attention of the king of the gods, Zeus, who later raised the scorpion to heaven and afterwards, at the request of Artemis, did the same for Orion to serve as a reminder for mortals to curb their excessive pride.</p> <p>http://en.wikipedia.org/wiki/Scorpion</p>
9	<p>Sea Turtle</p> 	<p>Sea turtles are among the most impressive navigators in the animal kingdom, finding their way by following the Earth's magnetic field. Turtles originally evolved about 220 million years ago and all sea turtles are highly endangered. Camilla and Colours wonder why no one ever named a constellation after a turtle?</p> <p>http://www.conserveturtles.org</p> <p>http://www.unc.edu/depts/oceanweb/turtles/</p>

3, 16	<p style="text-align: center;">Snake (2)</p> 	<p>Snakes are elongated, legless, carnivorous (meat-eating) reptiles and can be distinguished from legless lizards by their lack of eyelids and external ears. http://dinosaurs.about.com/od/otherprehistoriclif/a/Prehistoric-Snakes-The-Story-Of-Snake-Evolution.htm</p> <p>A snake appears in our sky as the constellation Serpens, the only constellation actually divided into 2 pieces! There are also 2 sea snake constellations. Check out Hydra!</p>
8	<p style="text-align: center;">Swordfish</p> 	<p>Dorado is a constellation in the southern sky. It was named in the late 16th century and is now one of the 88 modern constellations. Its name refers to the dolphinfish (<i>Coryphaena hippurus</i>), which is known as <i>dorado</i> in Portuguese, although it has also been depicted as a swordfish. https://en.wikipedia.org/wiki/Dorado</p>
9	<p style="text-align: center;">Water Snake</p> 	<p>In Greek mythology, Hydra was an ancient serpent-like water monster with reptilian traits. It possessed many heads – and for each head cut off it grew two more. It had poisonous breath and blood so virulent that even its scent was deadly. Myths relate that Hydra and Cancer (the crab) were put into the sky after Heracles slew them. There are 2 water snakes in the stars - Hydra and Hydrus, one female and one male. https://en.wikipedia.org/wiki/Lernaean_Hydra</p>