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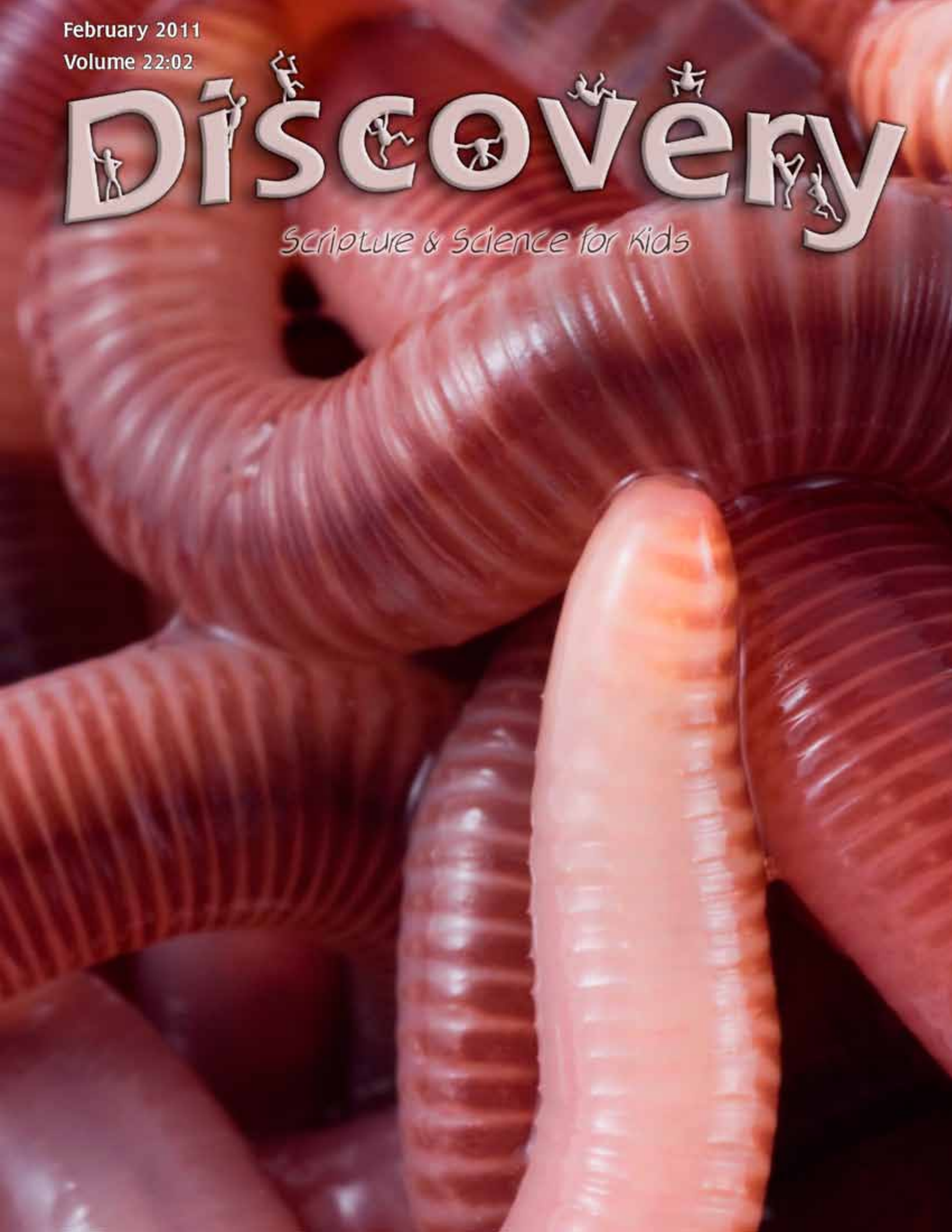
Discovery

Scripture & Science for Kids



The Earth is Crawling with Worms

WILLIE THE WORD WORM

Hello kids. It's Willie the Word Worm here today to tell you all about worms. But first, let me introduce myself. Some of you kids may know me already. I am the news anchorworm for the popular kids' television program "Digger Doug's Underground." My specialty is words. Any time Iguana Don, Digger Doug, Professor Whitecoat, or some other character on our show uses an important or difficult word, I pop up in the show and explain what the word means. I also follow leads and get the scoop on really exciting stories, like the time Iggy wrecked his bike, or the time he caused Professor Whitecoat to blow-up Whitecoat laboratories. But nevermind about that. Today, I want to give you the scoop on something amazing: worms. That's right, this issue of *Discovery* magazine is all about creepy, crawly worms.

Photo by Henry Kaiser, National Science Foundation

You might not know it, but worms are everywhere. "What is a worm?," you may ask. A worm is a slender critter with no legs and no backbone. Some people think that caterpillars are worms, but they are not. They have legs and are really larval (juvenile) stages of insects. The truth is, God designed thousands of different species of worms that live in almost every type of environment you can imagine. For instance, let's think about the bootlace worm, also known as the ribbon worm. These "little" critters live in the water, especially in the ocean, and are often only a few inches long. But, they sure can get big! One bootlace worm that washed up on the shore of Scotland in the 1800s was over 180 feet long. In fact, scientists think that some bootlace worms can grow to be 200 feet long. That would make them the longest animals in the world. Just for your information, the second longest animal in the world is the lion's mane jellyfish that can grow tentacles up to 120 feet long. Isn't it amazing that God designed a worm that can grow to be half as long as an entire football field?

Another interesting kind of worm you will study about in this issue is the earthworm. We asked Dr. Jeff Miller, a scientist that works for Apologetics Press, to write an article about earthworms and he did a great job. One thing you might like to know is that in Africa, there is a worm called the African Giant Worm that can grow to be over two feet long. That is about as long as your arm. Imagine trying to bait a fishhook with that squirming giant!

Compare the size of the worm to a standard 12 inch ruler.

Let me tell you about another amazing worm. This one was named "Barry." It's true! The people who found him gave him a name because he was so interesting. In 2009, researchers at an aquarium in England were having a terrible time with one of their aquariums. Something was killing the fish and demolishing the coral reef in the tank. The researchers set traps with hooks and very strong fishing line. But whatever was killing the coral appeared to be **eating the metal hooks and breaking the fishing line as well**. Finally, the workers decided they had to remove the coral and take the entire tank environment apart. When they did, they found a four-foot long bristle worm. That worm was as long as many of our *Discovery* readers are tall. The workers named the worm Barry. Big Barry was not easy to remove, because he was covered with thousands of pointy spikes that cause permanent numbness to humans.

This is not Barry, but it is an image of another bristle worm.

Not all worms, as you know, are as big as bristle worm Barry. There is a group of worms known as arrow worms. They live in the ocean. And you have probably never seen them. The reason you have never seen them is because they are so tiny. They are very common and are considered to be ocean plankton. Maybe you have heard of plankton. It is the stuff that blue whales filter out of the water as food. Well, these arrow worms are shaped like tiny arrows (that's where they get their name). They swim about in the ocean and eat other plankton organisms that are smaller than them.

I could go on and on telling you about all the amazingly different, wonderfully designed worms of the world. But we're out of time. Remember, whenever we see design, we know that an intelligent designer must be responsible for it. Only God could design and create so many remarkable, wonderful worms. This is Willie the Word Worm signing off.

THE Slimy FRIENDS

LIVING BENEATH US

JEFF MILLER

It may be hard to believe, but the earthworm (also known as the angleworm) is a complicated little creature with more than 1,800 different species found worldwide—30 of which are in the eastern United States. The most common earthworm in the U.S. grows to be about 10 inches in length. Its reddish-brown color is due to the pigment hemoglobin in its blood, although an earthworm in Great Britain is green in color. Amazingly, an Australian earthworm species grows to be about 11 feet in length (a basketball goal is only 10 feet high!).

The earthworm is an invertebrate, meaning that it does not have a backbone. Its body is divided into ring-like segments. As a "segmented worm," the earthworm belongs in the same phylum with marine worms and leeches. The common earthworm in the U.S. can have as many as 150 segments, and some organs, including the organs that eliminate waste, are copied in every segment. God also gave some worms an amazing ability. Certain earthworm species can regrow segments or body parts if they get cut off—a feature which evolutionists cannot hope to explain through the theory of evolution. Some have even been known to regenerate a head, which, believe it or not, is not the only body part that breathes oxygen for the earthworm's survival. Interestingly, they receive oxygen through their skin. They also cannot see or hear, but are very sensitive to vibrations and light. The earthworm is hermaphroditic, meaning that each worm has the reproductive organs of both sexes. The "clitellum" is a bulged organ on the earthworm that makes a sack for holding the worm's eggs after mating. Baby worms are born from the sack in only two to four weeks.

Earthworms tend to live near the soil surface. However, one Asian species is known to climb trees to try to escape drowning during heavy rainfall. For food, earthworms eat the plants and other organisms found in the soil in which they live. However, they also eat the soil itself along the way, as well as sand and tiny pebbles. In fact, earthworms eat so much food that scientists estimate that the amount of food they eat and discard every day equals their own bodyweight!

You might wonder, "What are those little slimy guys good for?" We can know that God had a special purpose in mind for everything He created in this wonderful world around us. This is true for the squirmy little earthworm as well. For instance, when the Bible says that God feeds the birds of the air (Matthew 6:26), the earthworm probably crossed His mind, because they certainly serve as food for birds. Earthworms also help humans gather food in that they often serve as bait for fishermen who wish to lure fish to their hooks. Even more interestingly, earthworms are great for gardens. Gardeners estimate that a good vegetable garden should have at least 10 earthworms in every square foot of gardening space. The worms burrow many tunnels in the soil, which allow oxygen to get to the plant roots and other organisms that live in the soil. They also help with water drainage and draw materials into their burrows that help in growing healthy plants and vegetables. We can know that God was certainly thinking about the needs of human beings—made in the image of God (Genesis 1:26-27)—when He created the slick and slithery earthworm.

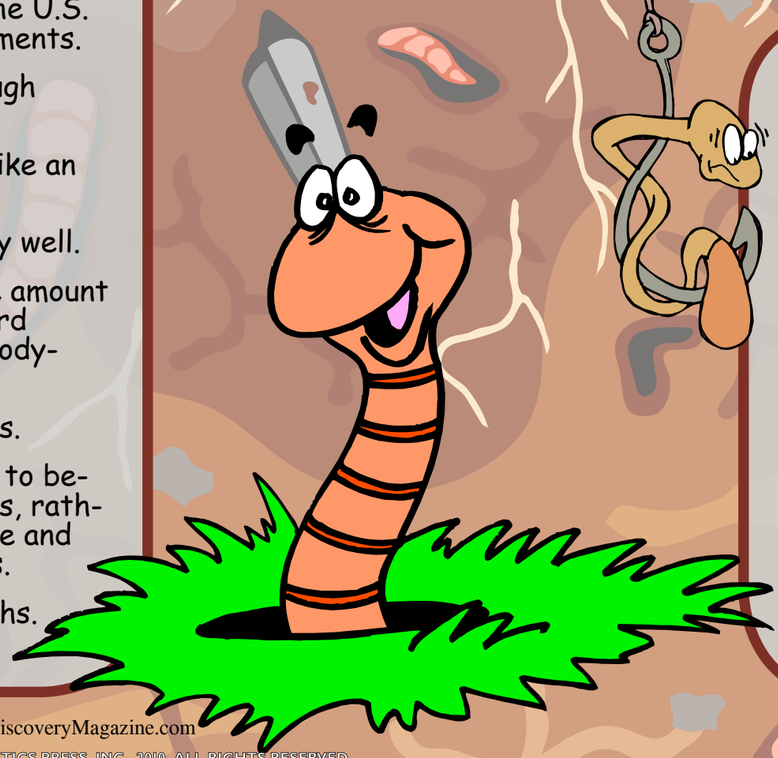
Activity Pages

True or False

1. ____ Caterpillars are worms.
2. ____ Worms evolved 265 million years ago.
3. ____ The common earthworm in the U.S. can have as many as 150 segments.
4. ____ Worms receive oxygen through their skin.
5. ____ The bristle worm is shaped like an arrow.
6. ____ Worms can see and hear very well.
7. ____ Scientists estimate that the amount of food worms eat and discard every day equals their own body-weight.
8. ____ Worms are great for gardens.
9. ____ It makes much better sense to believe that God created worms, rather than them evolving by time and chance over millions of years.
10. ____ Tubeworms have two stomachs.

Fill in the Blanks

1. A worm is a slender critter with no legs and no _____.
2. _____ designed thousands of different species of worms.
3. _____ could never explain something as terrific as the tubeworm.
4. The chemical called _____ is poisonous to most animals, yet tubeworms can carry lots of it in their blood without being harmed.
5. Scientists estimate that the amount of food earthworms eat and discard every day equals their own _____.



Match, Find, and Circle

1. ___ Have legs and are really larval (juvenile) stages of insects
2. ___ Also known as the ribbon worm
3. ___ Name given to a four-foot-long bristle worm discovered in an aquarium in England.
4. ___ Shaped like a tiny arrow
5. ___ Means "to not have a backbone"
6. ___ An organism that lives in a harsh environment which would normally kill most other organisms
7. ___ A worm that lives near hydrothermal vents
8. ___ A theory that cannot reasonably explain the existence of the tubeworm (or any other worm)

K	J	E	X	T	R	E	M	O	P	H	I	L	E	W
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							Q	K	J	B	M	H	P	Q

A. Evolution
B. Giant tubeworm
C. Extremophile
D. Invertebrate
E. Arrow worm
F. Barry
G. Bootlace worm
H. Caterpillars

Dear Digger Doug,

Why don't the people in the Bible have last names?
—Peyton, Pikeville, KY

Dear Peyton,
This is another terrific question from a reader who is obviously reading his Bible. Keep that up. As you have noticed, you do not see names in the Bible like John Smith or Simon Johnson. So how did the people in Bible times tell the difference between two people with the same first name? As you read the Bible, you will come across the answer. Often, when a person with the same first name as someone else is mentioned, there will be an additional piece of information given. For instance, in Acts 10:6, we read about a man named "Simon, a tanner." A tanner was a person who prepared animal skins by tanning them. So to show which Simon was being mentioned, his job as a tanner was given as well. Instead of a "last name" he was given "a last job." That was often done in Bible times. People were often given names like John the blacksmith or Saul the tailor. In fact, that is where many modern last names like Smith and Tailor come from. On other occasions, the Bible might mention who a person's dad was. For instance, Numbers 11:28 talks about "Joshua the son of Nun." By telling the father's name, it sets Joshua apart from others who might be named Joshua. Interestingly, many modern names like Johnson originally meant, "the son of John." Also, sometimes a person was labeled by a certain trait or characteristic he or she had (like being a twin—John 11:16, Didymus means "twin"), or based on where they lived, like Mary Magdalene (since she was from Magdala). There you go, Peyton, thanks for the question.

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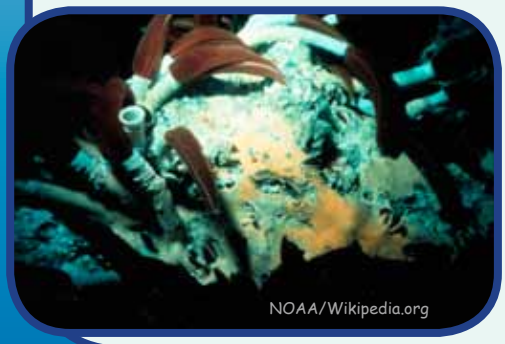
Terrific Tube Worms

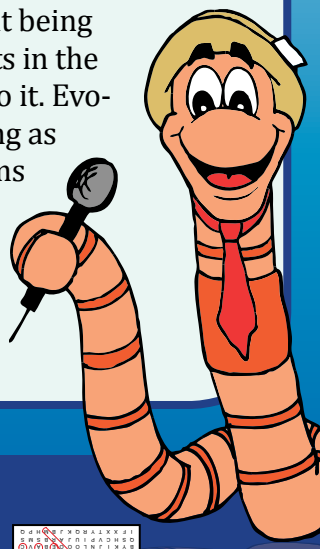
Willie the Word Worm

Hey kids. It's Willie the Word Worm again, back with a special report on a very interesting kind of worm—the tubeworm. In last month's issue of *Discovery*, there was an article that talked about extremophiles. An extremophile is an organism that lives in a harsh environment that would kill other organisms. Well, have I got an extraordinary extremophile for you.

Giant tubeworms are some of the most interesting animals in the world. And I'm not saying that just because I'm a worm. These worms live on the bottom of the ocean where there is no sunlight. They live in colonies beside hydrothermal vents. A hydrothermal vent is a crack in the ocean floor where lava and hot gases spew out. The water around these vents can reach over 600 degrees Fahrenheit. But this heat doesn't bother the tubeworms. They actually like it. Furthermore, the water pressure that is present around these vents is enormous. Do you know how your eardrums begin to hurt if you swim too far under water? That is because the deeper you go down, the more pressure builds up. Can you imagine swimming over 6,000 feet down to the bottom of the ocean? Your eardrums would burst and your lungs would be crushed. But this pressure doesn't bother tubeworms. God designed them to be able to take the extreme heat, pressure, and darkness.


NOAA/Wikipedia.org

Furthermore, tubeworms don't have a stomach. That's right, they don't really even have a mouth or any of the other organs that are used by most creatures to digest food. How do they live? Well, they have a symbiotic relationship with bacteria that lives in their bodies. The bacteria produce the different chemicals that the worms need, and the worms supply the bacteria with hemoglobin. Those who believe in evolution have tried to explain how the worms and bacteria evolved, but they cannot. You see, the worms cannot live without the bacteria, and the bacteria need the worms as well. Their symbiotic relationship shows that the organisms must have been designed by an intelligent designer. Oh, one more thing. The chemical called nitrate is poisonous to most animals, yet tubeworms can carry lots of it in their blood without being harmed. The most brilliant scientists in the world cannot figure out how they do it. Evolution could never explain something as terrific as the tubeworm. Tubeworms are great evidence to show that God exists. You heard it here first, folks. You can always count on Willie the Word Worm to bring you the latest news.



ANSWERS

TRUE OR FALSE: 1-F; 2-F; 3-T; 4-T; 5-F; 6-F; 7-T; 8-T; 9-T; 10-F.
FILL IN THE BLANKS: 1. backbone; 2. God; 3. evolution; 4. nitrate; 5. bodyweight. MATCH, FIND, AND CIRCLE: 1. H (Caterpillars); 2. G (Bootlace worm); 3. F (Barry); 4. E (Arrow worm); 5. D (Invertebrate); 6. C (Extremophile); 7. B (Giant tubeworm); 8. A (Evolution).

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