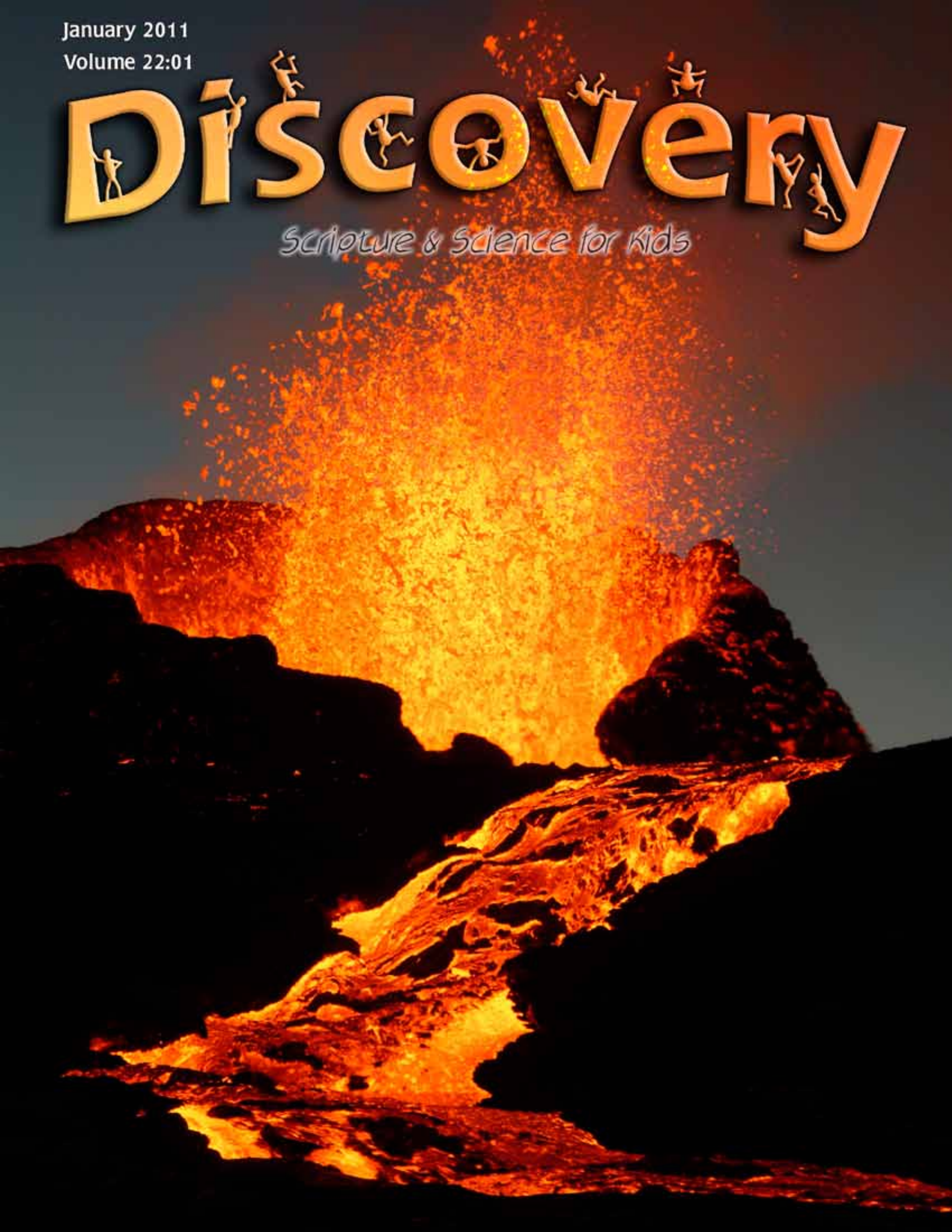


January 2011
Volume 22:01

Discovery

Scripture & Science for Kids



VOLCANOES ERUPT

WITH INTERESTING INFORMATION

Kyle Butt

The ancient town of Pompeii was viewed as a wonderful place to live. Many very important Roman officials made it their home. The weather was nice, it was close to the ocean, and the city made for an excellent place to retire. But something troubling happened in Pompeii. Around the year A.D. 62 a severe earthquake rocked the city, causing considerable damage. After that, many smaller earthquakes continued to aggravate the citizens of Pompeii. Eighteen years after the major earthquake of 62 occurred, something even worse happened. The historian Pliny the Younger tells about the devastating volcanic eruption that demolished the entire area in A.D. 79. Massive amounts of ash exploded out of the top of the volcano near Pompeii. A cloud of volcanic gases swept over the area. And a "river" of molten lava oozed down the side of the mountain, toasting to a crisp everything it touched. In two short days, the city of Pompeii had been completely destroyed, and it was not discovered again in modern times until A.D. 1599.

about volcanoes? What is a volcano? Why do volcanoes occur? Why does lava pour out of many of them? These and other questions are fascinating to study. Volcanoes are astounding reminders that God's creation is awesome.

Volcanoes are cracks in the Earth's crust where hot gases and magma spill out. Magma is rock that is so hot it melts into a liquid. It is called magma when it is under the Earth's crust, but when it comes out of the crust it is called lava. Think about a volcano like a cream-filled donut. If you squeeze the donut hard enough, a crack will appear where the cream will pour out. The place on the donut where the cream pours out is the "volcano" of the pastry. Volcanoes are places in Earth's crustal plates "squeezed" together in such a way that a crack is made and magma pours out.

The molten lava that pours out of many volcanoes comes in several different types. There is smooth pahoehoe (pah-HOY-hoy) lava, pillow lava that

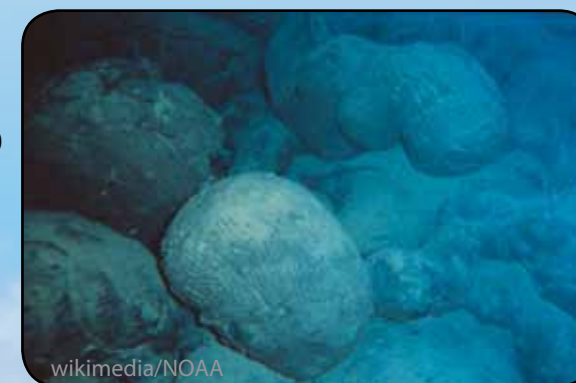


Pahoehoe Lava

forms on the bottom of the oceans, the rough A'a (ah ah) lava, and various other kinds. Lava is fascinating because it is liquid rock. Studying it is also helpful to show that the idea the Earth is billions of years old is false.

You may have heard of radiometric dating methods. These "clocks" are used by evolutionists to "prove" that the Earth is millions or billions of years old. You see, radiometric dating methods can only be used to date igneous rocks. Igneous rocks are rocks that cooled from lava or magma. Thus, radiometric dating methods are often used to give assumed dates for lava. These dating methods supposedly show that much of the lava on Earth cooled millions of years ago.

When we start to look more closely at the evidence, however, we realize something is very wrong with these dating methods. For instance, geologist Andrew Snelling studied lava that came from an eruption of Mt. Saint Helens in 1986. The rock should have measured only a few decades old. Yet when it was dated using radiometric methods, the date came out to be about 300,000 years old. On another occasion, lava flows in the Grand Canyon, that could only be a few hundred or a few thousand years old, were dated with radiometric methods that gave dates of about 990 million years old. Some lava from an island in Hawaii that was taken from an eruption about 200 years ago contained substances that gave radiometric dates of about two million years old.



Pillow Lava

The lessons to be learned about radiometric dating are simple. First, such dating methods can only be used on igneous rocks (most fossils are not even found in such rocks, so radiometric dates certainly cannot be used to date them). Second, since the dating methods give drastically wrong dates when they are used to date lava and igneous rocks when **we already know the date**, why would we expect them to give correct dates when they are used to date rocks whose age we don't know?

Volcanoes are captivating geological occurrences that show God's creative ability and power. Many evolutionary geologists have tried to use lava to "prove" the Earth is old. The dating methods used, however, have been shown to be terribly inaccurate, even when dating rocks that are only a few hundred years old. The biblical position that the Earth is only a few thousand years old is the only one that agrees with all the evidence from true science, including the study of volcanoes.



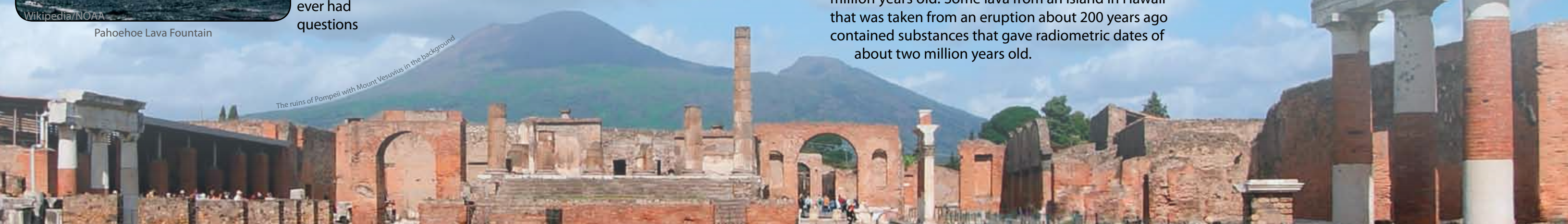
A'a Lava



Pahoehoe Lava Fountain

What happened to Pompeii reminds us of the amazing power and majesty of volcanoes. Have you ever had questions

The ruins of Pompeii with Mount Vesuvius in the background



Incredible Earthly Power—Nothing to God

DAVE MILLER

God is omnipotent, which means He is all-powerful. Nothing on Earth is omnipotent. Yet, God has made some aspects of His creation very powerful. Volcanoes are among the Earth's most powerful and destructive forces. Volcanologists (those who study volcanoes) have developed a scale to describe the magnitude and severity of a volcano's eruption. The Volcanic Explosivity Index, or VEI, classifies volcanic explosions from 0 to 8, based on such things as the height of the eruption column and the amount of erupted material.



Volcanic Cloud of Dust and Ash

Explosive volcanoes are so powerful that they can completely disrupt and transform the environment around them—including animal and human life.

They erupt suddenly, with terrifying force, spewing forth hot gas and lava with a shower of dust, ash, and cinder. Even "volcanic bombs" are released—large chunks of molten rock that fly high into the air and then rain down on the countryside. The eruption of Mt. St. Helens clogged streams with rock and mud, forming volcanic mudflows that moved down the volcano's slopes, traveling up to 90 miles per hour. Some of the mudflows were as high as a six-story building! Mudflows strip mountains and valleys bare and have been known to bury entire communities.

Explosive volcanic eruptions can also blast out clouds of hot tephra from the side or top of the volcano.



These fiery clouds race down mountainsides with hurricane force. The ash that is shot into the sky falls back to Earth like a blanket that suffocates plants, animals, and humans. Flows of searing lava, which can reach 2,000 degrees Fahrenheit (about 10 times the boiling point of water!), burn everything in their path, including whole towns.

Some volcanoes have been so powerful that the blast from their eruptions can be heard thousands of miles away. In 1883, the island of Krakatau ("Krakatoa") in Indonesia exploded with devastating fury. Its colossal blast was heard more than 3,000 miles away! The explosion caused massive tsunami waves more than 120 feet tall.

We cannot help but be humbled by such incredible power, causing us to look to the Creator in awe and wonder: "Yours, O LORD, is the greatness, **the power** and the glory, the victory and the majesty; for all that is in heaven and in earth is Yours...and You are exalted as head over all... In Your hand is **power and might**" (1 Chronicles 29:11-12). "Indeed these are the mere edges of His ways, and how small a whisper we hear of Him! But **the thunder of His power** who can understand?" (Job 26:14)—"Who established the mountains by His strength, being clothed **with power**" (Psalm 65:6).

Some Like It Hot!

JEFF MILLER

Some people (like myself) like the air conditioner to be on nearly all the time—even during the winter. Some people (like my co-worker Eric Lyons) like it to be warm all the time. However, even though Eric likes it warm, he would not want to live in or very near a volcano! Interestingly, not all of God's creatures avoid living close to volcanoes.

"Extremophile" is the name scientists give to microscopic organisms that live and thrive in "extreme" environments such as volcanoes and volcanic vents. It is notable that the highest microbial life appears to have been found at a volcanic vent 19,850 feet above sea level in South America. However, though we probably usually think of tall mountains high above sea level when we think of volcanoes, extremophiles and other creatures have been found in underwater volcanoes as well. Scientists recently discovered creatures that live on and around

active volcanoes at the bottom of the ocean. While exploring a volcano on the bottom of the Pacific Ocean near Guam, scientists found limpet snails and two species of shrimp. The Loihi shrimp is believed to graze on bacteria found on the volcanoes using tiny

claws like garden shears. The Alvinocaris shrimp becomes a predator after reaching adulthood. Its front claws grow large and the shrimp begins to eat the smaller shrimp as well as other fish that die in the area due to the volcanic activity. Scientists

Loihi Shrimp



Credit: WHOI

are amazed that these creatures are somehow suited to live and even thrive in such high pressure, high temperature, highly acidic environments. Amazingly, genetic engineers hope to copy their designs for the benefit of mankind.

Evolutionists believe that over millions of years these creatures adapted to the highly acidic environment produced by the volcanoes. But no one can explain how such an adaptation could have occurred. In fact, *National Geographic News*, known as being highly pro-evolution, was so amazed at the design found in extremophiles that they went so far as to call them "miracles," without realizing that they actually stated the truth of the matter. Almighty God miraculously created these amazing volcanic creatures, as He did all other living creatures, during the Creation week.

White Volcanic Vents



ACTIVITY PAGES



TRUE OR FALSE

1. God is omnipotent.
2. VEI stands for Very Expensive Items.
3. Underwater volcanoes would have played a very small part in the Noahic Flood.
4. God specially designed some animals with the ability to live near volcanoes.
5. Radiometric dating methods have been shown to be terribly inaccurate.
6. Underwater volcanoes account for roughly 80% of all the volcanic activity on Earth.

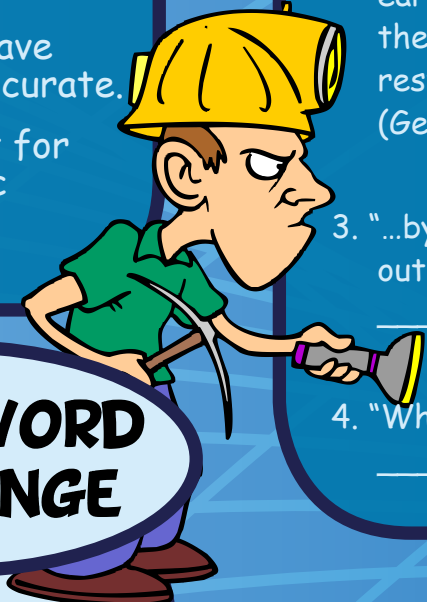
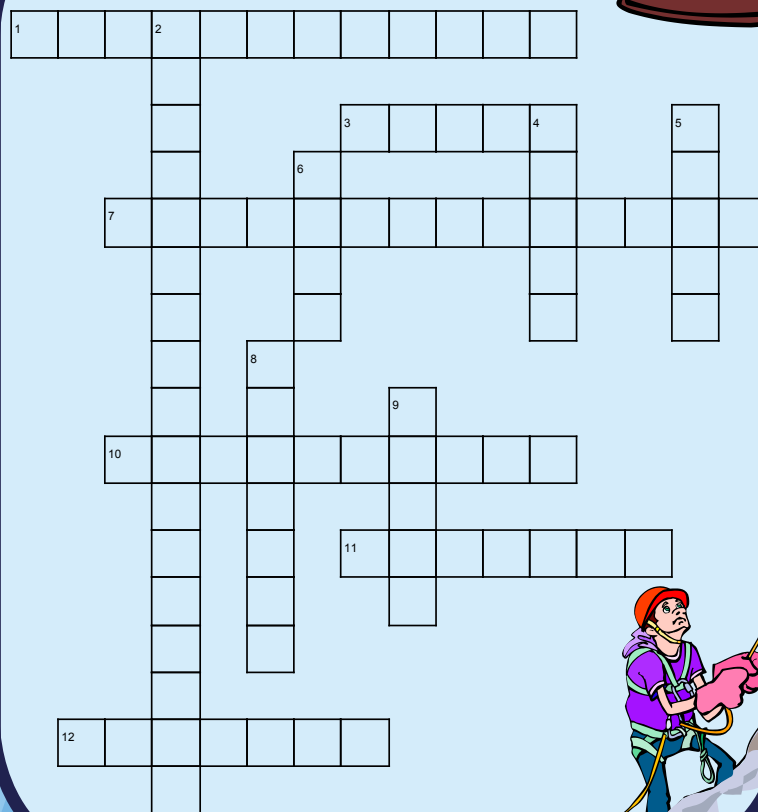
Across:

1. Microscopic organisms that live and thrive in "extreme" environments
3. The main gas that is expelled from volcanoes
7. Those who study volcanoes
10. Lava that forms on the bottom of the oceans
11. Roman town that was demolished by a volcanic eruption in A.D. 79
12. Rocks that cooled from lava or magma

Down:

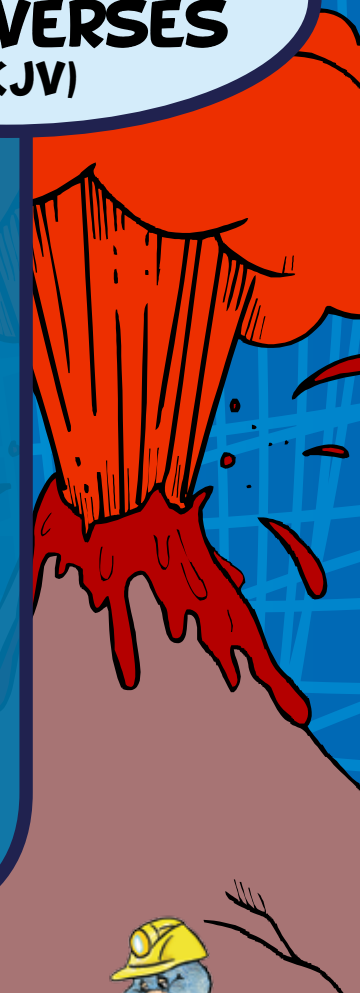
2. Used by evolutionists to date igneous rocks (although incorrectly)
4. Underground rock that is so hot it melts into a liquid
5. H₂O
6. Magma that comes out of the Earth's crust
8. Crack in the Earth's crust where hot gases and magma spill out
9. All the fountains of the great deep were broken up during this event

CROSSWORD CHALLENGE



COMPLETE THE BIBLE VERSES (NKJV)

1. "In the six hundredth year of Noah's life, in the second month, the seventeenth day of the month, on that day all the fountains of the great _____ were _____ up, and the windows of heaven were opened" (Genesis 7:11).
2. "Then God remembered Noah, and every living thing, and all the animals that were with him in the ark. And God made a wind to pass over the earth, and the _____ subsided. The _____ of the deep and the windows of heaven were also stopped, and the rain from heaven was restrained. And the waters _____ continually from the earth" (Genesis 8:1-3).
3. "...by the word of God the heavens were of old, and the earth standing out of water and in the water, by which the _____ that then existed _____, being _____ with water" (2 Peter 3:5-6).
4. "Who established the _____ by His strength, being clothed with _____" (Psalm 65:6).



Dear Digger Doug,

I was reading May's issue when I saw "Complete the Bible Verses." When I looked up the first verse, it wasn't the right verse. Should I get a different Bible or ask for some help wording it?

—Faith, Griswold, IA.

Dear Faith,

Your question can help us learn a lot about the Bible. As you may know, the Bible was not originally written in English. It was written in two primary languages: Hebrew for the Old Testament and Greek for the New Testament. Since all the available manuscripts of the New Testament are in Greek, the message of the Bible must be translated from Greek to English in order for those of us who speak English to understand it. A "version" is a translation of the Bible from the original language. There are lots of different versions: The King James Version, the New King James Version, the American Standard Version, the New American Standard Version, and a whole bunch more. Each one is worded a little differently, because there is more than one way to get an idea across. For instance, one person might say, "he tossed a ball," another might say, "he threw a ball," and another might say, "he passed a ball." All three words, "tossed, threw, and passed," might be translating the same Greek word "ballo." In *Discovery*, we use the New King James Version. There are other good versions available, but we have chosen the NKJV. Therefore, if you want to get the verses just like the ones we put on the activity pages, you will need to use the New King James Version. Thanks, Faith, for the great question.





APOLOGETICS PRESS, INC.
 230 Landmark Drive
 Montgomery, AL 36117
 (800) 234-8558 (Orders)
 (334) 272-8558
 www.DiscoveryMagazine.com
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Nonprofit Organization
 U.S. Postage
PAID
 Montgomery, AL
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Underwater Volcanoes AND THE FLOOD

ERIC LYONS

There are an estimated 1,500 land volcanoes around the world. When most people consider these lava-ejecting openings in the Earth, they think of such well-known land volcanoes as Mount Saint Helens in Washington State, Mount Fuji in Japan, or Mount Vesuvius in Italy. The fact is, however, many **underwater** volcanoes also exist.

Loihi, for example, is an underwater volcano about 20 miles southeast of the island of Hawaii. It is one of the world's most famous "submarine" volcanoes, which had its last major eruption in 1996. Although Loihi's peak is 10,000 feet **above** the seafloor, it is still 3,000 feet **below** sea level.

About 2,500 miles northeast of Loihi lies another underwater volcano, known as the Axial Seamount. The seamount is settled about 300 miles off Oregon's coast. It rises about 3,600 feet above the surrounding seafloor and is more than 4,500 feet below sea level. Its



Credit: NOAA and NSF



Credit: NOAA and NSF

only known eruption was in 1998. The fact is, there are thousands of underwater volcanoes all across the globe, and they account for roughly 80% of all the volcanic activity on Earth.

So what do underwater volcanoes have to do with the Flood of Noah's day? When the Bible says in Genesis 7:11 that the Flood began "when the windows of heaven were opened," it also states that "on that day **all the fountains of the great deep were broken up.**" Considering that water (H₂O) in the form of steam is the main gas that is expelled from volcanoes, it is reasonable to conclude that the breaking up of "all the fountains of the great deep" is a reference to major geologic activity, namely volcanic eruptions. In these worldwide, underwater eruptions, steam would have ruptured from the seafloor for several weeks (Genesis 8:2), drastically heating the oceans and raising the sea levels.

Eventually, there was so much H₂O on Earth that even the highest mountains were covered (Genesis 7:19-20). Indeed, "the world that then existed perished, being flooded with water" (2 Peter 3:6), much of which came forth when "all the fountains of the great deep were broken up."

ANSWERS

COMPLETE THE BIBLE VERSES: 1. deep, broken; 2. waters, fountains, receded; 3. world, perished, flooded; 4. mountains, power.
 11. Pompeii; 12. igneous; **Down:** 2. radiometric dating; 4. magma; 5. water; 6. lava; 8. volcano; 9. Flood.
 TRUE OR FALSE: 1. T; 2. F; 3. F; 4. T; 5. T; 6. T; 7. S-L; 8. T; 9. S-L; 10. F; 11. F; 12. F.
 CROSSWORD CHALLENGE: Across: 1. extremophile; 3. steam; 7. volcanologists; 10. pillow lava.
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