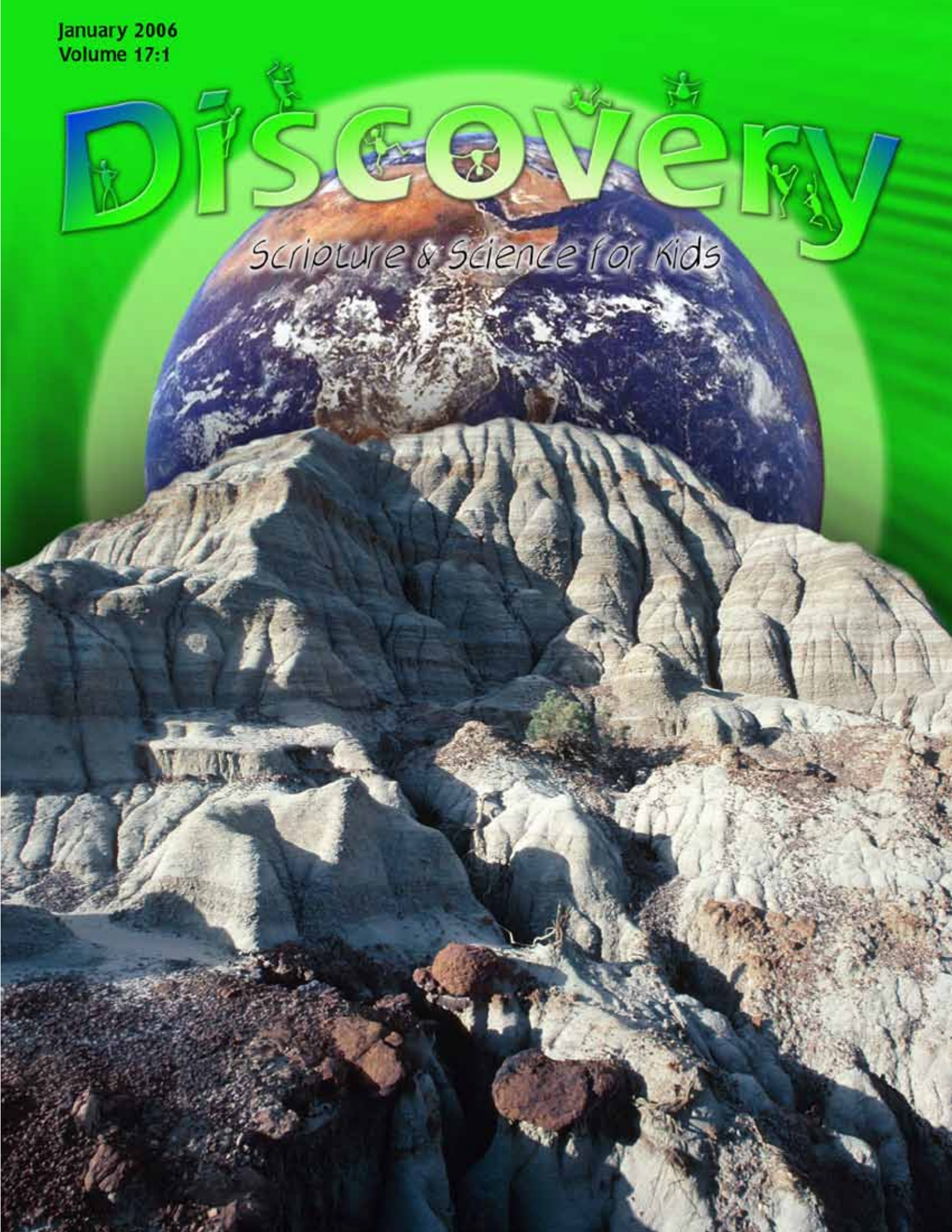


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Discovery

Scripture & Science for Kids



ARE ROCKS REALLY BILLIONS OF YEARS OLD?



Most of you don't use words or phrases like half-life, radiometric, and daughter element in everyday conversation. In fact, you are probably much more interested in PE class than you are in studying the methods used to date the Earth.

However, since most science books and school textbooks are selling you a lie by telling you that the Earth can be dated at almost 5 billion years old (and the Universe at almost 14 billion), you deserve to hear the truth.

But, before we start this study on dating methods, you have the

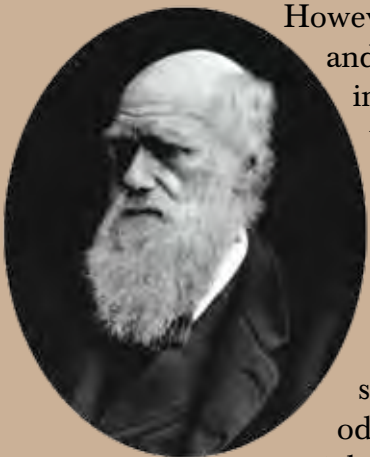
right to ask a very valid question: "Why

does the age of the Earth matter?" The answer is simple. The Bible presents evidence to establish that the Earth is only a few thousand years old. Most scientists suggest that it is billions of years old. If the dating methods these scientists use are right, then the Bible is wrong. However, if the dating methods that give billions of years are wrong, then the Bible remains the inspired Word of God that can be trusted.

Since the days of Charles Darwin, it has become clear that in order for

evolution to occur, the Earth must be very old. In Darwin's day, many scientists thought that 20 million years would be enough time. But as scientists

began to discover the design of the Universe, it soon became evident that the time would have to be increased by billions of years (how many more billions will scientists have to add in the future?). In order to "prove" that these billions of years actually occurred, certain dating methods have been invented to calculate the Earth's age. If you have taken Earth Science in school, then you have studied the different ways that scientists "date" the rocks and other materials of the Earth. The goal of this issue of *Discovery* is to show (without going into technical details) that the dating methods yielding billions of years have some serious flaws in them.



Charles Darwin

PROBLEMS WITH RADIOMETRIC DATING

Assumption 1: The Rate of Decay has Always Been the Same

The first major assumption built into radiometric dating is the idea that the parent elements have decayed in the past at the exact same rate as they are decaying today. This idea has problems, because no one alive today knows what kind of

environment existed in the distant past. We cannot claim to know how fast elements decayed in the past, because we have very little evidence to prove this idea (which is why it is an assumption). Let's consider how badly this idea

New ways of dating rocks are supposed to be able to give ages in the billions of years. These are the radiometric dating methods. Each of these methods is based upon the decay rate of certain elements. In one method, for instance, the element uranium-238 will break down into the element lead over a period of many years. The



Uranium—courtesy House.gov

element that breaks down (in this case, uranium-238) is called the parent element. The element that is formed (in this case, lead) is called the daughter element. How long is this supposed to take? In the case of uranium and lead, the half-life is supposed to be 4.5 billion years. A half-life is simply the time that it takes half of a sample of the parent element to turn into the daughter element. For instance, if you have 50 ounces of uranium, then in 4.5 billion years you supposedly should have 25 ounces of uranium and about that many ounces of lead. Therefore, if you know the rate of decay for an element, once you measure the amount of the two elements in the rock sample, simple math should give you an age for the rock. However, there are certain things that scientists must assume in order for radiometric dating to work. Let's look at those assumptions.



Lead—courtesy House.gov



could alter the age of the Earth. Suppose you come upon a man who is cutting down trees in a forest. You watch him for an entire hour, and he cuts down only 1 tree. Then you count the number of trees he has cut—31 in all. If you assume that he has been cutting trees down at the same rate, then you calculate that he has chopped for 31 hours. However, when you talk to the man, he tells you that, earlier in the day when his ax was sharp and

his stomach was full, he was cutting down 5 trees an hour; only in the last hour had he slacked off. With this information, you now understand that he worked for only seven hours, not 31. Claiming that the decay rates in the past were the same as they are now is an assumption that cannot be proven and should not be granted to those who want an age for the Earth measured in billions of years.

Assumption 2: Elements have not Been Affected by Outside Forces

Another assumption built into the radiometric dating methods is the idea that the elements have not been affected by outside forces. That means that no water has soaked through the sample and



“carried away” some of the lead, or that none of the uranium had a chance to escape through holes in the rock. However, this is a huge assumption. How can a person claim that natural forces have not affected the elements in a rock for a period of billions of years? In 4.5 billion years, could it be slightly possible that water seeped through the sample and added or subtracted some lead or uranium? Furthermore, could there be an “outside chance” that some of the uranium seeped out of pores in the rock? If any rock were really 4.5 billion years old, no one in this world would have a clue what had or had not gone in or out of the rock over that vast amount of time. Once again, the assumption that certain rock samples are “closed systems” simply cannot be granted.

Assumption 3: No Daughter Element Existed at the Beginning

To date rocks using any radiometric dating system, a person must assume that the daughter element in the sample was not there in the beginning. However, that claim cannot be proven. Who is to say that the rock did not start out with 23 ounces of lead already in it? The lead could have been in the rock from the beginning (and so could the uranium). To illustrate this point, suppose you go to a swimming pool and find a hose that is pumping water into the pool at a rate of 100 gallons an hour. You discover that the pool has 3,000 gallons of water in it. You calculate that the hose must have been running for 30 hours. However, when you ask the owner of the pool how long she has been running the hose, she tells you that she has been running it for only 1 hour. Most of the water was already in the pool due to a heavy rain the night before. If you assumed that all the water came from the hose, your calculations would be way off—29 hours off to be exact. Assumption three, that no daughter element existed at the beginning, simply cannot be granted.



Another Problem with Radiometric Dating

In addition to the assumptions that are built into radiometric dating, another problem is that the different radiometric methods drastically dis-

agree with one another at times. On occasion, the same sample of rock can be dated by the different methods, and the dates can differ by several hundred million years. Some rocks from Hawaii that were known to have formed about two hundred years ago rendered a date of 160 million



Hawaii satellite image courtesy of: [visibleearth.NASA.gov](http://visibleearth.nasa.gov).

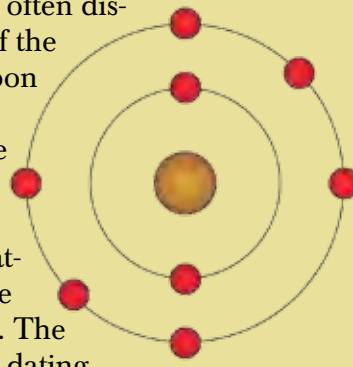
to 3 billion years when dated by the potassium-argon method. Another time, the same basalt rock in Nigeria was given a date of 95 million years when dated by the potassium-argon method, and 750 million years when dated by the uranium-helium method. But what can you expect from dating methods that are based entirely on built-in assumptions? Anything is possible!

It is likely that other dating methods soon will be “discovered” that will give even older ages for the Earth. But each dating method that renders colossal numbers of years will be based on similar, unprovable assumptions. All around you, books, television, and radio are telling you that the Earth is billions of years old. This is nothing more than a trick to try and discredit the real history of the Earth as found in the Bible. Realizing that these vast ages of billions of years come from dating methods that are based upon incorrect assumptions will give you more confidence in the Bible. There never have been billions of years available for evolution.



In 1940, Martin Kamen (pictured above) and Samuel Ruben discovered carbon-14. That discovery enabled Willard Libby of UC Berkeley to invent radiocarbon dating in 1949.

Another dating method often discussed when studying one of the various sciences is radiocarbon dating (also known as carbon-14 dating). Some people who defend the theory of evolution have been known to say that this method of dating supports the idea that the Earth is billions of years old. The truth is, however, carbon-14 dating is totally useless in measuring the millions (or billions) of years needed by evolutionists.



Evolutionist Richard Dawkins admitted the weakness of radiocarbon dating when he said, “It is useful for dating organic material where we are dealing in hundreds or a few thousands of years, but it is no good for the evolutionary timescale where we are dealing in millions of years.” Even the inventor of carbon-14 dating, W.F. Libby, acknowledged that it is not an accurate way of dating things past a few thousand years old. Simply put, radiocarbon dating can never be used to get accurate ages measured in millions or billions of years.

In addition, carbon-14 dating has been shown to be far from perfect in measuring organic material. Seals that were freshly killed have been dated at 1,300 years old. Also, when scientists tested two parts of a frozen musk ox found in Fairbanks, Alaska, two vastly different dates were given. Radiocarbon testing falsely showed that one part of the musk ox was 24,000 years old, while another part was only 7,200 years old. Obviously, carbon-14 dating cannot accurately render dates for the age of the Earth in billions of years. The truth is, it has trouble even with items measured in hundreds or thousands of years.

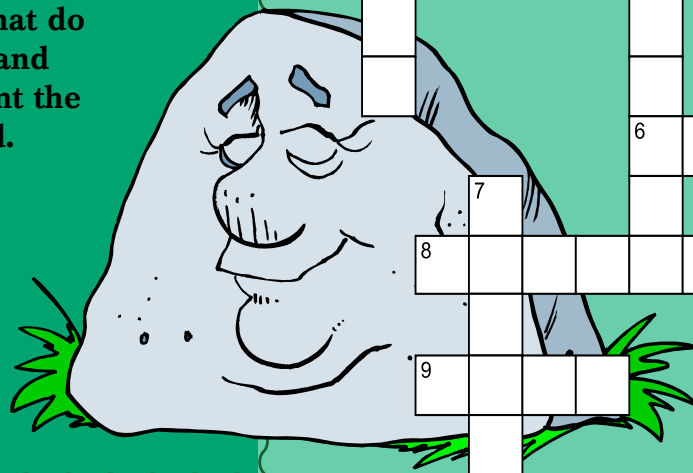
Dear Digger Doug,
Was there really an Ice Age?

Dear reader,

Millions of cubic miles of ice cover parts of the Earth today in areas like the Arctic and Antarctica. From what we can discover, it looks like there might have been a time when ice covered much of northern Europe, north-west Asia, and North America as well. And, although the Bible does not specifically mention this Ice Age or its cause, there is a good chance that these ice sheets formed as a result of the Flood of Noah's day.

The Flood would have changed the weather on Earth drastically. Reduced summertime temperatures could have been caused by volcanic dust (produced during the upheavals of the Flood) or by increased cloud cover that shielded the planet from some of the Sun's light. This, in turn, could have caused a rapid cooling of certain landmasses, which allowed snow to remain during the summer months in certain areas of the world where it currently does not linger during the summer. Over time, this snow might have been pressed together to form huge sheets of ice that would not begin to melt away until the weather patterns on Earth changed.

While we cannot be sure about all the causes of the Ice Age, we can offer possible explanations that do not take millions of years, and that would take into account the biblical record of the Flood.



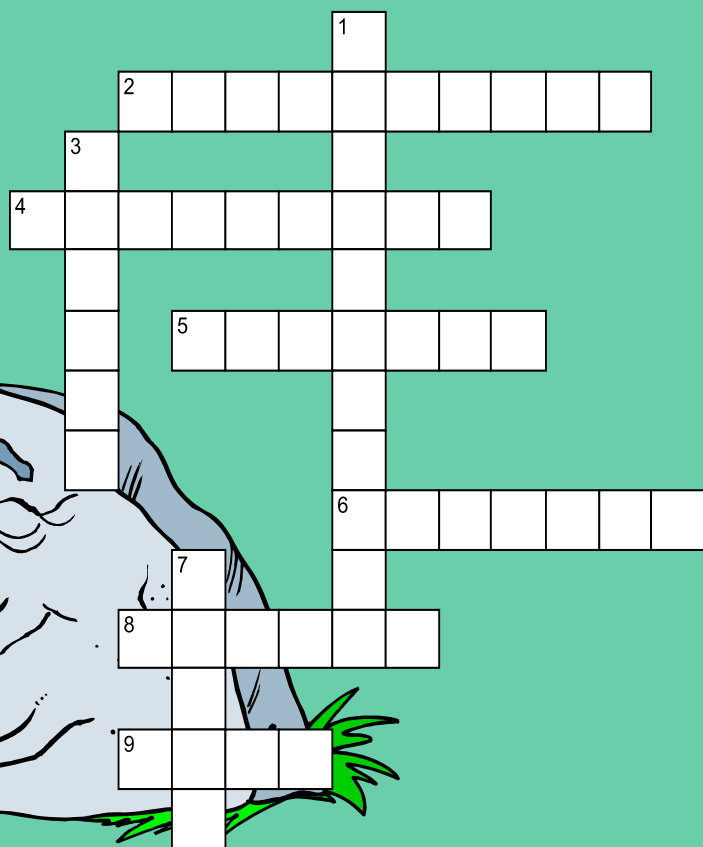
CROSSWORD CHALLENGE

Across:

- A cone-like rock formation that rises up from the floor
- The time that it takes for one half of a parent element to change into a daughter element
- Stalactites can be found even on modern structures like this memorial in Washington, D.C.
- According to many science textbooks, the Earth is about five _____ years old.
- The element that breaks down into the daughter element
- Daughter element of uranium-238

Down:

- A dating method used only on organic material
- Rocks from this state that were known to have formed about 200 years ago rendered a date of 160 million to 3 billion years when dated using one radiometric dating method.
- Stalagmites and stalactites are often found in these



TRUE OR FALSE

- _____ Radiometric dating is not based on any unproven assumptions.
- _____ The different radiometric dating methods always agree.
- _____ The age of the Earth has nothing to do with the Bible.
- _____ Evolutionary dating methods are very accurate.
- _____ We do not know exactly what kind of environment existed on Earth thousands of years ago.
- _____ It has been proven that decay rates in the past have always been the same.
- _____ Stalactites and stalagmites can form in only a few years.
- _____ Radiocarbon dating is effective at dating rocks that are millions of years old.

MULTIPLE CHOICE

- What daughter element is a product of the decay of the parent element uranium-238?
 - Carbon
 - Aluminum
 - Lead
 - Thallium
- An assumption is something that has not been
 - Written down
 - Proven
 - Studied
 - None of the above
- In Charles Darwin's day, many scientists thought the Earth was
 - 200 years old
 - 20 million years old
 - 2 billion years old
 - 200 billion years old
- Cone-like rock formations that "drop" from the ceiling
 - Megarocks
 - Stalagmites
 - Stalactites
 - None of the above

- The same basalt rock in this country was given a date of 95 million years when dated by the potassium-argon method, and 750 million years when dated by the uranium-helium method.
 - Mexico
 - France
 - Nigeria
 - Japan
- The Bible presents evidence to establish that the Earth is
 - Only a few thousand years old
 - Millions of years old
 - Billions of years old
 - Trillions of years old

ON A SEPARATE SHEET OF PAPER

- Name three assumptions that are made by scientists when referring to radiometric dating.
- Besides the assumptions used in radiometric dating, what is another major problem with the procedure?

Truth Be Told

Would you like to know more about geology and the age of the Earth? You can find answers to many questions about geology in our new book *Truth Be Told*. Much of the information in this issue of *Discovery* is covered in the book, as well other interesting material on dinosaurs, evolution, design in nature, and much more. Ask your mom or dad to order you a copy today.



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 ADDRESS SERVICE REQUESTED

DRIPPING STONES

BRAD HARRUB

Are you a spelunker? Spelunkers are individuals who enjoy exploring caves. Buried beneath the Earth's surface in many parts of the United States are vast networks of caverns—many of which are bigger than your school! Imagine walking down into a cave and shining your headlamp on the beautiful walls all around you. As you look up, you see what appear to be huge icicles reaching almost to the floor. In other areas you see huge cones coming up from the floor. These beautiful rock formations are called stalagmites and stalactites.

Stalactites “drop” from the ceiling, while stalagmites rise up from the floor of the cavern. Many times these rock formations will grow together forming beau-

tiful pillars, veils, “soda straws,” or even what appear to be waterfalls. These amazing rocks are formed from minerals carried in groundwater. As the groundwater trickles through the cracks in the ground, it finally becomes exposed to the air in the cavern. As the water dries, a dissolved mineral—calcium bicarbonate—is precipitated out, leaving a ring of calcite. Calcite is the primary mineral that is found in underground caverns, and it can display a variety of colors and shapes. This process of water seeping out, drying, and leaving behind calcite goes on over and over, causing the stalagmite or stalactite to get bigger. The beautiful colors that are often seen in stalagmites and stalactites are caused by iron or other impurities that are in the groundwater.

Many people suggest that it takes millions of years to form these amazing rock formations. However, we know today that it does not require millions of years. In truth, stalactites can be found on modern structures, such as the Lincoln Memorial or man-made tunnels from West Virginia to San Francisco! In fact, at Mother Shipton's Cave in England this process happens so quickly that visitors can watch as teddy bears and dinosaur figurines become covered in rock (see picture to the left). While many would point to stalagmites and stalactites as proof for evolution, the truth is, these beautiful rock formations can form rapidly and they stand as just one more beautiful example of the handiwork of God.



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3. Hawaii; 7. caves. TRUE OR FALSE: 1. F; 2. F; 3. F; 4. F; 5. T; 6. F; 7. T; 8. F; 9. T; 10. F. CROSSWORD CHALLENGE: Across—2. stalagmite; 4. half-life; 5. Lincoln; 6. billion; 8. parent; 9. lead; Down—1. radiocarbon; 6. A (Only a few thousand years old); 4. C (Stalactites); 5. C (Nigeria); 3. C (Lead); 2. B (Proven); 3. B (Proven); 4. C (Lead); 5. C (Lead); 6. A (Only a few thousand years old); 7. B (Proven); 8. B (Proven); 9. C (Lead); 10. C (Lead).