



Special Section
**Happy 50th
Birthday**

PRE-READING PROMPTS:

- What technologies are available today that were unknown before microprocessors were developed?
- Since the Industrial Revolution, human dependence on which natural resource has dramatically increased?
- Which of today's recent scientific developments do you think will become as commonplace in the future as the personal computers that are now found in many homes?

DID YOU KNOW?

- The American Automobile Association reported in February 1974 that 1 in 5 gas stations had no fuel at all! To accommodate this shortage, gas was rationed according to license plate numbers. People whose license plate ended in an odd number (or a letter) could get gas only on odd-number days of the month, while those with an even ending could get gas on even-number days.
- The first computer filled an entire 9 meter (29 foot) by 15 meter (49 foot) room, but stored only five megabytes. Today's computers can store 400,000 megabytes on a hard drive that is barely bigger than 3.5 inches (8.9 centimeters) in diameter. That's smaller than a paperback book.

CRITICAL THINKING:

- What do you think the world would be like without each of the developments discussed in the article? Have a classroom discussion about it.

CROSS-CURRICULAR CONNECTIONS:

SOCIAL STUDIES: Split the class into six groups. Have each group research the history of individual topics covered in the story: satellites, Mars exploration, climate change, energy consumption, computers, and growing tissues and organs. Have the teams make a timeline of the key discoveries that made these predictions realities and then have them present their findings to the class.

RESOURCES

- Learn more about energy at this informative, interactive site: www.alliantenergykids.com.
- See what's new in Mars exploration at NASA's Web site: <http://marsprogram.jpl.nasa.gov/allabout>.
- Find out more about growing tissues using nanotechnology at the new exhibit at the Science Museum in London: www.sciencemuseum.org.uk/antenna/nano/skin/index.asp.

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PHYSICAL: Elements
Weight & Switch

PRE-READING PROMPTS:

- What do you think an ecotoxicologist studies?
- Lead is known to be dangerous to humans when it is in products like paint, which can peel and be ingested. Based on this information, how might lead fishing weights affect birds?
- If lead weights are unsafe, do anglers have to abandon fishing as a hobby? What could they do instead?

DID YOU KNOW?

- More than 3,000 years ago, fishing lures and weights were made of bronze and bone.
- One of the biggest lures ever made is the 2.4 meter (8 foot)-long torpedo-shape wooden lure called "Bassmonger." It weighs more than 90 kilograms (200 pounds), and Ron Mirabile, the man who made it, hauls his lure across the country on the back of a trailer because it won't fit in his tackle box. He uses it to publicize his fishing-lure business.
- By studying six strands of hair and a few small pieces of skull, scientists recently concluded that Ludwig van Beethoven died of lead poisoning.

CRITICAL THINKING:

- Michael Browne, the teen featured in the article, went to fishing derbies to educate anglers about the dangers of lead weights. What other methods would be helpful in spreading the word? Which education methods would be most effective in your community? Why?

CROSS-CURRICULAR CONNECTIONS:

ART: You decide it's time to help spread the word about lead sinkers so you reserve a booth at the local Outdoor Anglers' Show. Prepare the following items to display: 1) an eye-catching sign that will "lure" participants to your booth, 2) a fact sheet describing the dangers of lead fishing weights to birds and other wildlife, and 3) a list of safer alternatives to lead weights. For more ideas, read: www.usgs.gov/newsroom/article.asp?ID=1972.

RESOURCES

- Visit the Centers for Disease Control and Prevention's Web site to learn about ways to avoid lead exposure: www.cdc.gov/Features/ChildhoodLead.
- See videos on lead mining, dangers, recycling, and more here: <http://videos.howstuffworks.com/discovery/34893-howstuffworks-show-lead-recycling-video.htm>.
- Learn how to make your own fishing lures at this site: www.tacklemaking.com.

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EARTH: Glaciers
Freed From the Ice

PRE-READING PROMPTS:

- In what parts of the world would you expect to find glaciers?
- Many glaciers are rapidly melting. What might be the cause?
- What do you know about mummies? What conditions do you think are necessary for a mummy to be preserved for thousands of years?

DID YOU KNOW?

- Glaciers cover 10 percent of the world's land area and store approximately 70 percent of its fresh water. If all the glaciers on Earth were to melt, the sea level would rise about 70 meters (230 feet).
- Glaciers are found on all of the world's continents. Although the island of Australia doesn't have any glaciers, its neighbor New Zealand (which is considered part of the continent of Oceania, along with Australia) boasts two famous ones: Fox Glacier and Franz Josef Glacier.

CRITICAL THINKING:

- Bacteria and fungi are simple organisms. In order to thrive, they require an environment that provides food, water, and air, is not too hot or cold, and is not too acidic or alkaline. With this in mind, explain why ice mummies remain so well preserved while frozen but begin to decompose once thawed? What might museum curators do to prevent the decomposition of ice mummies and other artifacts on display?

CROSS-CURRICULAR CONNECTIONS:

SOCIAL STUDIES: When archaeologists find human remains in a glacier or at any other site, they are presented with a dilemma: Should they examine the remains to learn more about the culture of the deceased or should they turn the body over to its descendants or to a final resting place? Split into two groups and debate each option.

RESOURCES

- Look at dramatic pictures showing how Glacier National Park's glaciers have changed over the years at the United States Geological Survey's Repeat Photography Project Web site: www.nrmisc.usgs.gov/repeatphoto/overview.htm.
- Find everything you ever wanted to know about all the different kinds of mummies at www.mummytombs.com.
- This site from NOVA, which accompanied the original broadcast of *Mummies*, has classroom activities and ideas from teachers: www.pbs.org/wgbh/nova/icemummies.



LIFE: Genetics
DNA Detectives

PRE-READING PROMPTS:

- What are some illegal products made from threatened or endangered species?
- Does a person need to have any special permits to import products that are made from legally protected species?
- How do you think scientists are working to prevent illegal imports of products made from threatened and endangered species?

DID YOU KNOW?

- In 2007, the U.S. Humane Society tested what claimed to be faux fur trim on several imported name-brand jackets. Unfortunately, it wasn't "fake fur"—but "Fido fur" instead. The importation was illegal, because it has been against the law to bring products containing dog and cat fur into the country since 2000.
- After observing a tourist's hair moving and making noise, a U.S. Customs official searched her and found a tiny drugged marmoset in her hairdo. The woman was attempting to smuggle the small monkey into the country.

CRITICAL THINKING:

- Television dramas about crime scene investigations are very popular. In a phenomenon known as the "CSI effect," viewers believe they have gained a basic understanding of DNA testing and other forensic techniques from these shows. However, many law enforcement officials and scientists disagree, saying the information presented on the shows is generally incomplete, misleading, or simply incorrect. Do you believe the "CSI effect" could affect a juror's ability to fairly evaluate evidence? Explain.

CROSS-CURRICULAR CONNECTIONS:

LANGUAGE ARTS: While many people know that poaching is illegal, they may not know that importing goods made from poached and endangered species is against the law as well. Write a letter to a fictional traveler explaining this difference and reminding the person to be wary of some of the goods he or she may encounter on vacation.

RESOURCES

- Learn more about the laws governing the trade in animal products at the Convention on International Trade in Endangered Species of Wild Fauna and Flora Web site: www.cites.org.
- Find out about other cool ways scientists at the U.S. Fish and Wildlife Service are using forensics to solve crimes against animals: www.lab.fws.gov.
- Have students create their own DNA aliases: www.nature.ca/genome/05/051/0511/0511_m205_e.cfm.