

# CURRENT SCIENCE®

ASIA EDITION

2010 • Issue 3

Supplements for Science and Geography needs in school



## THIS ISSUE AT A GLANCE

### EARTH SCIENCE

#### The Long Dry

Pages 4–5

##### Critical Thinking

- What type of climate do you live in? Is it arid? semi-arid? tropical? polar?
- Describe an original water conservation plan for drought-stricken regions.
- *Energy in the Earth system*: global climate
- *Structure of the Earth system*: oceans, weather, and climate

### LIFE SCIENCE

#### Lemon Aid

Pages 10–11

##### Critical Thinking

- Describe an original plan to combat greening.
- Name other plant diseases and the plants they infect. (*late blight* [tomatoes, potatoes], *pitch canker* [pine trees], *rust* [roses, geraniums], *chocolate spot* [beans])
- *Diversity and adaptation of organisms*: microorganisms
- *Structure and function in living systems*: infectious diseases

### EARTH SCIENCE

#### What a Waste

Pages 6–7

##### Critical Thinking

- Which diseases are more likely to occur where sanitation is poor? (*cholera, typhoid, infectious hepatitis, polio, diarrhea, schistosomiasis*)
- In your home, is human waste disposed of in a cesspool? a septic tank? a municipal sewage system?
- *Environment quality*: human waste and sanitation
- *Personal and community health*: disease prevention

### PHYSICAL SCIENCE

#### Super Bowl

Pages 12–13

##### Critical Thinking

- Name some other sports in which the competitors use or wear equipment that alters the effects of friction. (*swimming, snow skiing, snowboarding, cycling, running, sledding*)
- *Understandings about science and technology*: new technology
- *Motions and forces*: friction

### HEALTH SCIENCE

#### The Great Unknown

Pages 8–9

##### Critical Thinking

- Amanda Young has an immune system disorder. Name other disorders of the immune system. (*AIDS, Crohn's disease, lupus, rheumatoid arthritis, type 1 diabetes*)
- *Structure and function in living systems*: genetic diseases; the immune system
- *Personal and community health*: disease symptoms and diagnosis

### PHYSICAL SCIENCE

#### Big Catch

Pages 14–15


##### Critical Thinking

- Which process is the reverse of cellular respiration, using carbon dioxide and water and releasing oxygen as a waste product? (*photosynthesis*)
- *Science and technology in society*: societal challenges inspire questions for research
- *Environment quality*: air pollution

### Current Science

#### Online

You can find **Student's worksheet and online resources** at our web site: <http://www.nurturecraft.com/html/currentscience.htm>

Readers, look for the book  throughout this issue to guide in learning **Physics, Chemistry, Biology & Geography** in line with the MOE curriculum.

## NOVA

#### Tracking El Niño

("The Long Dry," p. 4)  
[www.pbs.org/nova/elniño/reach/time.html](http://www.pbs.org/nova/elniño/reach/time.html)

See El Niño's effects across the planet.

#### Who Does What?

("The Great Unknown," p. 8)  
[www.pbs.org/nova/teachers/activities/2806\\_doctors\\_01.html](http://www.pbs.org/nova/teachers/activities/2806_doctors_01.html)  
Explore the world of medical careers.

#### Fake or Real?

("Insight," p. 17)  
[www.pbs.org/nova/sciencenow/0301/03-fakeorreal.html](http://www.pbs.org/nova/sciencenow/0301/03-fakeorreal.html)  
Examine photographs for fakery, and then hear Hany Farid explain why you were right or wrong.

**SKILLBUILDERS**

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**CURRENT  
SCIENCE®****The Long Dry** (Page 4)**Multiple Choice**

Choose the response that best completes each statement or answers each question. Write the letters in the brackets.

1. Which is a type of Australian wildlife? (A) gorilla, (B) kangaroo, (C) wolverine ( )
2. A period of below-average rainfall that has adverse effects on a region is called a ( )  
(A) deluge. (B) drought. (C) monsoon.
3. In which decade did annual rainfall in the Murray-Darling Basin reach an all-time high in the ( )  
past century? (A) 1950s, (B) 1960s, (C) 1970s
4. Which type of climate receives a light amount of rainfall each year? (A) arid, (B) semiarid, ( )  
(C) temperate
5. El Niño is a temporary warming of waters in a region of which ocean? (A) Atlantic, (B) Indian, ( )  
(C) Pacific
6. How does El Niño affect Australia's climate? (A) It weakens trade winds that bring rain ( )  
to Australia. (B) It brings warmer air to Australia. (C) It brings more hurricanes.
7. What is the name of the longest river in southeastern Australia? (A) Darling, (B) Murray, (C) Sydney ( )
8. The Australian city of Victoria is receiving how much rain today compared with what it received ( )  
in 1996? (A) 15 percent, (B) 70 percent, (C) 85 percent

**What a Waste** (Page 6)**Fill in the Blanks**

Write the word or words that best complete each sentence.

1. A substance that is free of germs is said to be \_\_\_\_\_.
2. A pathogenic organism is one that causes a \_\_\_\_\_.
3. \_\_\_\_\_ is the destruction or removal of disease-causing waste.
4. A \_\_\_\_\_ is a device, popular in rural China, that breaks down  
human dung and releases methane.
5. Of the approximately 6.8 billion people on Earth, \_\_\_\_\_ billion have access to  
facilities that destroy or remove disease-causing waste.
6. The kidneys produce a form of waste called \_\_\_\_\_.
7. \_\_\_\_\_ is the English scientific name for what's informally known as *fen*, *tatti*, and  
*poep* in some other languages.
8. About \_\_\_\_\_ percent of the world's population lacks access to facilities that destroy or  
remove disease-causing waste.

**SKILLBUILDERS**

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**CURRENT  
SCIENCE®****The Great Unknown** (Page 8)**Short Answer**

1. What was the basic problem that brought Amanda Young to the attention of researchers at the National Institutes of Health (NIH)? \_\_\_\_\_  
\_\_\_\_\_
2. What is spinal meningitis? \_\_\_\_\_  
\_\_\_\_\_
3. A dermatologist treats diseases of what body part? \_\_\_\_\_
4. What has genetic research revealed about diseases and their treatment, according to this article?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. What did NIH researchers discover about Amanda Young? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Lemon Aid** (Page 10)**Vocabulary Challenge**

Match each numbered word or phrase with its correct description. Write the letter of the description in the bracket provided.

- |                         |     |  |
|-------------------------|-----|--|
| 1. Pierce's disease     | ( ) | A. a citrus tree that yields pale green or yellow fruit that looks like extra-large grapefruit |
| 2. phloem               | ( ) | B. a mixture of nutrients that a plant makes to nourish itself                                 |
| 3. yellow shoot disease | ( ) | C. a technique that encourages citrus trees to yield fruit earlier in their lives              |
| 4. bacterium            | ( ) | D. a type of conductive tissue in plants   |
| 5. Asian citrus psyllid | ( ) | E. another term for greening   |
| 6. phloem sap           | ( ) | F. a bacterial infection of grapevines   |
| 7. guava                | ( ) | G. a plant disease that is caused by a fungus  |
| 8. chestnut blight      | ( ) | H. an insect suspected of transmitting greening  |
| 9. pomelo               | ( ) | I. a plant that appears to protect citrus trees against greening                               |
| 10. micro-budding       | ( ) | J. type of microbe that is thought to cause greening   |

**SKILLBUILDERS**

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**CURRENT  
SCIENCE®****Super Bowl** (Page 12)**True or False**

Read each statement, and decide whether it is true (T) or false (F). Write your response in the bracket provided.

1. Friction is the resistance of an object to movement. ( )
2. Oil is applied to bowling lanes mainly to keep them clean. ( )
3. In bowling, the pocket is the space between the head pin and either of the two pins beside and behind it. ( )
4. Bowling balls are made of marble. ( )
5. Moment of inertia is a measure of how weight is distributed in an object. ( )
6. Bowling balls with weirdly shaped cores change speed and direction as they move down a lane. ( )
7. A bowling ball high in porosity has a smooth surface. ( )
8. A hook shot in bowling is one that changes direction partway down the lane, suddenly moving sideways toward the pocket. ( )

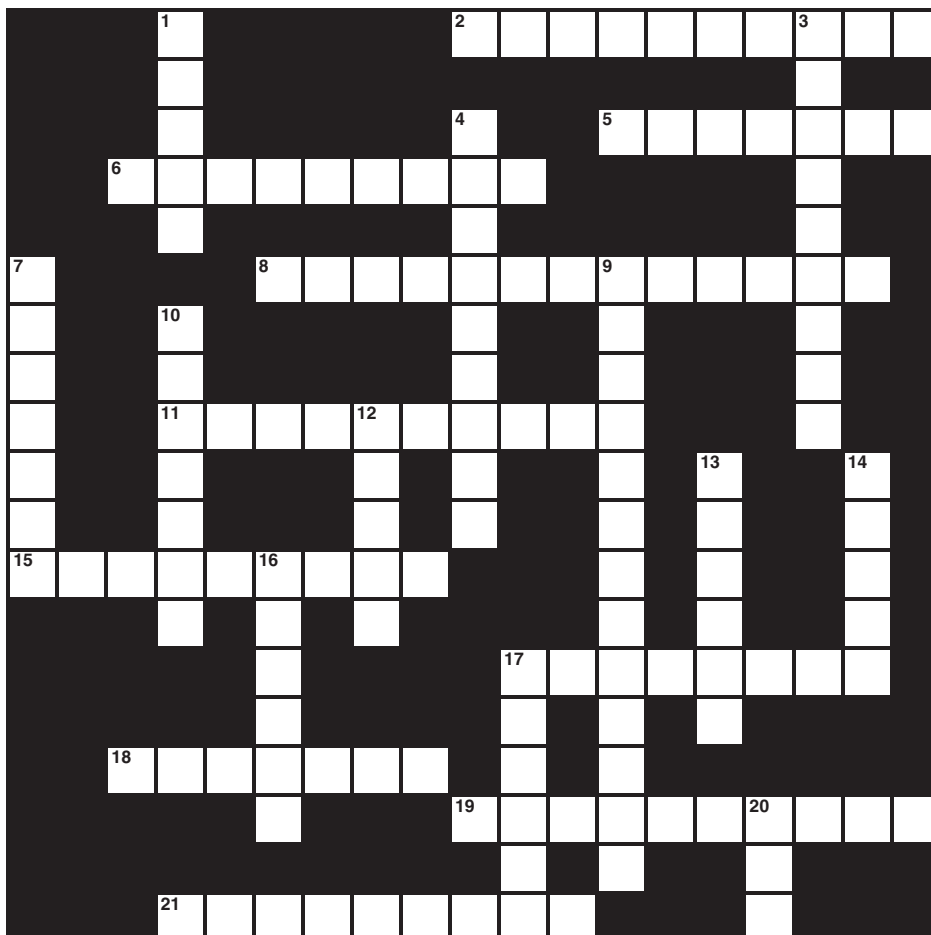
**Big Catch** (Page 14)**Multiple Choice**

Choose the response that best completes each statement or answers each question. Write the letters in the spaces.

1. The process of collecting carbon dioxide before it's released into the air by power plants and factories is called carbon (A) capture. (B) containment. (C) control. ( )
2. A protein that accelerates a chemical reaction is called (A) an acid. (B) an enzyme. (C) a sugar. ( )
3. In the human body, carbon dioxide is a waste product of cellular (A) automation. (B) reproduction. (C) respiration. ( )
4. A supercritical fluid is a gas that acts like a (A) liquid. (B) solid. (C) vapor. ( )
5. A molecule of bicarbonate contains one atom of (A) hafnium. (B) helium. (C) hydrogen. ( )
6. Scientists are trying to use carbonic anhydrase to remove carbon dioxide from (A) flue gas. (B) nitrogen. (C) red blood cells. ( )
7. Calcium carbonate has a look and texture like that of (A) flour. (B) salt. (C) sugar. ( )
8. Which substance makes human blood acidic? (A) bicarbonate, (B) carbon dioxide, (C) water ( )

**SKILLBUILDERS**

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**CURRENT  
SCIENCE®****Discoveries** (Page 16)**Crossword****Across**

2. phenomena that can't be explained scientifically
5. a peninsula in Mexico
6. an organism that eats meat
8. breaks down in nature
11. a type of plant trap (two words)
15. a sea that borders Honduras
17. a scientist who studies plants
18. a dangerous dietary supplement
19. adverse reaction (two words)
21. an herb

**Down**

1. an ancient Central American civilization
3. a relationship between two species that benefits both
4. a small mammal that has a long snout and a voracious appetite (two words)
7. the ocean that lies between Asia and North America
9. celebrity Twitterer (two words)
10. a type of marine animal
12. an ancient city that existed in Central America
13. one component of a well-balanced diet
14. a message sent via Twitter
16. a tropical island in Southeast Asia
17. a country in Central America
20. a U.S. agency that regulates the drug industry (abbr.)

**Sci-Triv Game** (Page 2)

**Answers**

**Life Science**

1. True. Mike the Headless Chicken (1945–1947) survived 18 months after his head was cut off. Just enough of Mike’s *brain stem* was left to keep the bird alive. The brain stem controls the basic processes that are essential for life, such as breathing, heart rate, and blood pressure. A statue honoring Mike, pictured on page 2, stands in the city of Fruita, Colo. **2. B, 3. Gila monster, 4. pupa.** These are the four main stages of an insect’s complete metamorphosis. **5. Plumage** is the covering of feathers on a bird.

**Earth Science**

1. False. Friable rock crumbles easily. **2. C, 3. A spelunker** is a person whose hobby is studying caves. **4. moon. Ganymede,** a moon of Jupiter, is bigger than the planet Mercury. **5. A pampa** is a vast, grassy plain in the temperate region of South America, particularly Argentina and Uruguay.

**Mathematics**

1. True. A square number is a number that is the square of another integer—9 is the square of 3. **2. C, 3. A numerator** is the top number of a fraction. **4. deficit, 5. diameter**

**Health Science**

1. False. The notion that the human body needs eight glasses of water a day is a myth. People should drink when they feel thirsty. **2. B. The biceps femoris** are located in the upper legs. The biceps brachii are located in the upper arms. **3. A cadaver** is a dead human body preserved for anatomical study. **4. Short-term, 5. The auditory canal** is the hollow passageway in the outer ear through which sound waves travel to the eardrum.

**Physical Science**

1. False. Hydrogen is the lightest element. **2. A. An alloy** is a substance composed of two or more metals mixed together or a metal mixed with a nonmetal. Gunmetal, a.k.a. red brass, is a type of bronze that contains copper, tin, and zinc. It is resistant to corrosion

from steam and salt water. It was originally used in the making of guns. **3. A neutron** is an uncharged particle in the nucleus of an atom. **4. spark plug, 5. A filtrate** is the liquid product of the process of filtration, in which solid particles are separated from a liquid.

**Insight** (Page 17)

The woman is Reese Witherspoon.

**Optricks** (Page 24)

**Mystery Photos:**

**Top:** railroad tracks

**Middle:** rose thorns

**Bottom:** matches

**Bend Your Mind:** The MP3 player costs \$100.50, and the downloadable song costs 50 cents.

**Whatizit?** The projections transfer digested food into the bloodstream. Together, the villi and the microvilli provide the small intestine with an enormous surface area for absorbing nutrients from digested foods.

**SKILLBUILDERS ANSWER KEY**

Page 2

**The Long Dry**

1. B, 2. B, 3. A, 4. B, 5. C, 6. A, 7. A, 8. C

**What a Waste**

1. sterile, 2. disease, 3. Sanitation, 4. biogas digester, 5. 4.2, 6. urine, 7. Feces, 8. 40

Page 3

**The Great Unknown**

1. Amanda Young was frequently sick because her body could not fight off infections. **2. Spinal meningitis** is an infection of the linings of the brain and spinal cord. **3. the skin** **4. Gene research** has revealed that a single disease may have many differ-

ent genetic causes, each necessitating a different approach to treatment. **5. Amanda Young** has a genetic defect. As a result, her body cannot make a protein that enables her immune system to recognize invading bacteria.

**Lemon Aid**

1. F, 2. D, 3. E, 4. J, 5. H, 6. B, 7. I, 8. G, 9. A, 10. C

Page 5

**Super Bowl**

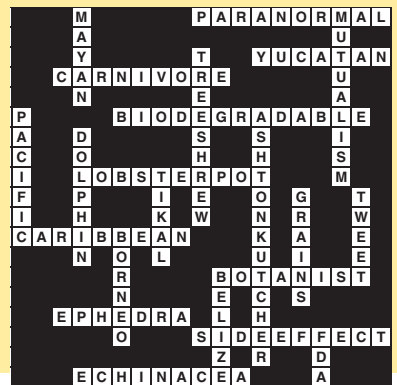
1. T, 2. F. Oil is applied mainly to protect the lanes from damage. **3. T, 4. F. Bowling balls** are made of plastic. **5. T, 6. T, 7. F. A bowling ball** high in porosity has a rough surface with many microscopic spikes. **8. T**

**Big Catch**

1. A, 2. B, 3. C, 4. A, 5. C, 6. A, 7. A, 8. B

Page 5

**Discoveries**



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