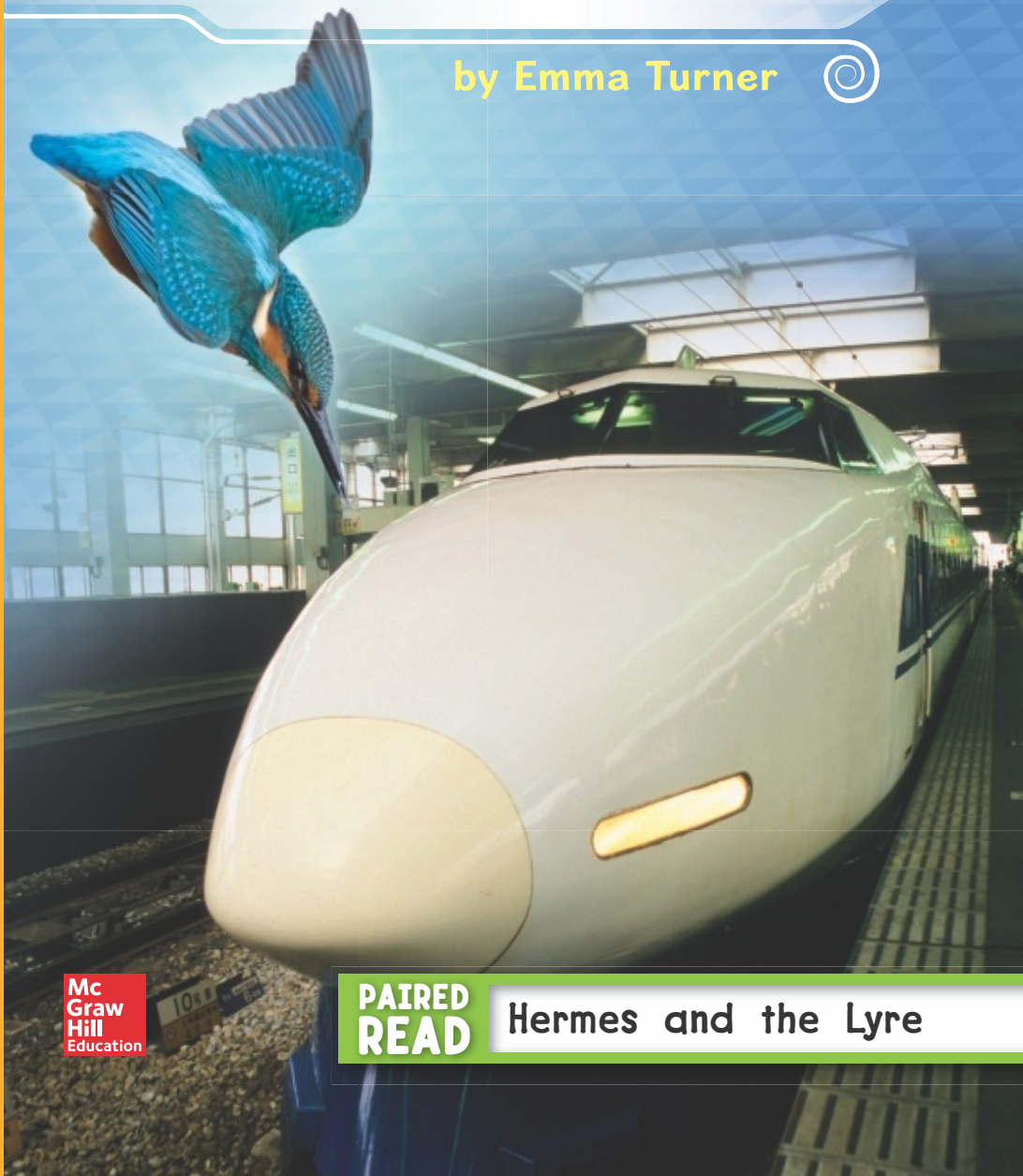
Expository Text

Inspired by Nature

by Emma Turner



PAIRED READ

Hermes and the Lyre

Mc Graw Hill Education

VOCABULARY & SKILLS

Comprehension Skill
Main Idea and Key Details

Vocabulary
effective, example, identical, material, models, similar

Expand Vocabulary
borrow, copy, future, grip, tiny, trap

Content Standards
Science
Technology

Word count: 722**

Photography Credit: Cover (tl) Andrew Howe/Vetta/Getty Images, (br) Irene Alastruey/Punchstock.
**The total word count is based on words in the running text and headings only. Numerals and words in captions, labels, diagrams, charts, and sidebars are not included.

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Genre Expository Text

Essential Question

What ideas can we get from nature?

Inspired by Nature

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Introduction

Lotus plants live in muddy ponds. Yet, their leaves are clean and dry. A lotus leaf has **tiny** grooves. These grooves **trap** air bubbles. The air bubbles keep dirt and water off.

lotus plant

AID/amanaimages/CORBIS

Plants and animals have some very useful features. Scientists learn from these **models**. They make new products that **copy** the features. There are now paints that copy the lotus leaf. Objects with these paints stay clean!

STOP AND CHECK

Why do people use ideas from nature?

These grooves keep the leaf clean.

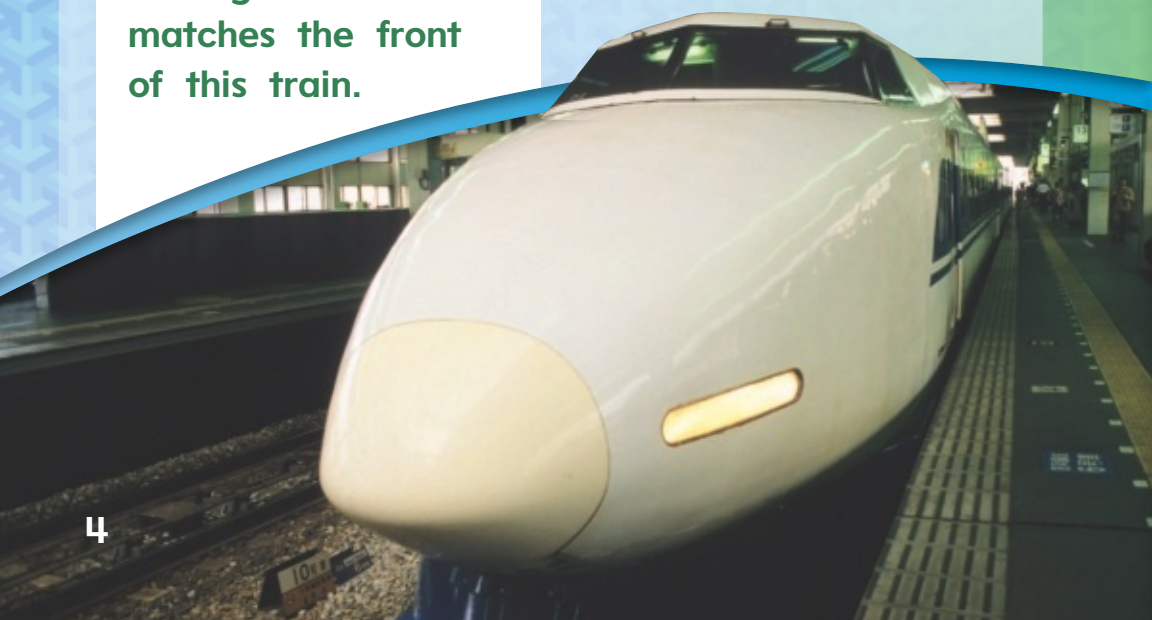
Chapter 1 Getting Around

Using ideas from nature can help us travel better. The first fast trains in Japan were noisy.

Kingfisher birds dive into water without a big splash. Engineers changed the shape of the trains. The front is now like the shape of a kingfisher's beak. This stops the loud noise.

(t) Andrew Howe/Vetta/Getty Images, (b) Irene Alastruey/Punchstock

A kingfisher's beak matches the front of this train.



This shark's scales help it swim faster.

People look for ideas underwater, too. Sharks have scales on their skin. These scales help sharks slide through water.

People copied sharks' scales to make swimsuits and airplanes. Swimmers and airplanes now move faster.

People who make cars get ideas from insects. One **example** is bees. Bees can see all around. This stops bees from hitting things. Locusts are useful, too. Locusts fly in large groups. But they never hit each other. People want to build cars with **similar** features.

STOP AND CHECK

What ideas did scientists get from nature?

This bee can see all around it.

sodapix sodapix/F1online RF/Getty Images

Dolphins helped solve a problem. Sometimes earthquakes cause tsunami. Scientists try to track, or follow, these huge waves. Then they can warn people.

Machines on the sea floor gather information. The information goes to the surface as sounds. Sometimes the sounds are not clear.

A tsunami can cause huge damage.

dpa/CORBIS

Scientists looked at how dolphins send messages through water. They copied the way dolphins "talk." This helps track tsunami waves.

dolphins

(t) Marty Snyderman/CORBIS

Tsunami Warning System

❸ Satellite sends information to warning center.

❷ information is sent to satellite.

❶ Machine collects information and sends it to the surface.

Scientists have used ideas from butterflies, too. A Morpho butterfly's wings have a special pattern. The pattern makes the wings look bright blue. Cell phone screens can be hard to read. A new cell phone uses the pattern of this butterfly's wings. Colors on the phone screen will look brighter!

STOP AND CHECK

What problem did scientists solve by studying dolphins?

Morpho butterfly

We can use nature as a model. The sandcastle worm makes glue. The glue works in water. Doctors fix broken bones with pins and screws. But glue would work better. Scientists made a new glue like the worm's glue. The glue is **effective**. It might fix broken bones in the **future**!

The sandcastle worm builds its home with a special glue.

Russell Stewart/the University of Utah

A gecko's toes are covered with tiny hairs.

What can scientists who make robots learn from geckos? A gecko's foot has many tiny hairs. The hairs **grip** any surface. Geckos can climb walls. They can walk across ceilings!

STOP AND CHECK

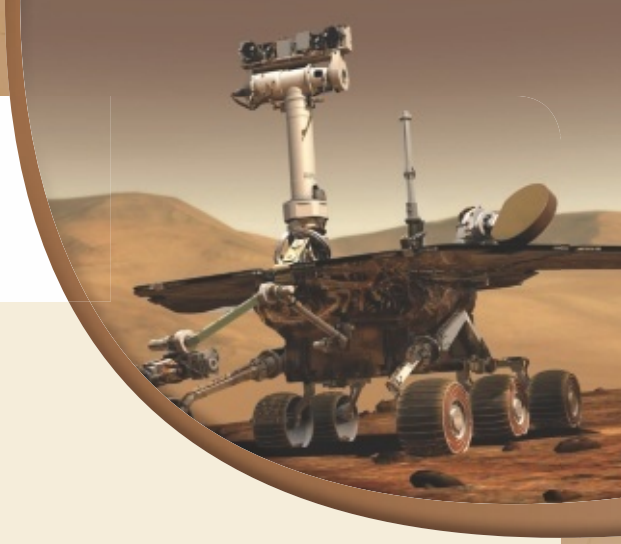
What is special about a gecko's feet?

Scientists built a robot. It is called Stickybot. Its feet are like a gecko's feet. They can grip any surface. In the future, people might wear Stickybot **material**. They could climb skyscrapers. They could crawl under bridges!

Stickybot can climb walls.

Mark R. Cutkosky/Standford

This robot can't go everywhere on Mars.



Scientists want to find new ways to explore Mars. Mars is a dry, windy planet. Tumbleweeds grow in dry, windy places. The scientists' new robot will be round like a tumbleweed. It will travel far in the wind.

STOP AND CHECK

Why are tumbleweeds a good model for a Mars robot?

tumbleweed

Conclusion

Nature's models work well. People cannot make products that are **identical**. But they can watch plants and animals. Then they can find ways to make our lives better. What ideas will people **borrow** next?

A bat inspired this small robot spy plane.

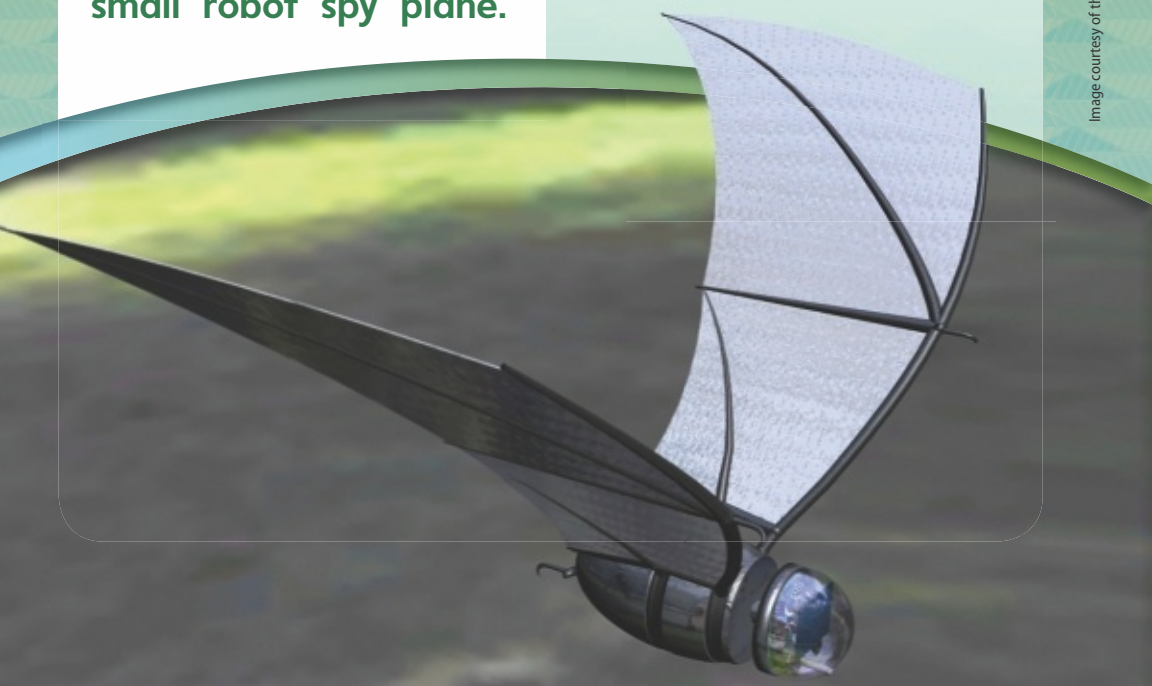


Image courtesy of the University of Michigan Library, UM3D Lab

Respond to Reading

Summarize

Summarize the ideas and new products in *Inspired by Nature*. Use your chart if you wish.

Main Idea
Detail
Detail
Detail

Text Evidence

1. Reread page 12. What is the main idea and two details?

   Main Idea and Key Details

2. What does the word *track* on page 7 mean? What clues help you figure it out? Vocabulary

3. Write about the most interesting product in this book. Include two details. Write About Reading

Genre Myth

Compare Texts

Read about how a Greek god uses objects from nature to make a musical instrument.

Hermes and the Lyre

Hermes was a son of the god Zeus. Apollo was Hermes' brother. One day, Hermes saw his brother's cows. Hermes decided to steal them. To hide his tracks, he made sandals out of twigs. He drove the cows backward to confuse Apollo.

Illustration: Gaia Bordicchia

Hermes saw an old man by the road. He told the man not to say anything about the cows.

Hermes drove the cows to a cave. He found a dead tortoise. He decided to make a musical instrument. He made a frame from the tortoise shell. He added reeds and sheep gut. That was how Hermes invented the lyre.

Apollo was looking for his cows. He asked the old man if he had seen them. The old man told Apollo he had seen a boy driving some cows backward. Apollo asked Hermes for the cows. But Hermes pretended to be a baby. So Apollo asked Zeus for help.

Zeus told Hermes to give back the cows. Hermes did not listen. He began playing the lyre. When Apollo heard the music, he made a deal with Hermes. Hermes kept the cows but he gave the lyre to Apollo. He promised not to steal from his brother again.

Illustration: Gaia Bordicchia

Make Connections

How did what Hermes saw in nature lead to a new idea? **Essential Question**

Why is learning about nature helpful? Use examples from the text in your answer. **Text to Text**

Focus on Science

Purpose To think up an idea for a new product

What to Do

Step 1 Work with a partner. Choose a plant or an animal.

Step 2 Find out about your plant or animal.

Step 3 Think up an idea for a new product that copies a feature of your plant or animal. Write a short paragraph about the new product.

Conclusion What did you learn about your plant or animal?

Literature Circles

Nonfiction

Thinkmark

The Topic

What is this book about?

Vocabulary

What new words did you learn in the text?

Conclusions

What did you learn from this book?

Author's Purpose

Why did the author write this book?

New Ideas | Science

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Grade 3 • Unit 3 Week 4

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