
Smithsonian
Safe Cycling
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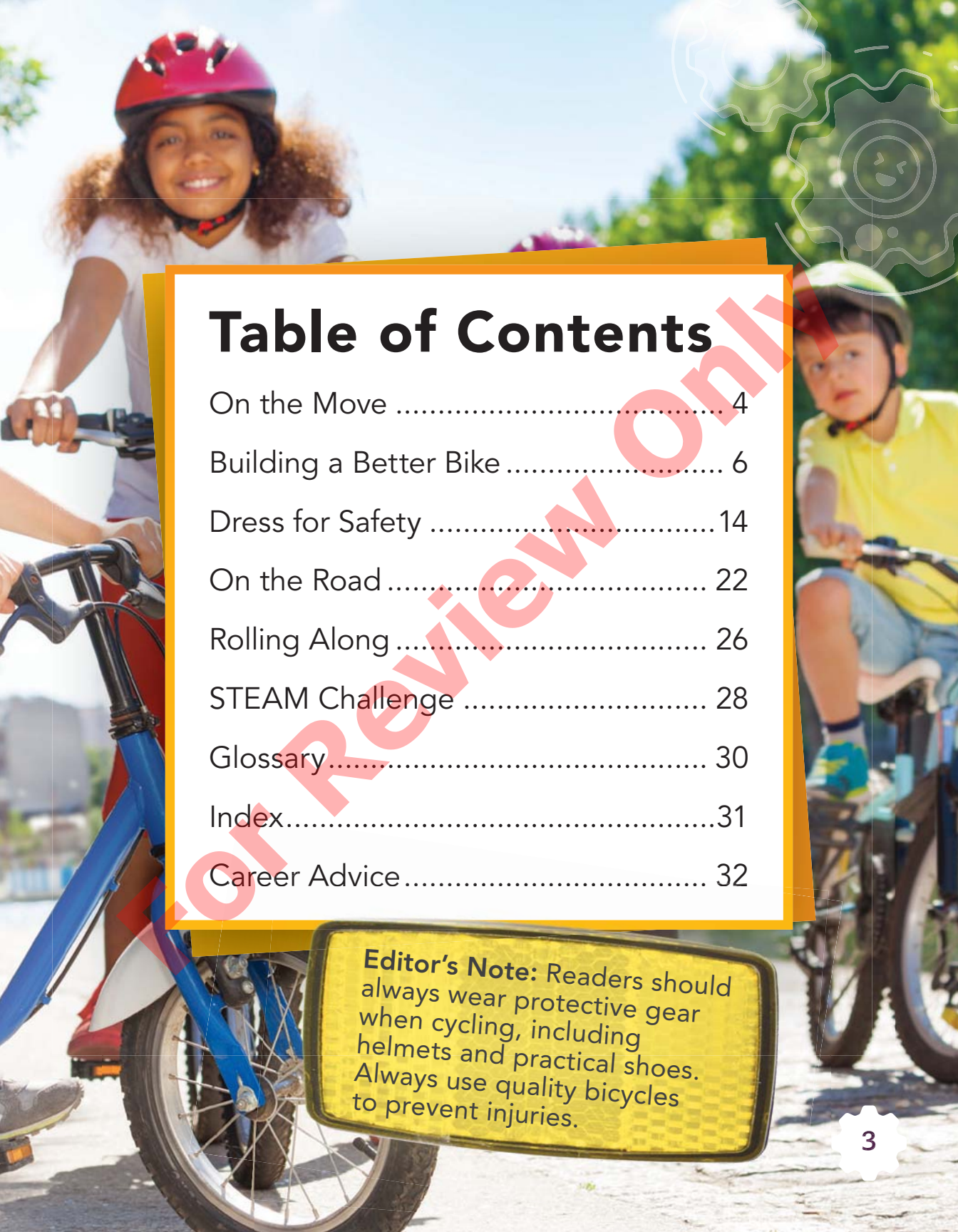


Table of Contents

On the Move 4

Building a Better Bike 6

Dress for Safety 14

On the Road 22

Rolling Along 26

STEAM Challenge 28

Glossary 30

Index 31

Career Advice 32

Editor's Note: Readers should always wear protective gear when cycling, including helmets and practical shoes. Always use quality bicycles to prevent injuries.

On the Move

You feel the cool wind blow through your hair. You hear the swoosh sound your bicycle makes with each turn of the pedal. You ride faster and faster until you feel as though you are flying.

All these things make riding a bike fun. But staying safe makes it even more fun. Riding a bike used to be dangerous. People were badly hurt. Today, **engineers** work hard to keep bike riders safe.

One of the first modern bikes was made by a German man in 1817. He called it a *Laufmaschine*, or "running machine."

Building a Better Bike

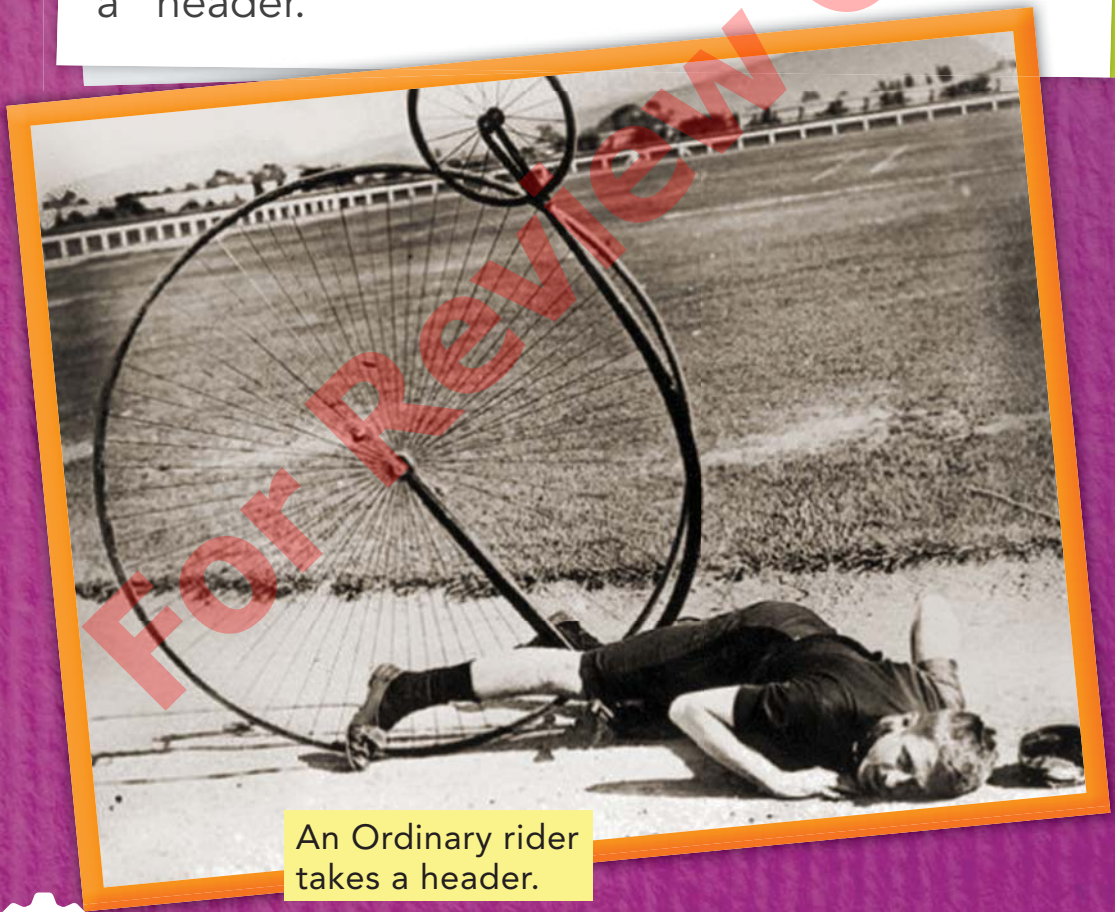
In the late 1860s, bikes started to become popular. Many adults rode them. The first bikes did not look like bikes that people have today.

About 10 years later, a new bike became popular. It had a huge front wheel and a small back wheel. A bike like this was called an Ordinary. Riders of these bikes sat high off the ground.

A man rides an Ordinary in 2015.

Ordinary bikes were light and fast. But they were not safe. They were hard to get on and off safely. Riders had to climb onto a seat that was about 1 meter (3 feet) off the ground.

Ordinary bikes also caused a lot of accidents. Riders sat on top of the big wheel, not in the center of the bike. When they had to stop fast, they could fly headfirst off the bike. This happened a lot! It became known as taking a "header."



An Ordinary rider takes a header.

This painting from around 1887 shows people riding types of Ordinary bikes.

Technology & Engineering

Wheel Size

Ordinary bikes were also called "penny-farthings." That nickname came from coins at the time. Pennies were big and farthings were small, just like the bike's tires. The big wheel helped riders go farther with less pedaling. The small wheel helped riders get on the bike easier.

STEAM CHALLENGE

Define the Problem

Bike riders need to stay safe while they ride. A company has asked you to build a model of a new bicycle helmet.

Constraints: You may only use cardboard, duct tape, glue, foam pool noodles, tissue paper, and plastic bags.

Criteria: Your helmet must fit and protect a honeydew melon when dropped from a height of 1 m (3 ft.).

Research and Brainstorm

What are the different parts of a helmet? How do they work together to protect a bike rider's head?

Design and Build

Sketch a plan for your helmet. Label the parts. What purpose will each part serve? What materials will work best? Build the model.

Test and Improve

Place your helmet on the melon. Drop the melon 1 m (3 ft.). Did your helmet keep the melon safe? How can you improve it? Improve your design and try again.

Reflect and Share

What other materials might keep your melon safe? How might your design change if you had to drop the melon from 3 m (10 ft.) off the ground?