Cruisers and Classics

After the invention of cars, bikes took a header. Many adults started driving—and stopped pedaling. Bike sales dropped. Bike makers had to come up with a new plan. So they created new designs, made just for kids.

In the 1930s, designers made bikes that looked like flashy cars and motorcycles. Bikes called Cruisers had balloon tires. These wide rubber tires were squishy. They rolled right over bumps and dips.

Bikes called Classics were decked out with chrome and fenders, lights, bells, and streamers. They were sturdy and heavy. And they could take a lot of punishment from the kids who rode them.

Stunts and Speed

In the 1960s, California kids started a **trend.** They pieced together bikes with tall, V-shaped handlebars and banana-shaped seats. Kids cruised their neighborhoods popping wheelies. From these cool rides, the Sting-Ray was born.

Sting-Rays were the first bikes used for Bicycle Motocross racing, or BMX. These bike riders did crazy mid-air tricks and raced over rugged dirt tracks.

In the 1970s, adults joined the kids' craze and climbed onto bike seats again. People were worried about the environment. Cars were polluting the air. And gas was expensive. Bikes were a clean ride and saved money. The new ten-speed bike was an instant hit. Extra gears made it easier to pedal uphill. Today, these bikes still zoom down hills and fly around corners in races like the Tour de France.

To the Hills and Beyond

Tooling along smooth roads might be fine for some people, but by the 1980s, a new group of riders wanted to head for the hills. They built the first mountain bikes to get them there. The first mountain bikes were made from old, beat-up Classics and Cruisers. Bike makers came up with designs made for riders who wanted adventure.

Skilled mountain bikers do crazy things that no one else should try. They strap on helmets and barrel downhill as fast as they can. They go for teeth-jarring rides, bumping over sharp rocks and ragged roots. These riders need a bike strong enough to take a beating.

Other mountain bikers ride for the scenery. They want to follow trails, exploring deep canyons and climbing tall peaks. They need a bike with a strong frame that isn't too heavy to pedal up steep hills.

From tricks to races, thrill rides to joy rides, bikes today fit every occasion. There are mountain bikes, racers, and BMX bikes. Fold-up bikes can slide under a desk. Electronic bikes give your legs a rest.

Cutting-edge bikes are more comfortable than ever. Then there is a bike you ride sideways. That is, you face sideways but move forward, as if you were snowboarding. Or maybe, *you* could design a totally new kind of bike!

Bikes bring freedom to see new places, fun times with friends, and great exercise. So strap your helmet and safety gear on tight. Hop onto the seat and set your feet on the pedals. Your pedal-pushing journeys are about to begin!

BIKES ACROSS TIME

Hobbyhorse
early 1800s

Boneshaker
1860s

High-wheeler
1870s

WORDWISE

gear: wheel with teeth around the outside that changes the movement of a machine

spoke: thin bar going from the center of a wheel that helps support the rim

trend: something that becomes very popular

Daredevil. *This BMX bike was built for performing spectacular stunts.*

Cruiser
1930s

High-rise
1960s

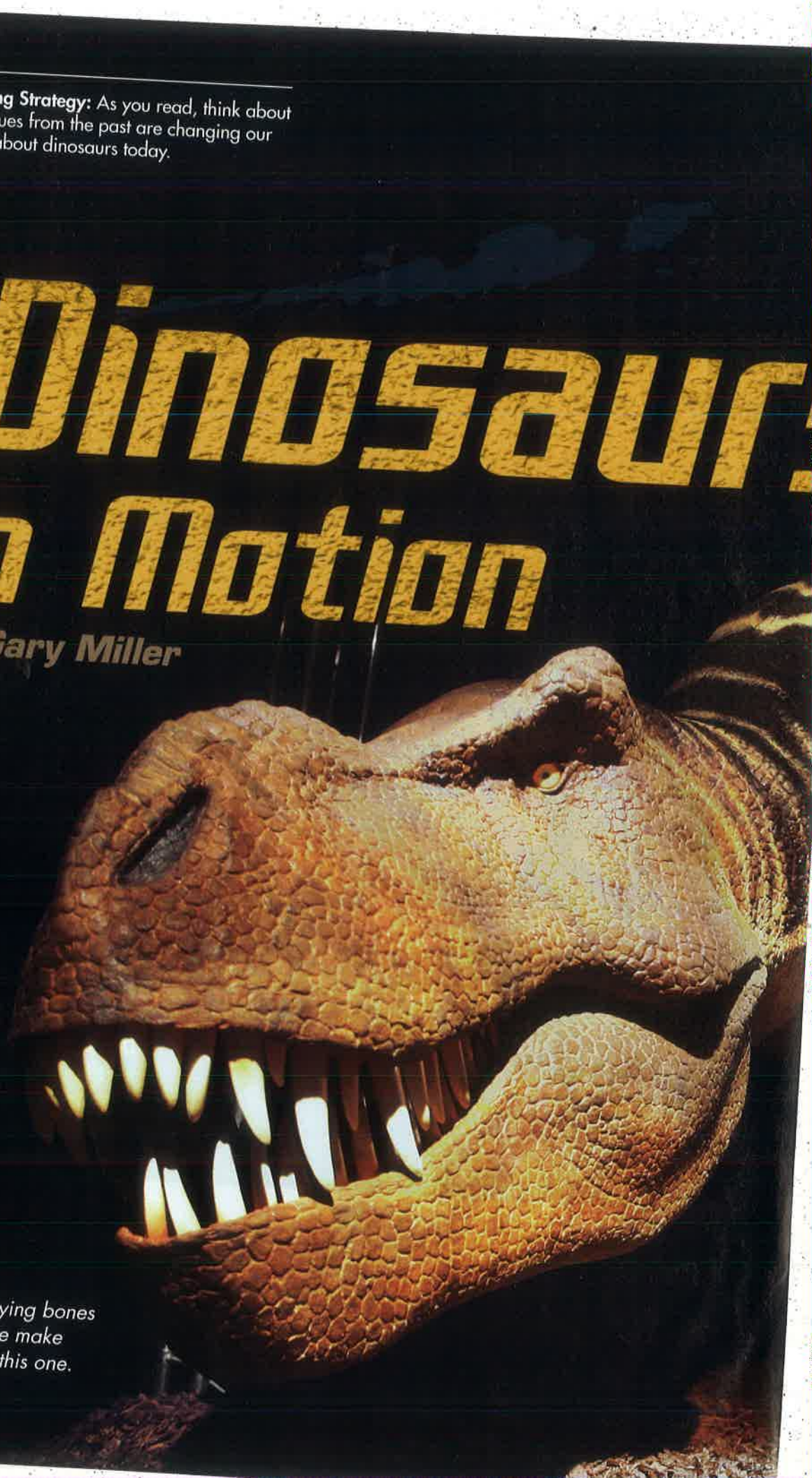
Mountain Bike
late 1990s

TECHNOLOGY

Reading Strategy: As you read, think about how clues from the past are changing our ideas about dinosaurs today.

Dinosaurs in Motion

By Gary Miller



Fierce Face. *Studying bones (top) helps people make dino models like this one.*

It's a peaceful day in the rain forest. Suddenly, there is a loud crash nearby. Heavy footsteps shake the ground. The sounds come closer. A Tyrannosaurus rex *bursts through the trees! It stands as tall as a house. It opens its jaws. You see huge teeth. How are you going to escape?*

Then you hear your friend's voice in your ear, "Hey. Don't be so scared. It's just a movie." Phew! That dino seemed so real!

Digging for Dinosaurs

Moviegoers loved the film *Jurassic Park*. The dinosaurs were the stars of the show. Dinos haven't lived on Earth for 65 million years. So how did the moviemakers manage to bring them to life? They hired dino experts.

We asked **paleontologist** Tyler Lyson how he has learned about dinosaurs. Lyson found his first dino bone when he was six. Since then, he's been a real dinosaur fanatic.

Lyson says the best way to learn about dinos is to look at **fossils.** Fossils are the remains of living things from long ago. Scientists often find them hidden in rocks.

New Ideas About Dinos

In the 1960s, fossils helped scientists begin to think about dinosaurs in a whole new way. Up until then, people thought dinosaurs were a lot like today's slow-moving reptiles. So they made dinosaurs that looked that way.

A big breakthrough came in 1964. That's when scientist John Ostrom discovered some amazing fossils. They came from a small dinosaur. It was light and built for running. It also had two huge, sharp claws for killing prey.

Ostrom gave the dinosaur a name that means "terrible claw." Ostrom said that the dinosaur was a fast, fierce predator. It turned out that dinosaurs weren't so slow after all!

This discovery and others changed how dinosaurs in museums and movies look. For example, at the Denver Museum of Nature & Science, the *T. rex* once just stood there. Now it has one raised leg. It looks ready for action!

Dinos by the Herd

Bones can tell other stories, too. People once thought dinosaurs mostly traveled and lived alone. Then scientists found places where there were many dinosaurs' bones.

This meant some dinosaurs spent time together. Some may have traveled in herds. The makers of *Jurassic Park* used this idea. In one scene, a group of dinos thunders across a field. They look like a herd of stampeding buffalo.

Fossils gave scientists another new idea. Scientists once thought dinosaurs left their babies after they hatched. After all, that's what most modern lizards do.

Then paleontologist Jack Horner made a great discovery. He found fossil nests made by duck-billed dinosaurs. Besides eggs, the nests had the skeletons of young dinosaurs.

The young dinos had weak legs. They couldn't walk or run when they hatched. So how did they get food? Horner thought about the evidence he found. He concluded that dino parents must have brought food to their young.

Horner named his discovery *Maiasaura*. The name means "good mother lizard." You might see a model of a *Maiasaura* nest at a museum. Look for the good mother nearby!

Imagining the Past

Dinosaur model builders use what scientists like Horner and Lyson know about dinos. They also need a lot of imagination. Why? There's a lot scientists still don't know.

When a dinosaur died, its skin and other soft body parts usually rotted away. That leaves us with many questions. What color was the dinosaur's skin? Did it have stripes or other patterns on its scales? What were its eyes like?

To answer these questions, dino builders make educated guesses. First, they think about the place where the bones were found. A dino in the forest may have needed to blend in with its surroundings. Maybe it had stripes or spots. When fossils show signs of feathers, artists look at today's wildly colored birds for ideas.

ROBERT CLARK

Big Bite. *A model of a* T. rex *skull crunches a bone to pieces, showing the dino's power.*

Building Dinos Today

To bring dinos to life, moviemakers use fossil facts and imagination. They also use modern technology. They use **robotics.** Engineers build a **mechanical** frame, or metal skeleton. They stretch a rubber skin over the frame. When it's all done, the dino can turn, move its jaws, and even roar! That's like the *T. rex* in *Jurassic Park.*

Moviemakers also use computer-generated imagery, or CGI. Artists scan dinosaur models into a computer. Then they use software to animate, or make the dinos move. Artists used CGI for the running dinos in *Jurassic Park.*

Paleontologists still have many questions about dinosaurs. How did they act? What did they sound like? How did they hunt prey? The answers will help people build even better dinosaurs. Stay tuned: More life-like dinos are coming to a theater, park, or museum near you!

Wordwise

fossil: remains of something that lived long ago

mechanical: run by a machine

paleontologist: scientist who studies dinosaurs and other things that lived long ago

robotics: science of making robots