DK BACKPACK BOOKS

# 1,001 FACTS ABOUT DINOSAURS

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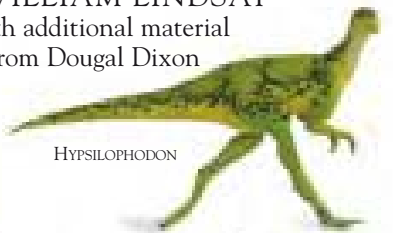
SAUROPELTA
IGUANODON
MEGALOSAURUS
TOOTH

BACKPACK BOOKS

# 1,001 FACTS ABOUT DINOSAURS

Written by
NEIL CLARK
and WILLIAM LINDSAY
With additional material
from Dougal Dixon



HYPSILOPHODON

TRICERATOPS SKULL

STEGOSAURUS

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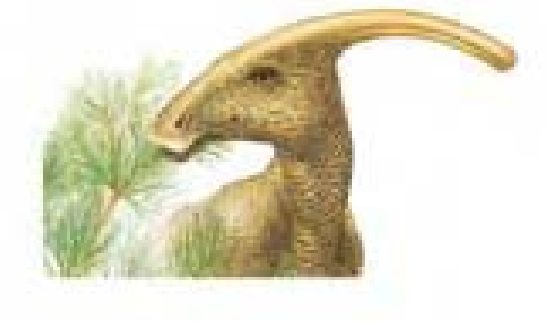
# Contents



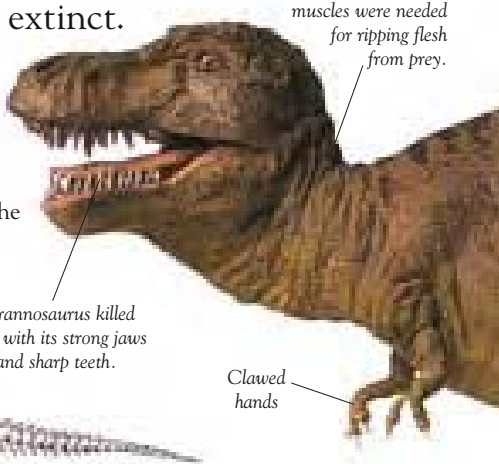
# INTRODUCTION TO DINOSAURS

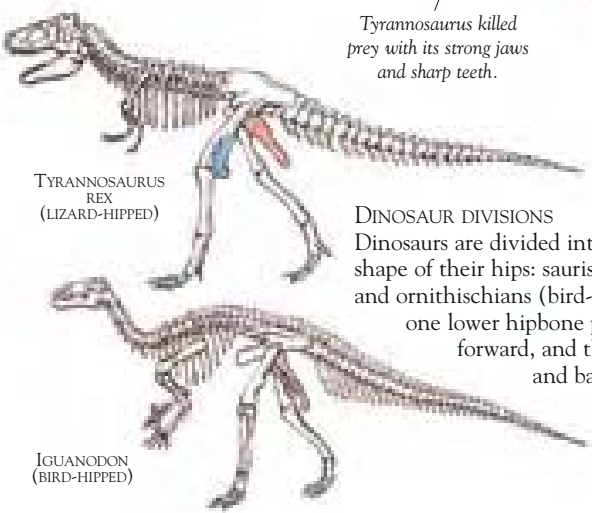
# WHAT ARE DINOSAURS?

ABOUT 225 MILLION YEARS AGO, a new group of reptiles appeared on Earth. Like all reptiles, they had waterproof, scaly skin and young that hatched from eggs. These were the dinosaurs. For the next 160 million years they ruled the Earth, before finally becoming extinct.

### LAND LEGS

Dinosaurs were land animals – they could not swim or fly. All dinosaurs had four limbs, but many, such as Tyrannosaurus rex, walked on only their two back legs, leaving the front legs free for other tasks.



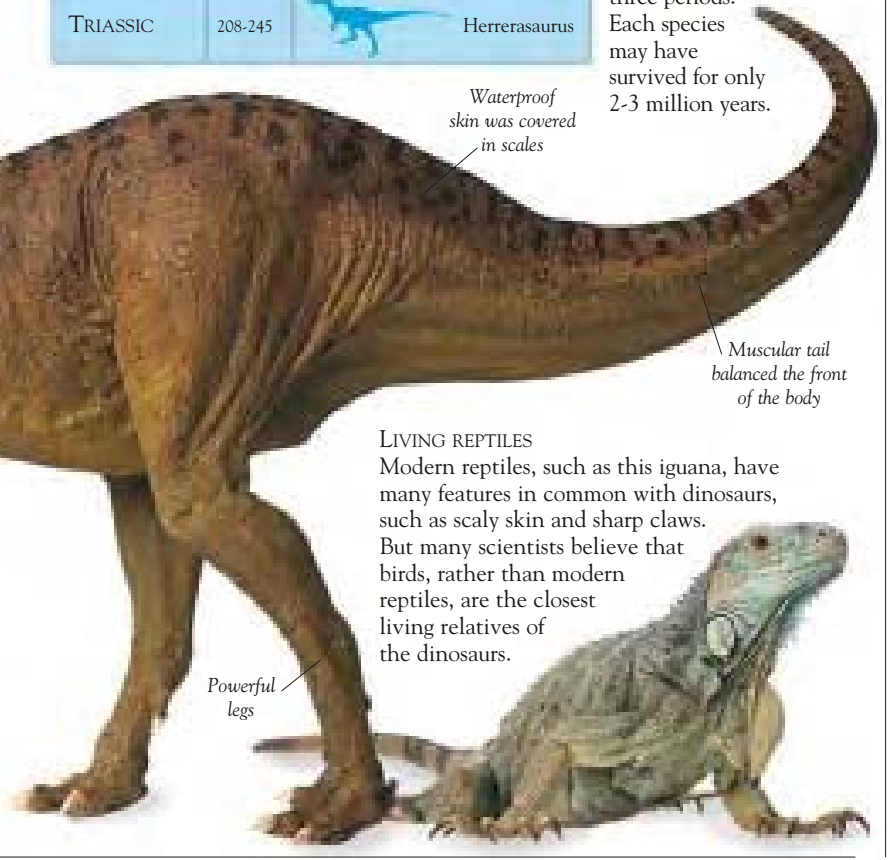

### DINOSAUR DIVISIONS

Dinosaurs are divided into two groups based on the shape of their hips: saurischians (lizard-hipped) and ornithischians (bird-hipped). Saurischians had one lower hipbone pointing downward and forward, and the other downward and backward. Ornithischians had their two lower hipbones pointing downward and backward.

| Period | Millions of years ago | Examples of dinosaurs from each period |
|---|---|---|
| CRETACEOUS | 65-145 | Triceratops |
| JURASSIC | 145-208 | Stegosaurus |
| TRIASSIC | 208-245 | Herrerasaurus |

### TIME LINES

Dinosaurs lived through three periods in the Earth's history – Triassic, Jurassic, and Cretaceous. Different species of dinosaur lived and died throughout these three periods. Each species may have survived for only 2-3 million years.




### LIVING REPTILES

Modern reptiles, such as this iguana, have many features in common with dinosaurs, such as scaly skin and sharp claws. But many scientists believe that birds, rather than modern reptiles, are the closest living relatives of the dinosaurs.

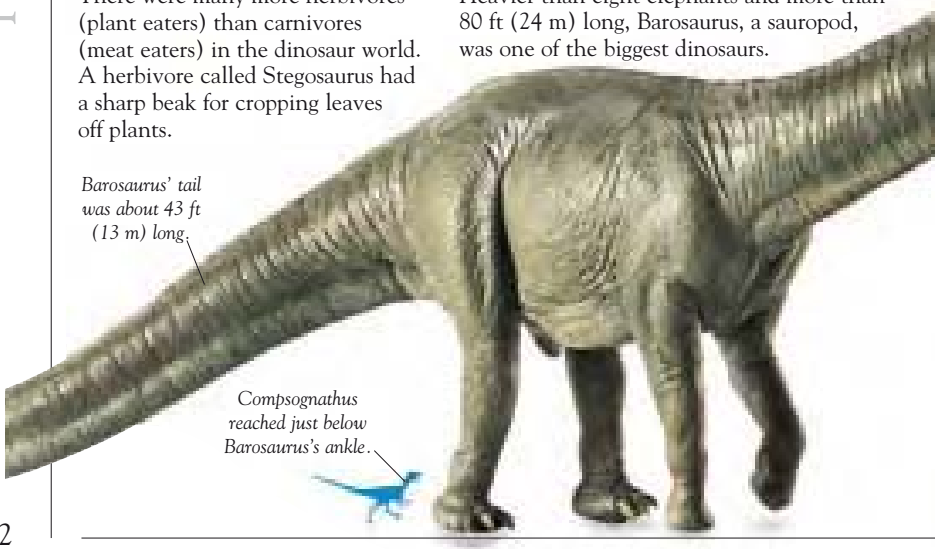
# Types of dinosaur

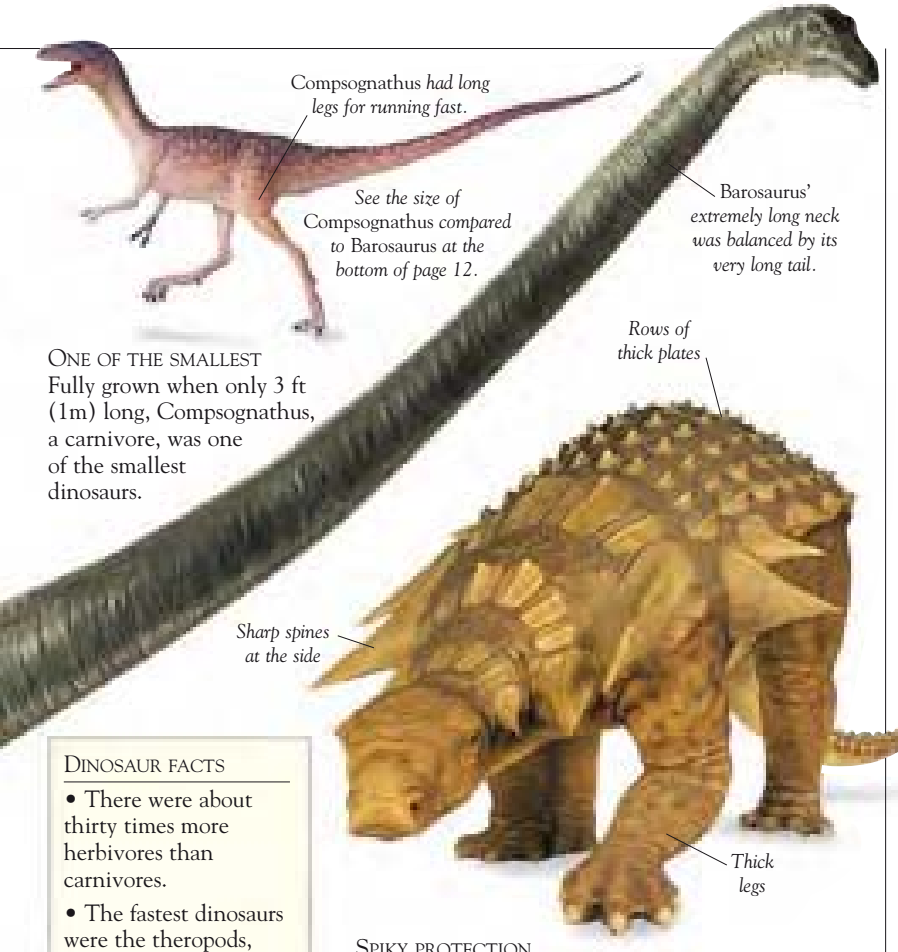
Dinosaur designs were varied and spectacular. A group of dinosaurs called the sauropods were the largest land animals that ever lived. The smallest dinosaurs were dog-sized. Large or small, all would have been wary of hungry meat eaters. Some dinosaurs had armored skin for protection. Others were fast runners and could escape predators by fleeing to safer ground.

DINOSAUR TERROR
*Tyrannosaurus rex* and other fierce meat eaters had huge, sharp teeth with which they killed prey.

HERBIVORES
There were many more herbivores (plant eaters) than carnivores (meat eaters) in the dinosaur world. A herbivore called Stegosaurus had a sharp beak for cropping leaves off plants.

ONE OF THE BIGGEST
Heavier than eight elephants and more than 80 ft (24 m) long, Barosaurus, a sauropod, was one of the biggest dinosaurs.






ONE OF THE SMALLEST

Fully grown when only 3 ft (1m) long, Compsognathus, a carnivore, was one of the smallest dinosaurs.

DINOSAUR FACTS

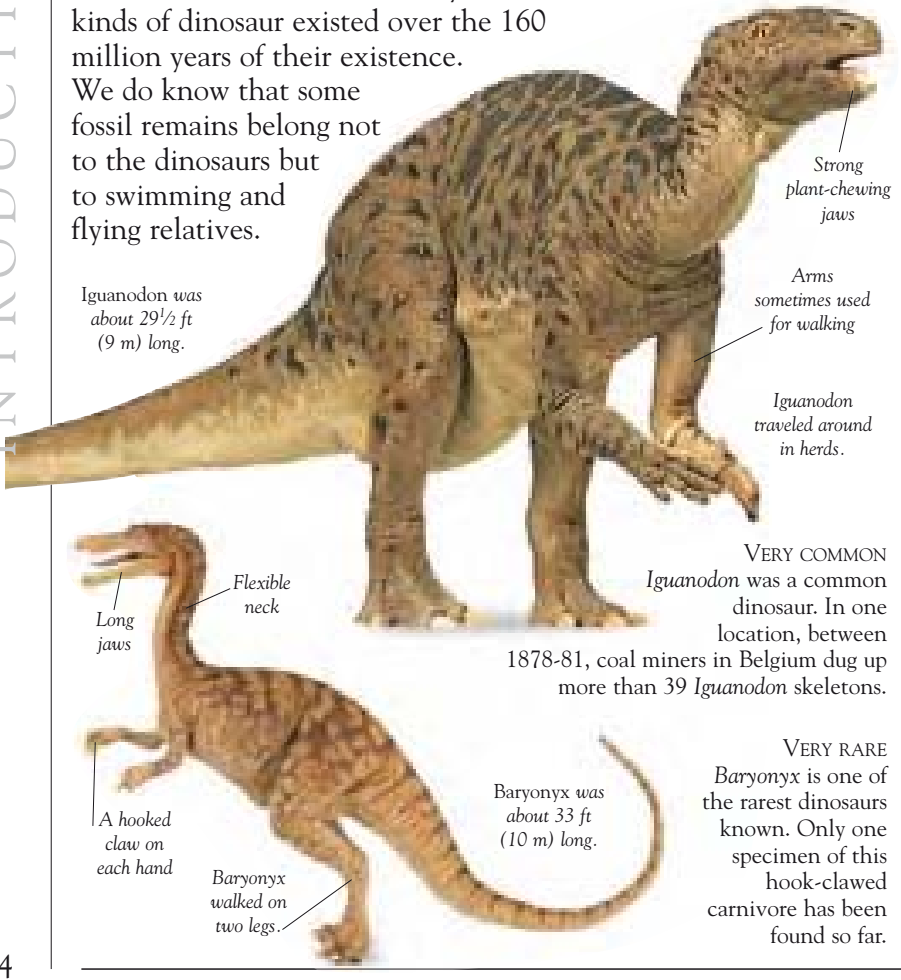
- There were about thirty times more herbivores than carnivores.
- The fastest dinosaurs were the theropods, which ran on two legs.
- Dinosaurs did not fly or live in the sea.
- The sauropods were the largest dinosaurs.

SPIKY PROTECTION

The slow-moving ankylosaurs, which were herbivores, had armored skin for protection from sharp-toothed carnivores. *Edmontonia* had bony plates and spikes on its skin. It lived at the same time and in the same places as *Tyrannosaurus rex*, so it needed all the protection its armor could give.

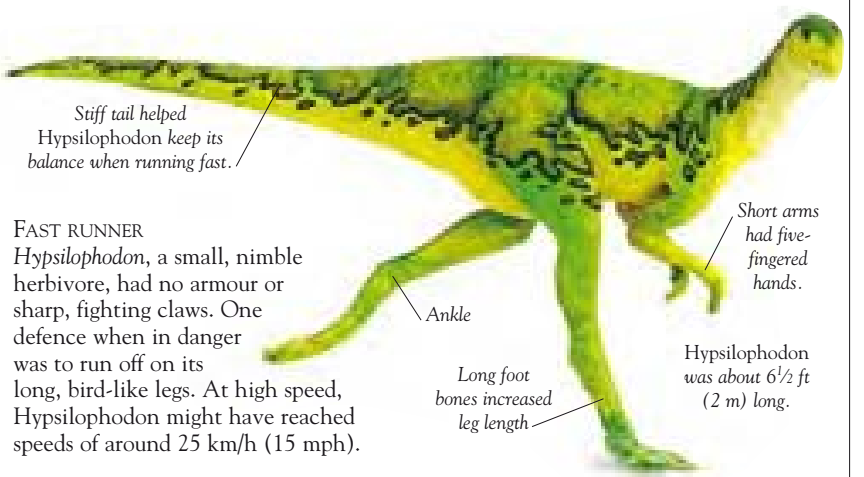
# More types of dinosaur

We will never know how many different kinds of dinosaur existed over the 160 million years of their existence. We do know that some fossil remains belong not to the dinosaurs but to swimming and flying relatives.




VERY COMMON
*Iguanodon* was a common dinosaur. In one location, between 1878-81, coal miners in Belgium dug up more than 39 *Iguanodon* skeletons.

VERY RARE
*Baryonyx* is one of the rarest dinosaurs known. Only one specimen of this hook-clawed carnivore has been found so far.




FAST RUNNER
*Hypsilophodon*, a small, nimble herbivore, had no armour or sharp, fighting claws. One defence when in danger was to run off on its long, bird-like legs. At high speed, Hypsilophodon might have reached speeds of around 25 km/h (15 mph).

THESE ARE NOT DINOSAURS
While the dinosaurs ruled the land, their reptile relatives, the pterosaurs, ruled the air above, and the ichthyosaurs and plesiosaurs ruled the oceans. Dinosaurs did not fly or live in water.

# Discovering dinosaurs

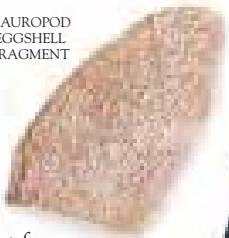
Sir Richard Owen (1804-92)

Everything we know about dinosaurs is based on their fossilized remains. These are pieced together to make the skeletons we see in museums. Sir Richard Owen, the famous dinosaur expert, first named some reptile fossils as dinosaurs in 1841.

## Fossils

Fossils are the remains of ancient living things buried and preserved in rocks. Most fossils were formed from tough body parts, such as the bones of animals or the woody parts of plants. Fossilization is a very slow process – it usually takes millions of years.

**Tough tooth**
Worn surfaces on fossilized teeth show how different dinosaurs ate in different ways.



Sauropod eggshell fragment

**Fossil eggshell**
Dinosaur eggshells, such as this fragment from a sauropod egg, were hard enough to be preserved as fossils.



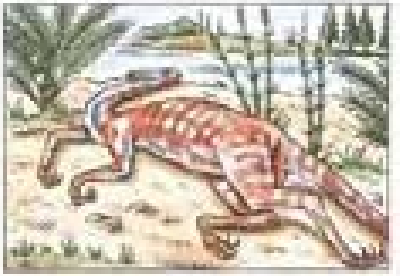
Iguanodon calf bone

**Fossil bones**
Sometimes when bones fossilize, slow chemical processes capture every detail of their original inner structure and outer shape. Even when bones are cracked and crushed, it is possible to identify scars where muscles were attached.

Sauropod tooth

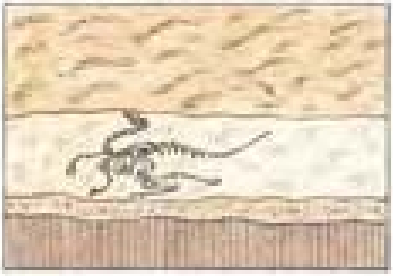
Fossilized cones

**Old cones**
These pine cones from the Cretaceous period were tough enough to fossilize.

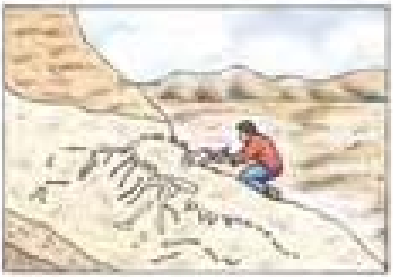


STORY OF A DINOSAUR FOSSIL

1 The dinosaur *Struthiomimus* lies dead on a riverbank. For *Struthiomimus* to have a chance of fossilization, it must be buried quickly before it rots away.



2 Buried under many layers of sediment, over millions of years, the hard parts of *Struthiomimus* change to stony fossils.



3 Earth movements and erosion expose the skeleton at the surface. A scientist starts to chip away the surrounding rock.




UNCOVERED FOSSIL

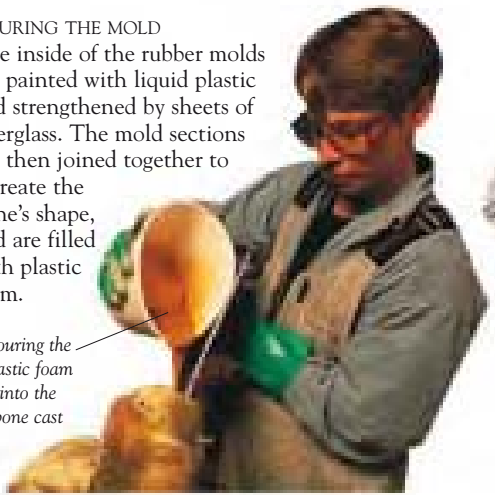
An almost perfect fossil of *Struthiomimus*, lying in its death pose, has been carefully uncovered. Studying this skeleton gives scientists more clues in the dinosaur puzzle.

# Preparing dinosaurs

MAKING A MOLD
To make a mold of an original bone, liquid rubber is painted on to the surface of the bone and left to set. When the rubber has set, it is removed from the bone in sections. It is then supported by cotton gauze and surrounded with a plastic jacket.

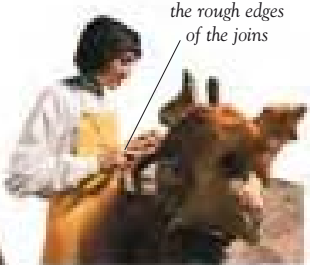
As scientists gain a better understanding of the way dinosaurs lived, museums try to arrange dinosaur skeletons in a variety of poses. Scientists at the American Museum of Natural History in New York built an exciting display. They showed a *Barosaurus* skeleton rearing up, defending its young against an attacking *Allosaurus*. Since the fossil bones of *Barosaurus* were very fragile and too heavy to display in such a pose, a lightweight replica of the skeleton was made.

POURING THE MOLD
The inside of the rubber molds are painted with liquid plastic and strengthened by sheets of fiberglass. The mold sections are then joined together to recreate the bone's shape, and are filled with plastic foam.



*Pouring the plastic foam into the bone cast*

*Filing away the rough edges of the joins*



FINISHING TOUCHES
The joins in the cast bones are smoothed by filing. The plastic bones are then painted to match the colours of the original bones.