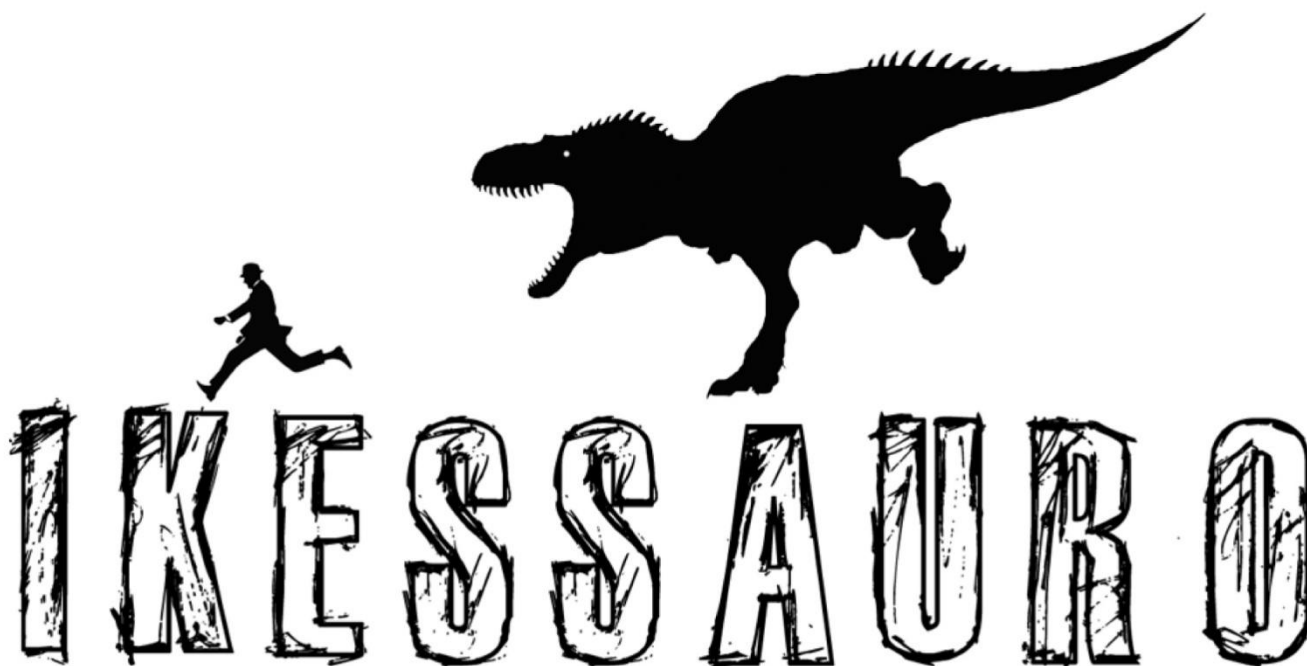
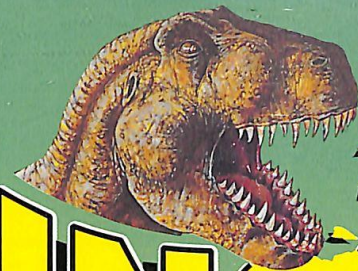


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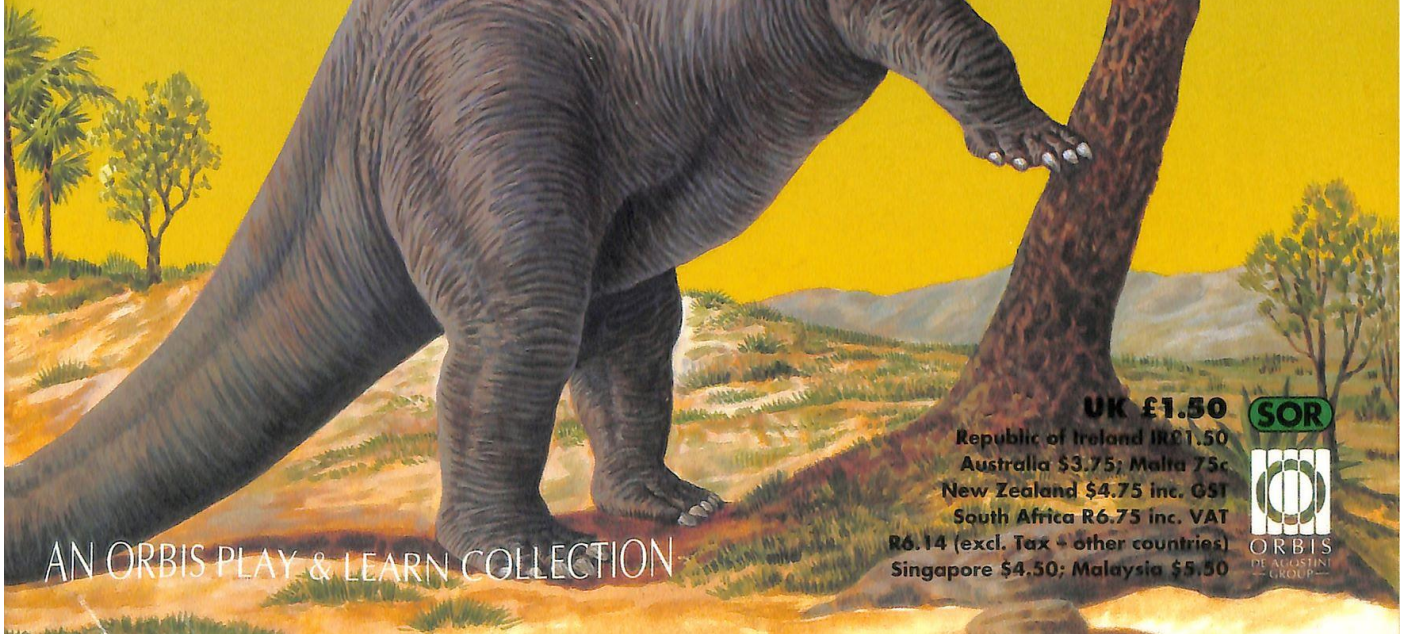
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IDENTIKIT

Discover two mighty dinosaurs and a wolf-like mammal

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IDENTIKIT



AUBLYSODON

Meat-eating *Aublysodon* may have been closely related to mighty *T rex*.

A *ublysodon* was probably a member of the tyrannosaur family of dinosaurs – the super hunters of their age. Tyrannosaurs were built to attack and kill the largest and most powerful prey they could find.

SKULLDUGGERY

So far, bits of teeth and skull are all that have been found of *Aublysodon*. However, these fossils have convinced most scientists that this big dinosaur was a tyrannosaur.

IN AT THE END

Like its larger relative *T rex*, *Aublysodon* roamed Earth at the end of the Age of the Dinosaurs. Fossil remains of the smaller meat-eater have been dug out of Late Cretaceous rock more than 65 million years old.



EAST TO WEST

Unlike *T rex* fossils, however, *Aublysodon* fossils have been found in the East as well as the West. More than 10 *T rex* skeletons have been unearthed in North America, but experts have discovered the remains of *Aublysodon* in both North America and China.

SMALLER VERSION

Aublysodon was only about a third the length of *T rex*, but it was still a fearsome-looking killer. Scientists do not have enough bones yet to reconstruct the smaller hunter completely. However, *Aublysodon* probably attacked in the same way as other tyrannosaurs. *Aublysodon* may have hunted in pairs, or even in a pack. It would have pounced on defenceless duck-billed dinosaurs and torn them to pieces with its razor-sharp teeth.



IDENTIKIT



Like *T rex* (left), *Aublysodon* had large, backward-curving teeth, to give it a better grip on its prey. Also like *T rex*, it could open its jaws very wide.

TIP TOP

Aublysodon had a different jaw shape from most other tyrannosaurs. *T rex*, for example, had a massive skull with a short snout. *Aublysodon* had a longer, slimmer head, and the tip of its lower jaw curved upwards.

MONSTER FACTS

- **NAME:** *Aublysodon* (oh-blis-uh-don) means 'blunt tooth'
- **GROUP:** dinosaur
- **SIZE:** up to 4.5m long
- **FOOD:** meat
- **LIVED:** about 70 million years ago in the Late Cretaceous in North America and China

SEE-SAW

Many tyrannosaurs had a saw-edge to their teeth, which would have made their bite even more lethal. Modern steak knives have a similar, serrated cutting edge, which helps them to slice through tough meat with ease.

BACK STABBING

Aublysodon had no saw-like edge to its teeth, which is how it got its name. But it was, like the other tyrannosaurs, armed with large, sharp, backward-curving teeth. So perhaps *Aublysodon* used its teeth to make slashing cuts when it bit into its prey. It could also have opened its jaws very wide, allowing it to seize large prey.

2210



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FAST SPRINTER

Some experts now think that *T rex* was not a slow, lumbering giant at all. They claim the huge dinosaur could probably have run as fast as a racehorse, although it could not have kept up that speed for very long.

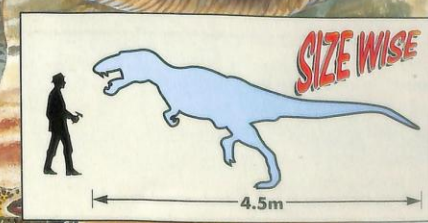
QUICK KILLER

Aublysodon must have been a similarly speedy hunter. It has the same ostrich-like build as *T rex*, so it might have clocked up to 65km/h, too.

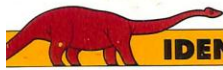
IT'S A FACT

MINI-KILLER

Scientists believe they may have discovered the smallest *Aublysodon* yet, in Mongolia. They found the remains of a scaled-down tyrannosaur there, with the same distinctive jaw shape. But this mini-killer would have used its sharp teeth to snap up small prey, such as lizards.



2211



AELOSAURUS

Long-necked *Aelosaurus* cropped juicy leaves from the tree tops.

Aelosaurus was a member of the titanosaur family of dinosaurs. The plant-eating titanosaurs, or 'titanic lizards', ranged in size from about 12m to 21m long. Some of them were protected by tough, bony plates of body armour on their backs.

GOING UP

Bulky *Aelosaurus* was not a particularly large titanosaur. It stood 3m tall at the hip and, at 15m, it was as long as two buses. The huge herbivore walked on all fours, but it could have reared up on its pillar-like hind legs to feed on juicy greenery.

WHIP LASH

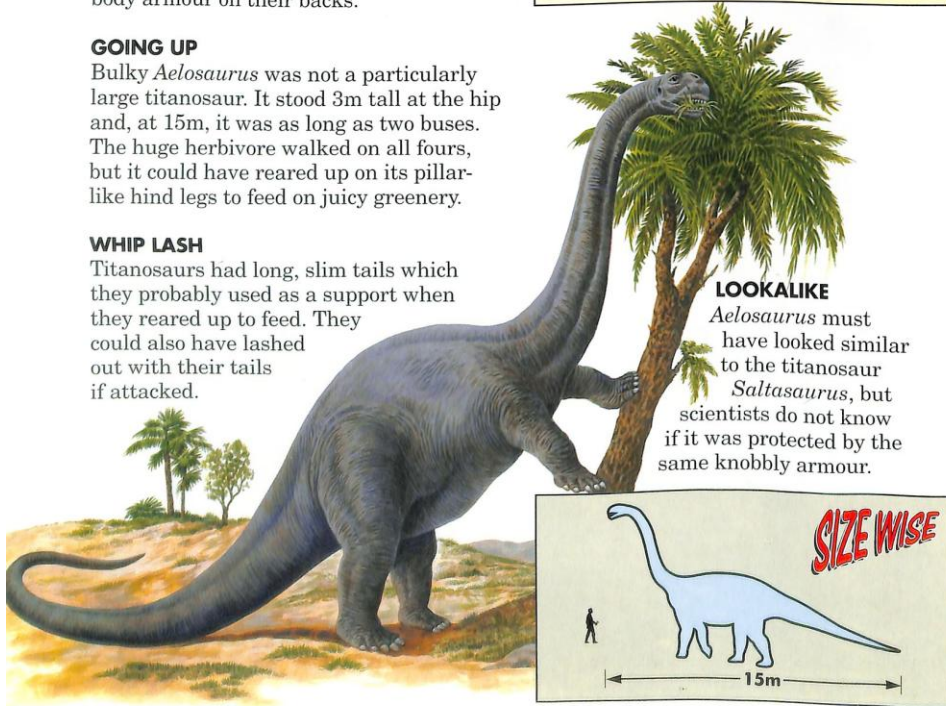
Titanosaurs had long, slim tails which they probably used as a support when they reared up to feed. They could also have lashed out with their tails if attacked.

MONSTER FACTS

- **NAME:** *Aelosaurus* (ee-oh-luh-saw-rus) means 'wind lizard'
- **GROUP:** dinosaur
- **SIZE:** about 15m long
- **FOOD:** plants
- **LIVED:** about 70 million years ago in the Late Cretaceous Period in Argentina

LOOKALIKE

Aelosaurus must have looked similar to the titanosaur *Saltasaurus*, but scientists do not know if it was protected by the same knobbly armour.



MESONYX

Living 55 million years ago, *Mesonyx* was one of the first mammal hunters.



Looking like a large wolverine today, *Mesonyx* probably behaved in a similar way. It had a wolf-like skull armed with good, meat-cutting teeth. These early hunters had short, sharp teeth at the back and dagger-like fangs at the front.

MONSTER FACTS

- **NAME:** *Mesonyx* (mees-on-ix) means 'medium claw'
- **GROUP:** mammal
- **SIZE:** 1.5m long
- **FOOD:** meat
- **LIVED:** about 55 million years ago in the Eocene Period in North America and Asia

THE KILLING FIELDS

Defenceless plant-eaters were easy prey for *Mesonyx*. The cunning carnivore would have hunted most of the small and medium-sized herbivores that shared its world. *Mesonyx* could have pounced on terrier-sized *Hyracotherium*, the first horse. Other victims would have included



Hyopsodus, which grew no bigger than a hedgehog, and sheep-like *Phenacodus*.

A hard life

There was an enormous increase in life on our planet during the Palaeozoic Era, when animals developed shells and skeletons.

At the beginning of the Palaeozoic, everything that was alive lived under water. There was not a single living thing on land – not even a plant. By the end of the Palaeozoic, life had progressed so much that living things had managed to conquer the land. Let's look at the amazing changes that happened in the first 200 million years of this Era – during the Cambrian, Ordovician, Silurian and Devonian Periods.

HARD LUCK

The development of the skeleton and shell was one of the reasons why so many different kinds of animal successfully evolved at the beginning of the Palaeozoic. Whether inside or outside, the hard parts of an animal's body are very important.

What is? THE PALAEOZOIC ERA

The Palaeozoic lasted from 570–245 MYA. It consisted of the:

- Permian Period 290–245 MYA
- Carboniferous Period 362–290 MYA
- Devonian Period 408–362 MYA
- Silurian Period 438–408 MYA
- Ordovician Period 505–438 MYA
- Cambrian Period 570–505 MYA

2214



By the end of the Palaeozoic Era, creatures similar to today's lung fish (right) and salamander (left) were living on land.

SUPPORT AND PROTECTION
If you didn't have a skeleton you would be like a wobbly jelly on the floor, unable to move. Without its shell, a crab would be a soft blob in the sea, and it would be eaten very quickly. A skeleton or shell is something to attach muscles to, and with muscles animals can move! A shell also protects a soft body, which means it is safer to move about.



KEY

THE CAMBRIAN

- 1 Crinoids
- 2 Scenella
- 3 Pikaia
- 4 Waptia
- 5 Opabinia

THE ORDOVICIAN

- 6 Ampyx
- 7 Lonchodomas
- 8 Trimerus
- 9 Orthoceras
- 10 Encrinurus

THE SILURIAN

- 11 Hemicyclaspis
- 12 Pterygotus
- 13 Rhymia

THE DEVONIAN

- 14 Eusthenopteron
- 15 Rhamphodopsis
- 16 Lunaspis
- 17 Dunkleosteus

ON THE MOVE

The hard material that makes shells and skeletons also gave animals the tools for rasping or cutting food. So, thanks to the skeleton and the shell, animals could leave the sea-bed and move about in the water to find better living conditions and more food.

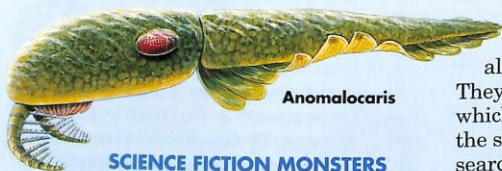
BACKBONES

During the first half of the Palaeozoic, more complicated forms of life developed. Fishes were the first animals to develop a backbone, and the oldest-known fishes lived over 400 million years ago in the Ordovician Period. By the middle of the Palaeozoic, they teemed in the seas and some fishes eventually left to try life on land.

2215

OCTOPUS ANCESTOR

In the Cambrian Period, alongside worm-like *Pikaia* and shrimp-like *Waptia*, lived *Scenella*. Similar to today's limpet, it was a mollusc about 1cm across. It had a cap-shaped shell, which protected its soft body, and belonged to a group of animals that may be the ancestors of today's squids and octopuses.



Anomalocaris

SCIENCE FICTION MONSTERS

Opabinia looked like a monster from a science-fiction movie, but was only 5cm long. It was discovered in the Burgess Shale of the Canadian Rockies. The tube that sticks out from *Opabinia's* head was rather like the hose of a vacuum cleaner. Food was grabbed in its pincers and put into the mouth. It had five eyes, gills and a sort of tail. *Anomalocaris* was another 'science-fiction' animal. At 60cm long, it was the monster of the Burgess Shale. *Opabinia* and *Anomalocaris* show the great variety of life in the Cambrian seas.

What is? A TRILOBITE

Trilobites were marine arthropods resembling woodlice. They had a head shield and an armoured thorax and tail, both divided into many segments. Out of each of these segments grew a pair of limbs designed for walking, swimming, breathing and handling food. Trilobites could crawl and swim. If threatened, many of them could curl up. There were many different kinds of trilobite living during the Palaeozoic Era.

GETTING BRAINIER

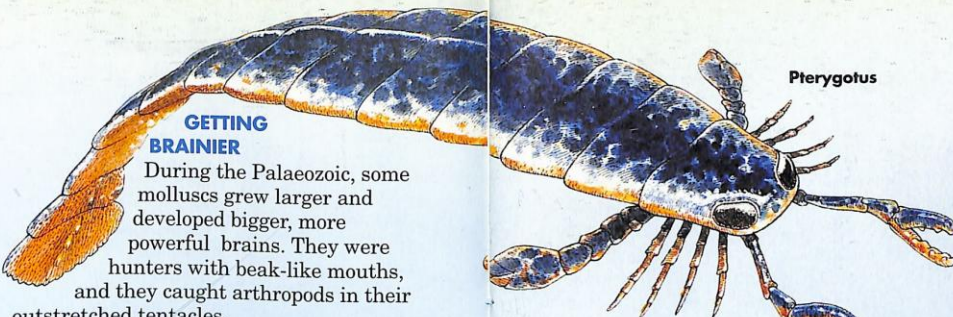
During the Palaeozoic, some molluscs grew larger and developed bigger, more powerful brains. They were hunters with beak-like mouths, and they caught arthropods in their outstretched tentacles.

JET-PROPELLED

These new, larger molluscs swam along using a sort of jet propulsion. They squirted a stream of water forwards, which pushed them backwards through the seas. As they moved, the molluscs searched for arthropods to eat.

ORDOVICIAN ORIGINS

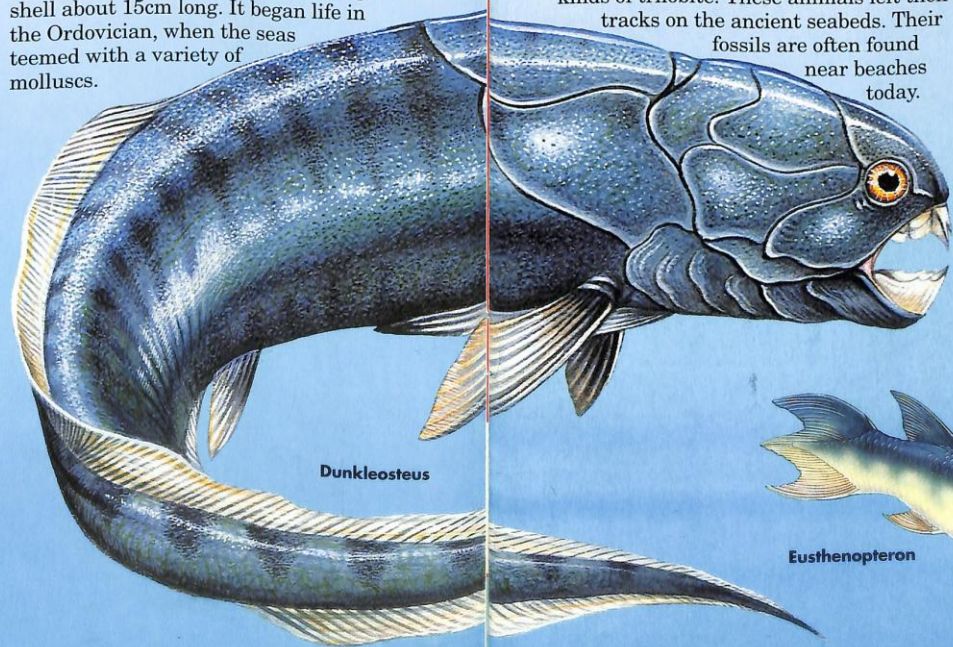
One mollusc, *Orthoceras*, had a straight shell about 15cm long. It began life in the Ordovician, when the seas teemed with a variety of molluscs.



Pterygotus

MONSTER OF THE DEEP

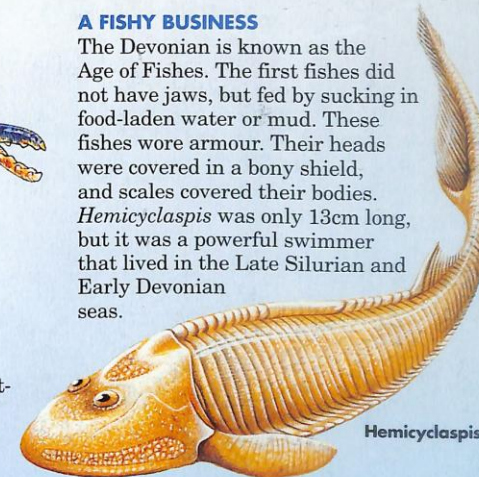
Imagine a terrifying giant scorpion, longer than a tall man. A creature like this actually existed during the Silurian. One of the largest-ever arthropods, *Pterygotus* hunted in the Silurian oceans, home to another important group of arthropods, the trilobites. There were many different kinds of trilobite. These animals left their tracks on the ancient seabeds. Their fossils are often found near beaches today.



Dunkleosteus

A FISHY BUSINESS

The Devonian is known as the Age of Fishes. The first fishes did not have jaws, but fed by sucking in food-laden water or mud. These fishes wore armour. Their heads were covered in a bony shield, and scales covered their bodies. *Hemicyclaspis* was only 13cm long, but it was a powerful swimmer that lived in the Late Silurian and Early Devonian seas.



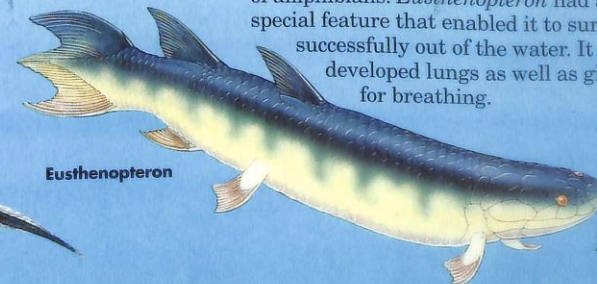
Hemicyclaspis

TERROR JAWS

Also swimming in the Devonian seas was a real monster. *Dunkleosteus* was an armoured fish almost as long as today's great white shark. Its jaws were lined with sharpened plates, which must have pierced and sliced its prey with ease. *Lunaspis* and *Rhamphodopsis* were smaller relatives.

FISH OUT OF WATER

Lobe-fin fish had fleshy, muscular fins. Some of them hauled themselves out of the water on these fins in search of food. One Late Devonian lobe-fin, *Eusthenopteron*, had fin bones something like the leg bones of amphibians. *Eusthenopteron* had a special feature that enabled it to survive successfully out of the water. It had developed lungs as well as gills for breathing.



Eusthenopteron

GIANTS OF THE PAST

AUBLYSODON

A group of *Edmontosaurus* are wallowing in the shallow waters of Late Cretaceous North America when they are charged by a ravenous pack of *Aublysodon*. Despite their size, the *Edmontosaurus* know better than to stay and confront *Aublysodon*. They desperately scramble up the banks to try to reach safety,

but their escape is hampered by rocky boulders. The *Aublysodon* increase their speed and sprint towards them. As the gap between them narrows, the *Aublysodon* open their vast jaws. Once impaled on the *Aublysodon*'s terrifying teeth, the end will be swift for these lumbering plant-eaters.

2218

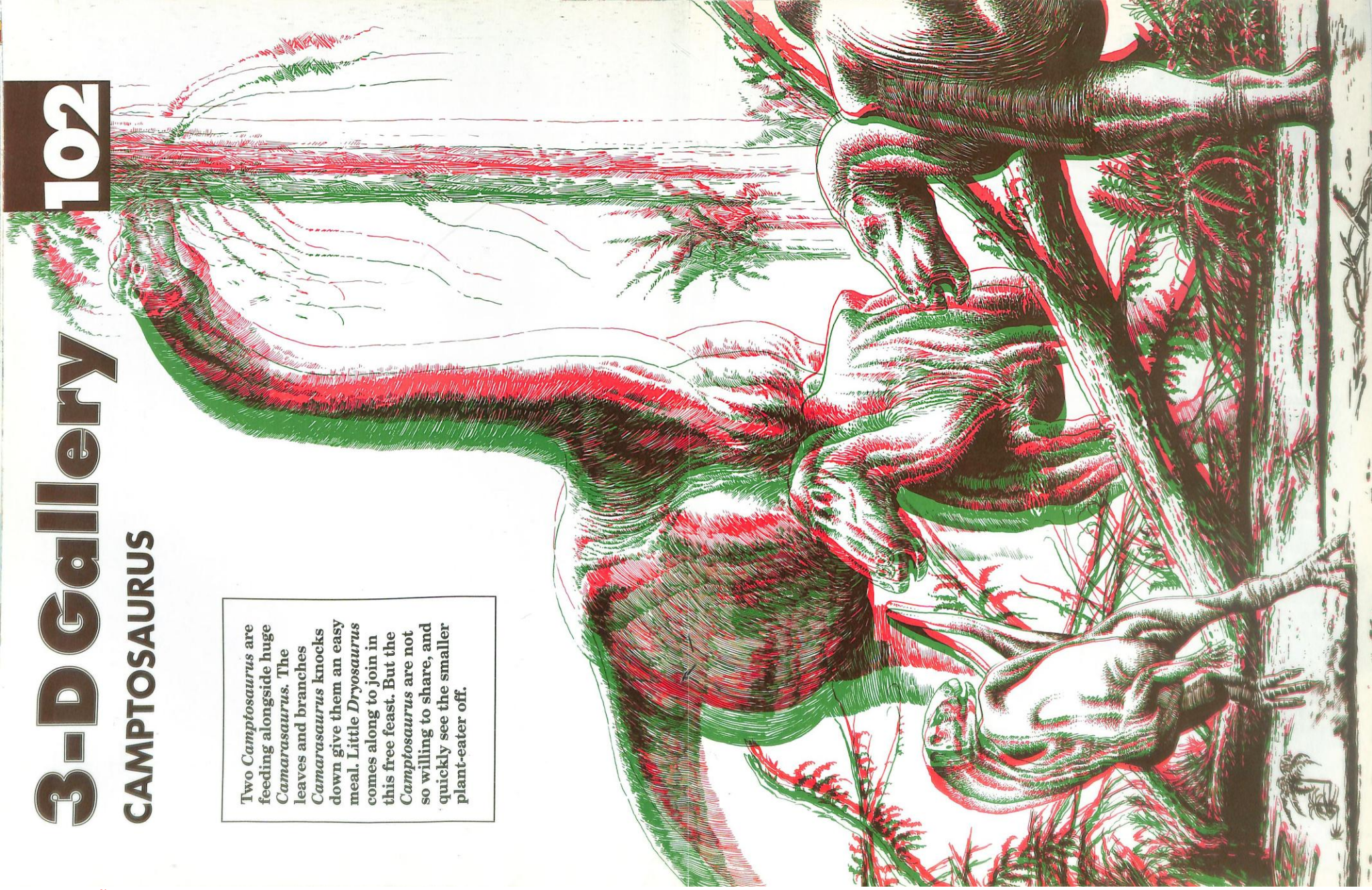
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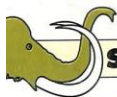
3-D Gallery

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CAMPTOSAURUS

Two *Camptosaurus* are feeding alongside huge *Camarasaurus*. The leaves and branches *Camarasaurus* knocks down give them an easy meal. Little *Dryosaurus* comes along to join in this free feast. But the *Camptosaurus* are not so willing to share, and quickly see the smaller plant-eater off.





Action man!

Let's whip out our specs and take a look at the work of artist Steve White.



he first thing people notice about Steve is that he wears ordinary glasses. As the artist who draws the stupendous 3-D pictures for us, you might imagine he wears 3-D specs! So how does he draw these remarkable pictures?

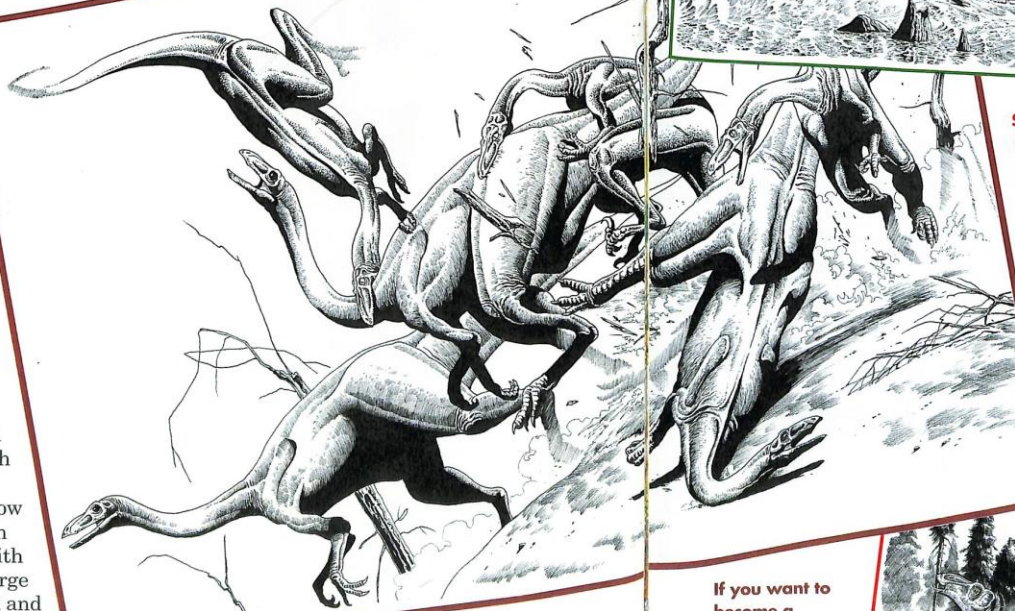
3-D TREATMENT

When you look at the 3-D pictures without your special glasses, they are a jazzy mesh of blurred green, red and brown lines. But that's not how Steve draws them. He puts in hours of painstaking work with a black fibre-tip pen and a large black marker, to create black and white pictures of dinosaurs. Then they are sent for special 3-D treatment, when the strange colours and blurred lines are created.

CHALLENGE STEVE

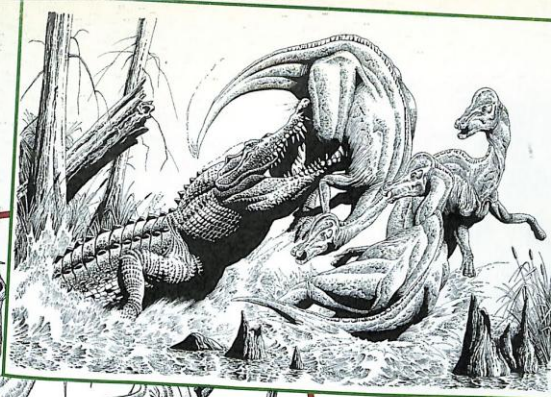
'It's quite a challenge to draw them,' says Steve. 'It's rather like creating a theatre set. You have to draw clear foregrounds, middlegrounds and backgrounds, or there's no depth and the 3-D effect doesn't work.'

2222



READ ALL ABOUT IT

Steve is a dinosaur fanatic himself (his favourite is *T rex*). He saw his first dinosaur when he was four – in an animal encyclopedia – and thought it was great. He immediately picked up a pencil and began to draw. He's been drawing dinosaurs ever since. 'My interest in them really snowballed,' he recalls. 'I read every book about dinosaurs I could lay my hands on.'



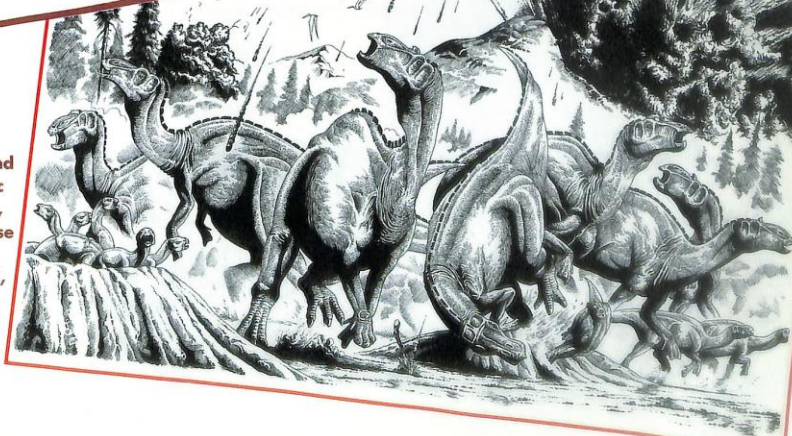
Steve does hours of detailed work on each picture with black pens before it is sent off for 3-D treatment.

LEAPING OFF THE PAGE

One of the remarkable qualities of Steve's dinosaurs is the way they seem to leap off the page. How does he get such life into his drawings? 'The big breakthrough came years ago, when I was still at school. All I'd seen until then were really stiff, static pictures. Then I saw the first drawings by Robert Bakker. I couldn't believe his dynamic, running dinosaurs and I thought:

This is what I've been waiting for! and I drew and drew.'

If you want to become a dinosaur illustrator like Steve White and create fantastic action pictures, just follow these three rules: stay interested, keep studying and draw like mad!



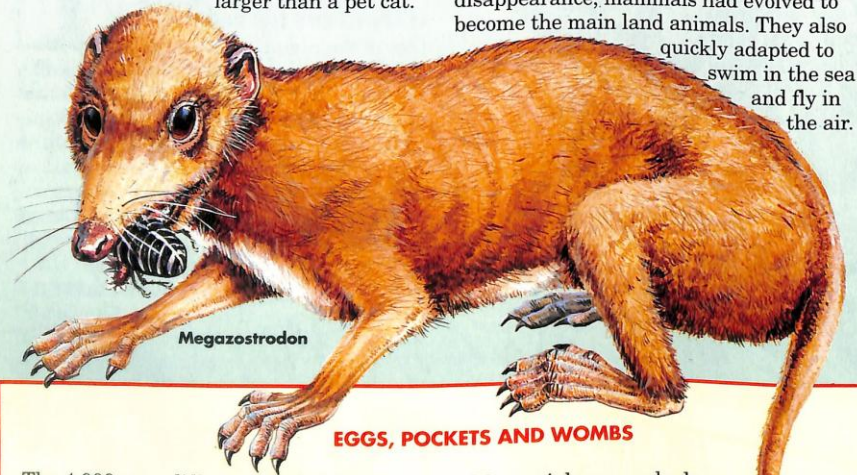
MOVING SCENES

Steve studied biology at school and mammals at college. This background helps him draw with accuracy. Steve has now drawn over 60 3-D scenes. So where do his ideas for the next one come from? 'I use dinosaur books of course, but to make the dinosaurs lifelike, I study other animals, too. I watch a lot of wildlife films on TV,' he says.

All in the family

When the Age of Dinosaurs ended another group of animals took over.

For 140 million years the mammals were small, nervous creatures, none larger than a pet cat.



Megazostrodon

ADAPTABLE ANIMALS

Megazostrodon was one of the very first mammals. This 10cm-long mammal would have hunted for insects to eat, while trying to keep out of the way of the dinosaurs towering over its head. But within 15 million years of the dinosaurs' disappearance, mammals had evolved to become the main land animals. They also quickly adapted to swim in the sea and fly in the air.

EGGS, POCKETS AND WOMBES

The 4,000 or so different species of mammal alive today are divided into three main types:

- Monotremes or egg-laying mammals (3 species alive today). They feed their newly hatched babies on milk. The platypus and echidna (right) are monotremes.



- Marsupials or pouched mammals (about 270 species alive today). Their tiny

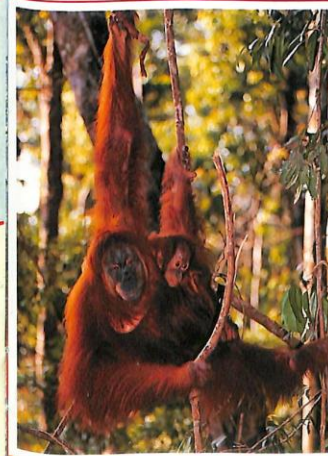
babies live protected in the mother's marsupium or pouch, which is a pocket of skin. Kangaroos (far right), koalas and wombats are all marsupials.

MAMMAL FEATURES

Key features of mammals are hair or fur on the body, warm blood, and milk, or mammary glands on the female. Mammary glands make milk to feed the babies, and this is where the name mammal comes from.

MAMMALS TODAY

Today, there are more than 4,000 different kinds, or species, of mammal. They range from tiny shrews to giant whales and, of course, include humans. Most mammals live on land and have four legs. But some walk on two legs, while others climb trees, swim under water or even fly through the air. Mammals have evolved to take advantage of most habitats and most food sources. Different mammals have adapted



to eat many different foods – from leaves to insects, and from eggs to their fellow mammals.

- Placentals (over 3,700 species alive today). The babies of placentals grow and develop in their mother's womb. Most mammals today are placentals, from cats to cows, dogs to dormice, elephant-shrews to elephants, and human beings to apes such as the orang-utan (above).

Is it true

that the earliest mammal still lives?

No. But similar mammals can be seen in the rainforests of India and South East Asia today. They are called tree-shrews, and look like a cross between a shrew and a squirrel. The bones and teeth of tree-shrews are similar in size and shape to the fossil bones and teeth of the early mammals. They are not, in fact, direct relatives. But we can imagine that the first mammals looked something like tree-shrews, as they scampered away from the great dinosaurs.

SUCCESS AND FAILURE

The mammal story has been one of success and failure. In the past, there were many other kinds of mammal that have long since died out. As a result, the

mammal family tree has lots of dead-end branches. But mammals are very adaptable and many new species have also evolved.



NO LONGER WITH US

The creodonts were the main meat-eating mammals in the world from about 60 to 30 million years ago. Most looked like dogs or bears, and they included huge beasts 4m long, bigger than any land predator today. But by seven million years ago, creodonts had gone. Modern carnivores, such as cats, dogs, bears, racoons, weasels and hyenas had taken their place.

STILL THRIVING

Insectivores are one of the great mammal success stories. They were among the early mammals, appearing more than 100 million years ago, and they still thrive today. There are over 240 living species, such as hedgehogs, moles and shrews, and the less familiar tenrecs, solenodons, desmans and moonrats.

BAT POWER

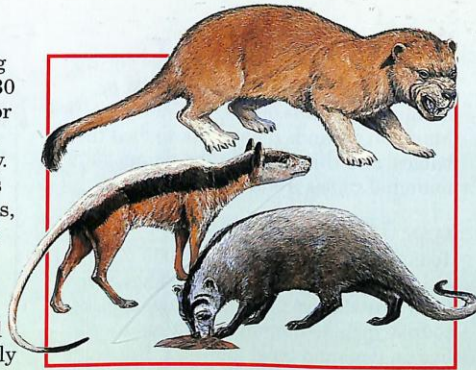
Bats are another great mammal success. They first evolved around 50 million years ago, and today one out of every four mammal species is a bat.

ON THE WAY DOWN

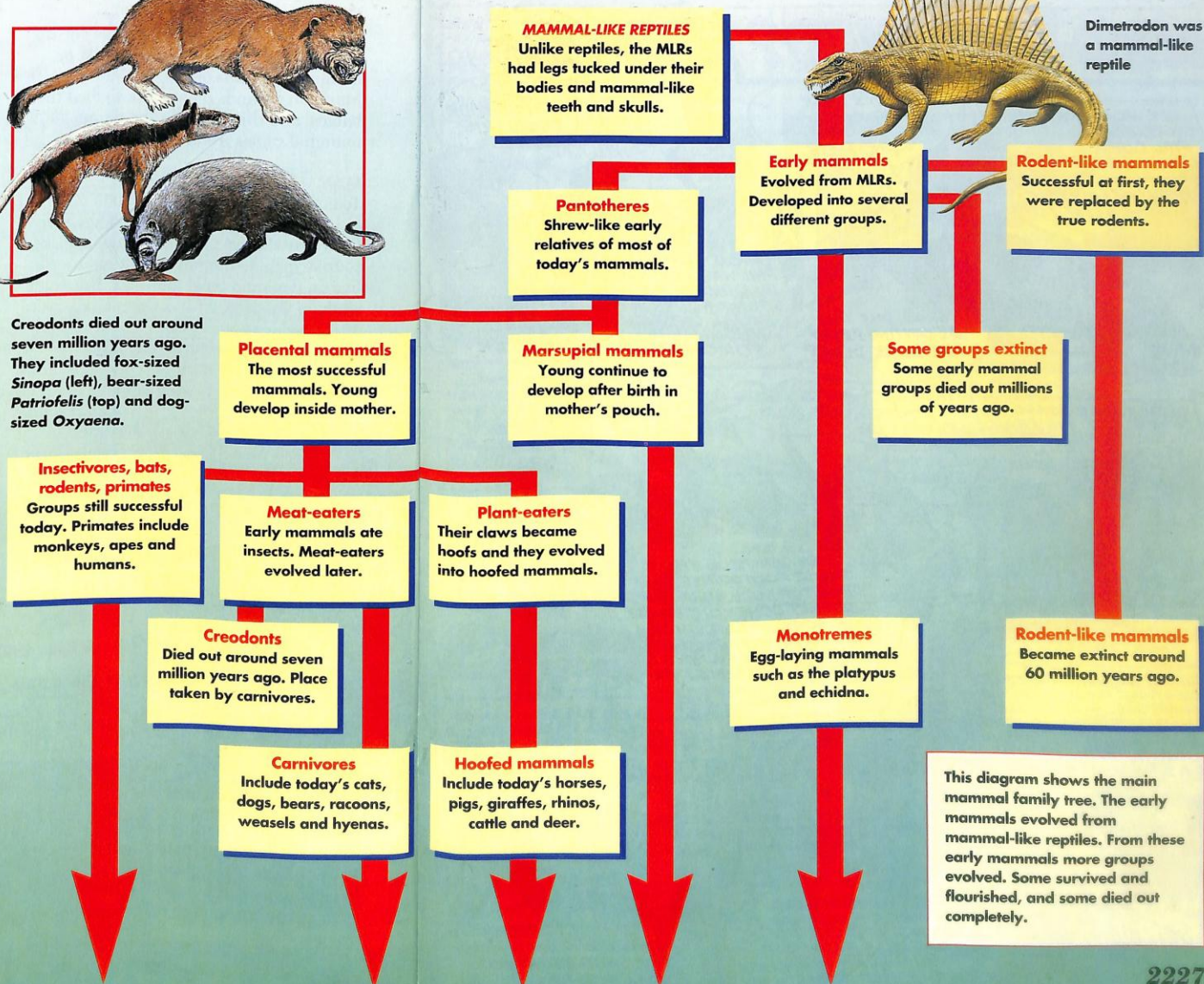
Some mammal groups, such as rhinoceroses, had great success for a time, but they have since faded away. Rhinos became numerous about 30 million years ago, with dozens of different kinds on many different continents. Today there are only five species left, in Africa and South East Asia, and they are incredibly rare.

ON THE WAY UP

The hoofed mammals are a fairly recent success story. This group of animals includes pigs, camels, giraffes, cows, sheep and goats. They only became numerous about 30 million years ago, and spread rapidly. Today they are the main large mammals in many areas.



Creodonts died out around seven million years ago. They included fox-sized *Sinopa* (left), bear-sized *Patriofelis* (top) and dog-sized *Oxyaena*.



Dimetrodon was a mammal-like reptile



BIRD-BRAINED?

ONE MORNING, WHEN SIX-YEAR-OLD CANADIAN PHIL CURRIE WAS HAVING BREAKFAST...



WOW! IT'S A PLASTIC DINOSAUR!

THAT'S WHAT YOU'D CALL A PROTOCERATOPS!



HE'S HERE AGAIN!

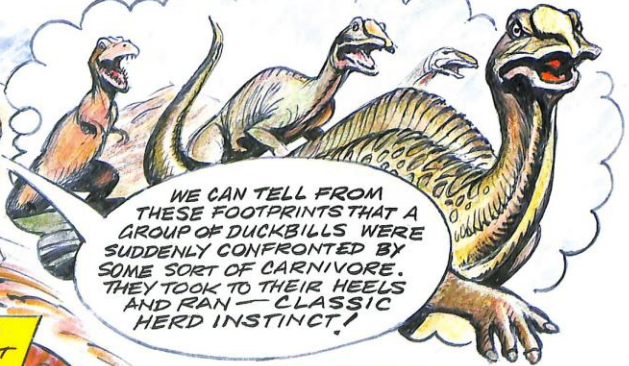
THAT MAKES FOUR TIMES THIS WEEK!

FROM THAT MOMENT, PHIL WAS FASCINATED BY DINOSAURS. HE SPENT HOURS IN THE ROYAL ONTARIO MUSEUM IN TORONTO...

WHEN I GROW UP I'M GOING TO BE A DINOSAUR HUNTER!

SHOULDN'T YOU BE GETTING READY FOR WORK, DEAR?

OVER THREE SEASONS, CURRIE AND HIS TEAM COLLECTED 100 FOSSIL FOOTPRINTS — AND DOCUMENTED ABOUT 1,600 MORE.



WE CAN TELL FROM THESE FOOTPRINTS THAT A GROUP OF DUCKBILLS WERE SUDDENLY CONFRONTED BY SOME SORT OF CARNIVORE. THEY TOOK TO THEIR HEELS AND RAN — CLASSIC HERD INSTINCT!

CURRIE BROUGHT TOGETHER SCIENTISTS FROM DIFFERENT COUNTRIES. IN 1987, THE CANADIANS HELPED THE CHINESE FIND A NEW SPECIES — JIANGJUNMAIOSAURUS — AND A 27M-LONG SAUROPOD.



HE'LL BLOW THE LOT UP!

NO! WE'VE FOUND A WAY OF USING EXPLOSIVES SO THAT ROCK IS REMOVED WITHOUT DAMAGING THE BONES.

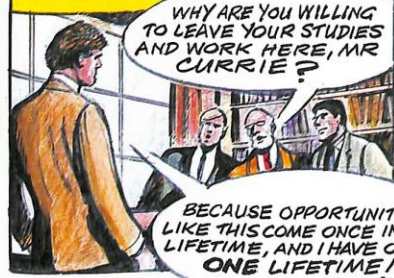
TWO YEARS LATER, CURRIE AND SOME MEMBERS OF THE CHINA PROJECT TRAVELLED TO THE CANADIAN ARCTIC...

THERE ARE MANY SIMILARITIES IN THE DINOSAUR LIFE OF OUR TWO COUNTRIES.

SO THESE SPECIES MUST HAVE MIGRATED THROUGH WHAT IS NOW THE ARCTIC...



WITH TWO DEGREES IN PALAEOLOGY, AND HALF WAY THROUGH A THIRD COURSE, HE SAW AN ADVERTISEMENT FOR THE JOB OF CURATOR OF PALAEOLOGY AT THE MUSEUM OF ALBERTA...



WHY ARE YOU WILLING TO LEAVE YOUR STUDIES AND WORK HERE, MR CURRIE?

BECAUSE OPPORTUNITIES LIKE THIS COME ONCE IN A LIFETIME, AND I HAVE ONLY ONE LIFETIME!

CURRIE GOT THE JOB, NOT LONG AFTER, HE HEARD THAT A COMPANY WAS PLANNING TO DAM PEACE RIVER CANYON, WHERE DINOSAUR FOOTPRINTS HAD BEEN DISCOVERED.



THERE WERE SOME THERE!

LET'S INVESTIGATE!

CURRIE FOUND MORE SPECIMENS THAN COULD BE COLLECTED, FOSSIL-RICH BLOCKS WERE CARRIED BACK TO THE MUSEUM BY HELICOPTER.



YES, BUT I'M TAKING THE PRIZE FIND BACK WITH ME.

THAT'S THE LAST OF THEM, PHIL?

YOU MEAN — THE EGG FRAGMENTS?

YEP! THE FIRST EVER FOUND IN ALBERTA.

HE ALSO DIRECTED DIGS AT ALBERTA'S FAMOUS DINOSAUR PARK...



CENTROSAURUS REMAINS — BABIES TOO — WHAT DOES THAT SUGGEST?

AND THE GAPS IN SIZES TELL US THAT BREEDING TOOK PLACE ONLY ONCE A YEAR.

THAT THEY LIVED IN A HERD!

THEY MUST ALL HAVE BEEN KILLED AT THE SAME TIME — BY SOME NATURAL DISASTER!

ON ANOTHER CHINESE EXPEDITION TO ALBERTA, THEY FOUND THE BRAINCASE OF A TROODON, AND TOOK A SPECIAL X-RAY OF IT.



THERE'S A PASSAGE CONNECTING THE INNER EARS. THIS HAPPENS IN BIRDS, BUT IN DINOSAURS?

I'M CONVINCED THAT THESE DINOSAURS ARE CLOSELY RELATED TO BIRDS. PERHAPS THESE CREATURES ARE NOT EXTINCT AFTER ALL?

PHILIP CURRIE AND OTHER EXPERTS ARE CERTAIN THAT DINOSAURS EVOLVED INTO BIRDS — BUT SOME SCIENTISTS THINK THIS THEORY IS BIRD-BRAINED!

Improve and test your knowledge

FACT FILE

Ichthyosaurus holds all the answers. See how you score in the quiz.

1 Amber comes from:
a) the sap of trees
b) crushed beetles
c) fossilized honey

2 Of the dinosaurs, *Troodon* was one of the:
a) slowest
b) brainiest
c) biggest

3 *Opabinia*'s head resembled:
a) a giant water melon
b) a vacuum-cleaner hose
c) a spade

4 3-D artist Steve Wright draws pictures in:
a) red and green
b) green and brown
c) black and white

Wrong-headed
There were several different types of pelycosaur – the fin-backed mammal-like reptiles that lived in Permian times. When they were first discovered, scientists mistakenly put the head of the meat-eating *Dimetrodon* on to the body of the plant-eating *Edaphosaurus*. The resulting mixed-up animal they called *Naosaurus*.

5 Limpet-like *Scenella* lived in the:
a) Cambrian Period
b) Ordovician Period
c) Silurian Period

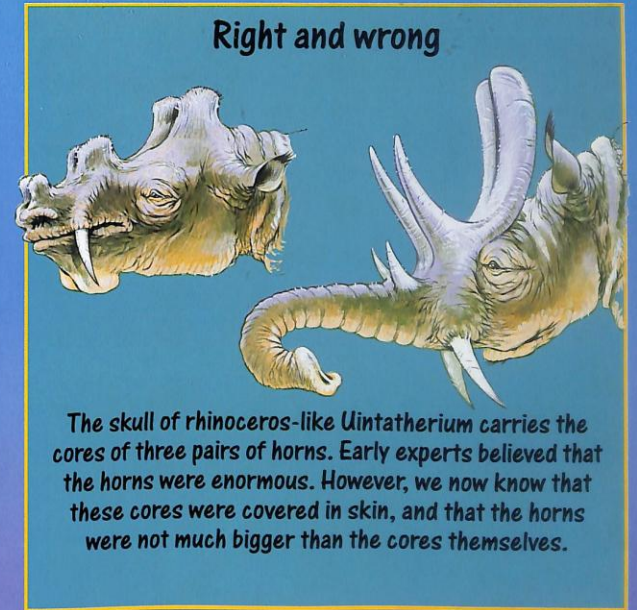
6 Palaeontologist Phil Currie believes dinosaurs evolved into:
a) humans
b) kangaroos
c) birds

7 Meat-eating *Aublysodon*'s teeth:
a) curved backwards
b) curved forwards
c) pointed downwards

8 Marsupials keep their newborn babies in:
a) nests
b) pouches
c) burrows

9 *Mesonyx* looked like today's:
a) tiger
b) zebra
c) wolverine

10 *Aelosaurus* was as long as:
a) one car
b) two buses
c) three coaches



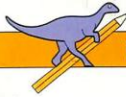
Right and wrong

The skull of rhinoceros-like *Uintatherium* carries the cores of three pairs of horns. Early experts believed that the horns were enormous. However, we now know that these cores were covered in skin, and that the horns were not much bigger than the cores themselves.

Keeping their heads down

Most of the earliest fishes – the ones without jaws – had a tail fin only on the underside of the tail. This was probably because they fed by sucking mud at the bottom of lakes, and the swimming action created with this fin would have kept their heads pointing downwards.

Aussie reference
When Louis Dollo reconstructed the Bernissart iguanodons in the 1880s, he used skeletons of an emu and a wallaby to help him.



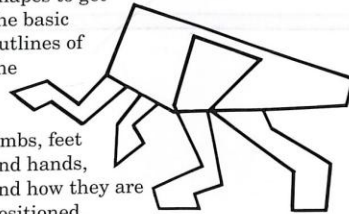
HOW TO DRAW

TROODON

1 With a sharp pencil, first draw this very simple, five-sided figure. This will give you the basic shape of Troodon's body and the direction in which it is pointing. It will also give you a guide for positioning the rest of the body parts. Try not to press too hard with your pencil, so you can rub out any mistakes.

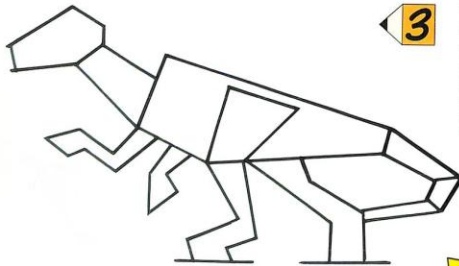


2 Now for the limbs. Again, at this stage you need only draw very simple shapes to get the basic outlines of the

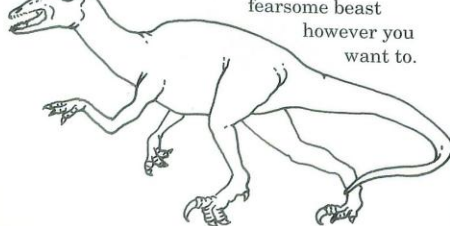


limbs, feet and hands, and how they are positioned.

3 It is time to attach the tail, neck and head shapes. Position the tail where the five-sided body figure is at its narrowest. Draw it in three sections, curving downwards and tapering at the end. The neck shape is quite thick and long. The head shape, which is narrower at the front, sits almost at right angles to the neck.



4 Finally, go over the whole outline to get smooth, curved lines. Finish off the tail and add the head details and sharp claws. Now you can colour your fearsome beast however you want to.



Fact box

Troodon was one of the brainiest dinos.

- **NAME:** Troodon (troo-o-don)
- **GROUP:** dinosaur
- **SIZE:** 2.4m long
- **FOOD:** meat
- **LIVED:** 75 million years ago in North America

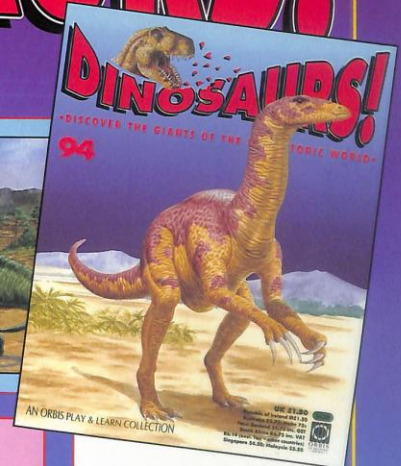
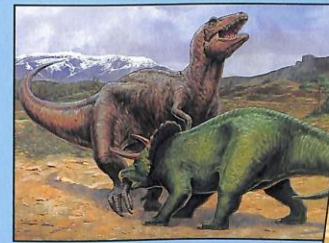


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COMING IN PART 94 OF

DINOSAURS!

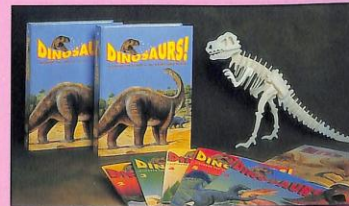
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PLUS

Three fascinating creatures in **IDENTIKIT** and **HISTORY IN PICTURES 3-D GALLERY GIANTS OF THE PAST**

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ANSWERS TO FACT FILE QUESTIONS: 1a 2b 3a 4a 5a 6a 7a 8a 9a 10a

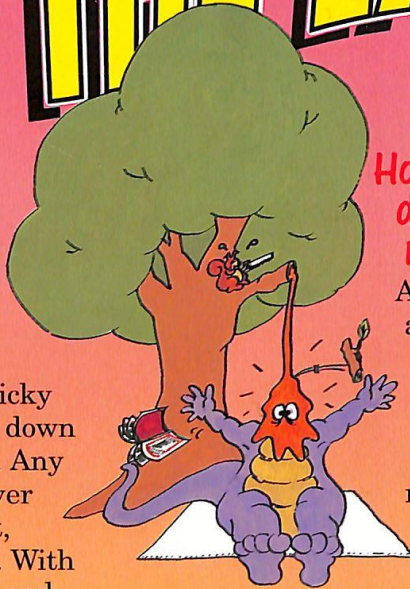


Dr David Norman of Cambridge University answers your dinosaur questions

ASK THE EXPERT

What is amber?

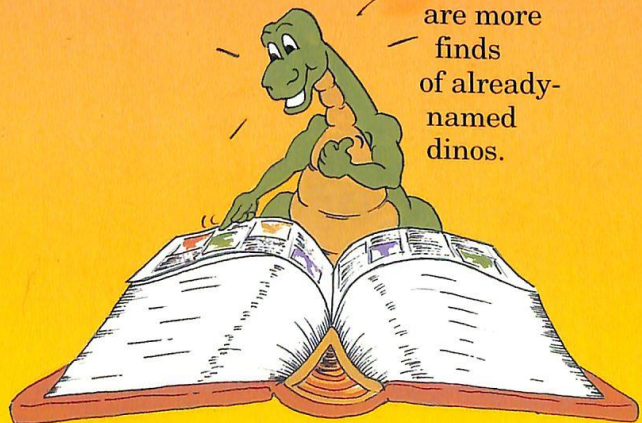
Amber is the resin or sap produced by coniferous trees when they are damaged – when a branch snaps off, for example. It is thick and sticky and runs in small rivulets down tree trunks, before drying. Any small creature crawling over it, or getting engulfed in it, becomes trapped and dies. With time, the amber sets hard and preserves the animal trapped inside.



How many species of dinosaur have been named so far?

About 1,000 species of dinosaur are known at the moment, but this number is rising all the time as new discoveries are made. Nobody is very confident about the exact number of valid species of dinosaur named to date. This is because some finds may not be new dinosaurs at all.

When experts have a chance to really study the new fossils, they may discover they are more finds of already-named dinos.



Were you interested in dinosaurs when you were a child?

Not particularly. I knew of them from books, and I visited the Natural History Museum in London once. But although I was amazed by the size of them, I was never particularly influenced by them. I was far more interested in playing football and cowboys and Indians with my friends!

