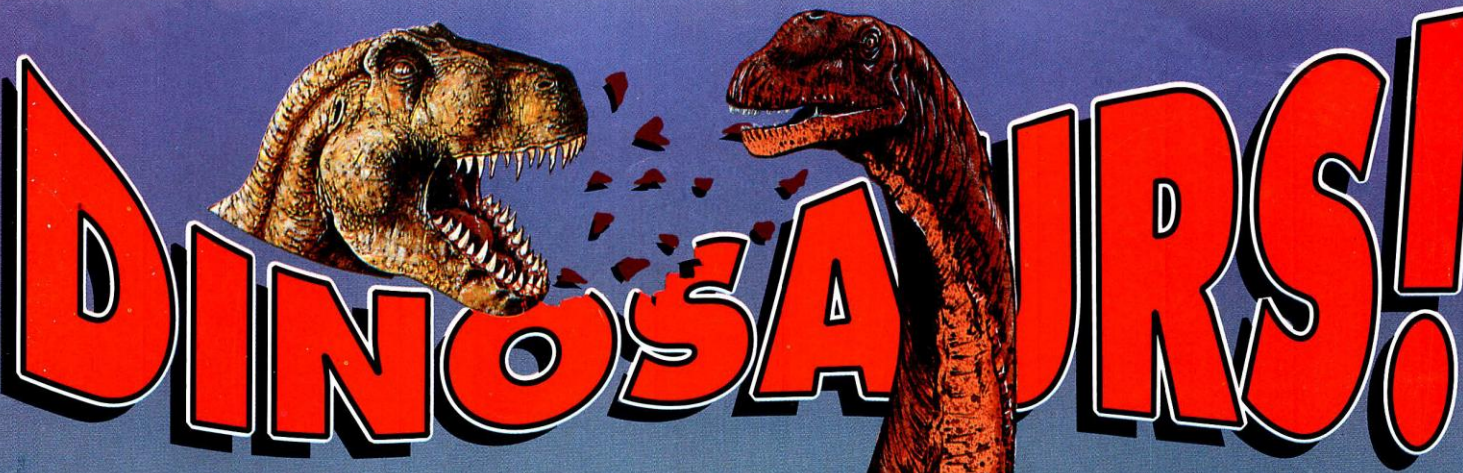


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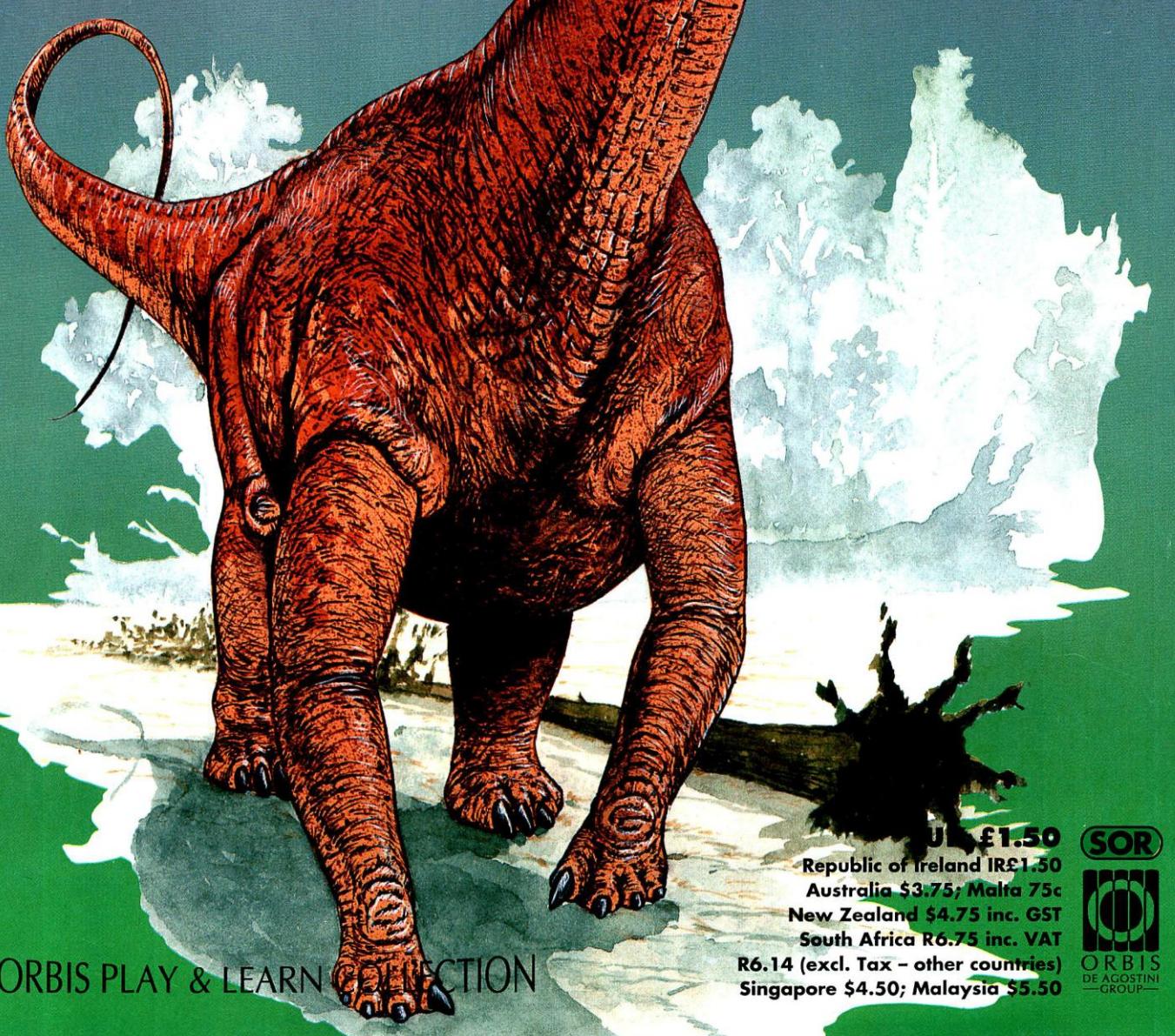
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82



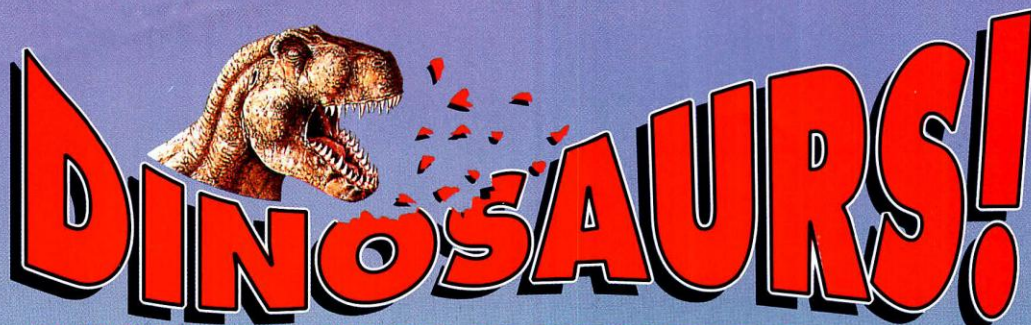
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IDENTIKIT

Two Cretaceous creatures and a prehistoric predator

ELASMOSAURUS	1945
ARGENTINOSAURUS	1948
ANDREWSARCHUS	1949

PREHISTORIC WORLD



Find out what prehistoric sea creatures ate in

OCEANS OF FOOD 1950



SPOTTER'S GUIDE

Dinosaur names explained in

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PLUS

GIANTS OF THE PAST

An *Elasmosaurus* grabs a fish from the rough Cretaceous seas 1954

3-D Gallery

A mother *Yangchuanosaurus* watches her babies at play 1956

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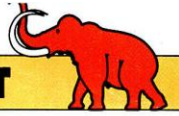
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ELASMOSAURUS

Elasmosaurus had an enormous snake-like neck and was a giant of the prehistoric seas.



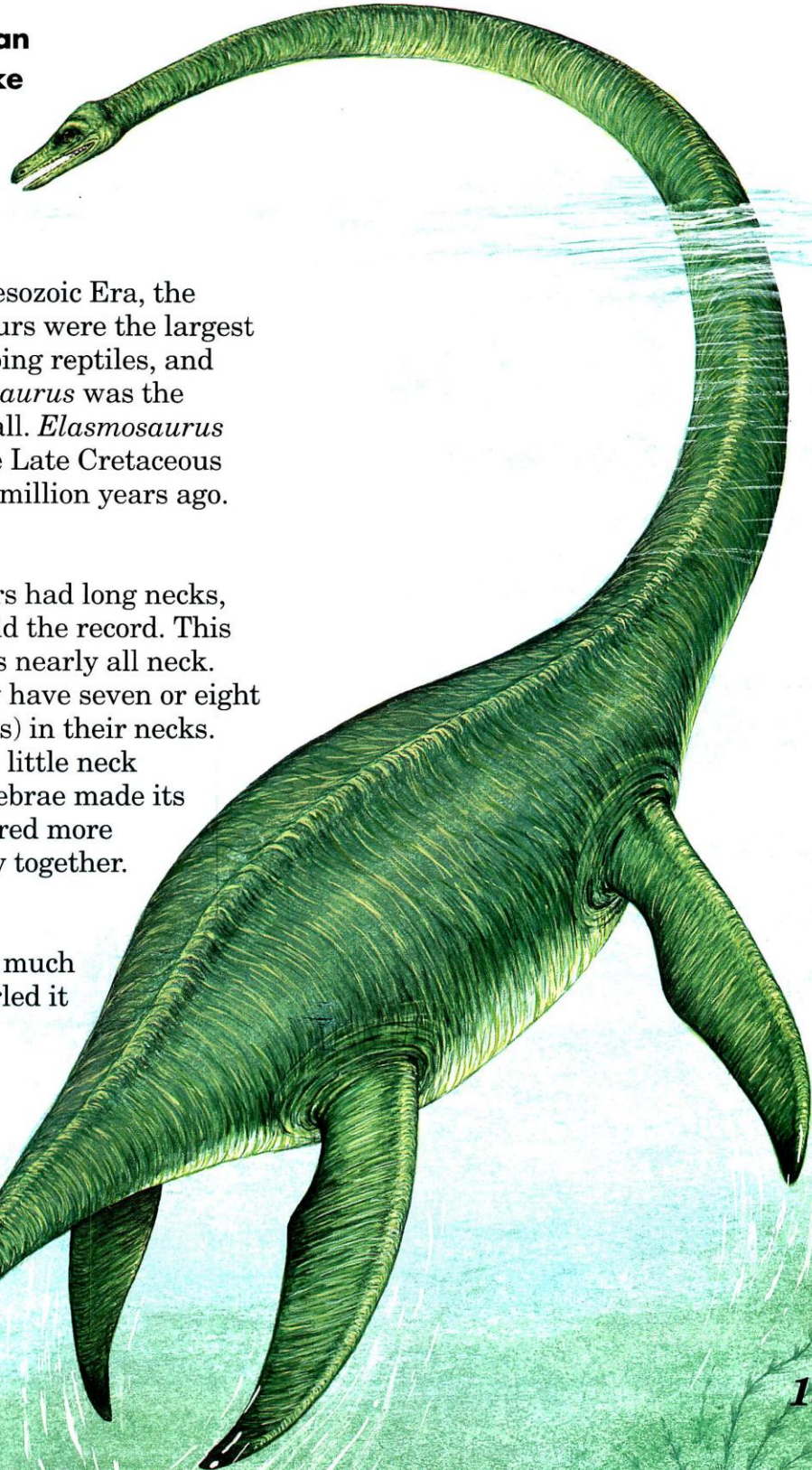
In the Mesozoic Era, the plesiosaurs were the largest ocean-going reptiles, and *Elasmosaurus* was the biggest plesiosaur of all. *Elasmosaurus* ruled the water in the Late Cretaceous Period, more than 66 million years ago.

GOING UP

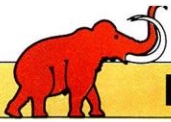
Most of the plesiosaurs had long necks, but *Elasmosaurus* held the record. This huge sea creature was nearly all neck. Land animals usually have seven or eight vertebrae (small bones) in their necks. *Elasmosaurus* had 71 little neck bones! The extra vertebrae made its neck so long it measured more than the tail and body together.

ROUND THE TWIST

Elasmosaurus had so much neck it could have curled it round into a circle on either side of its body. The neck was as flexible as a snake, and the plesiosaur probably moved it about in a snake-like way.



1945



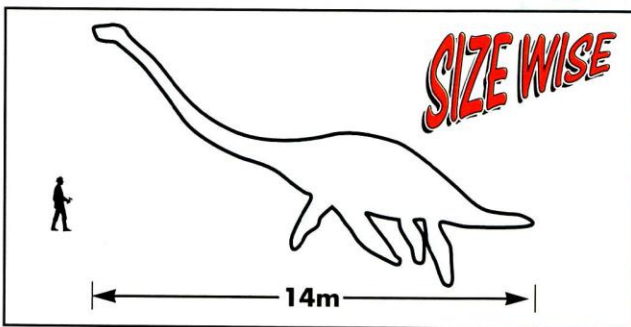
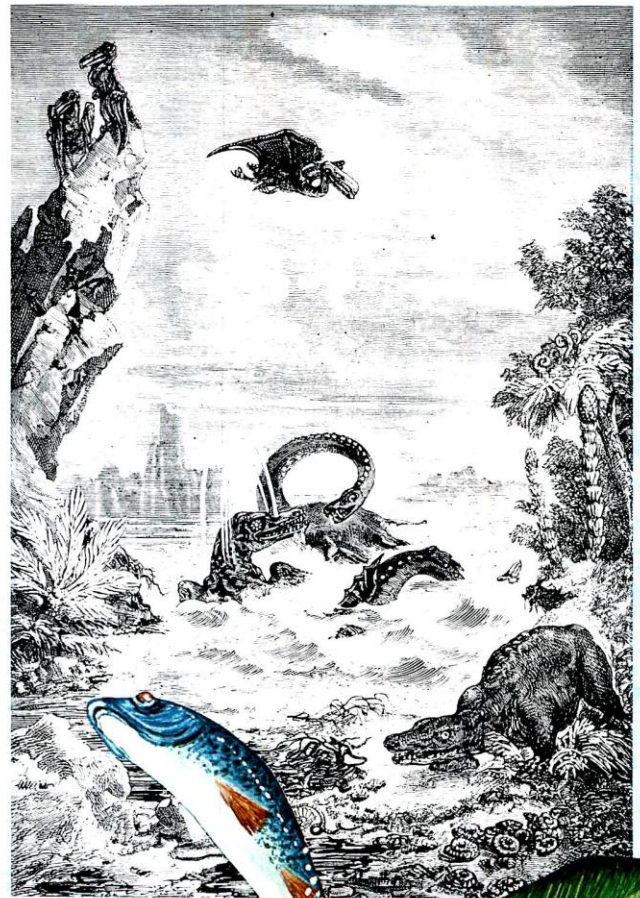
DEEP DOWN

Elasmosaurus probably paddled along with its neck held out of the water. When it spotted its prey, the plesiosaur plunged its small head into the water to snatch the fish. It would have been difficult for a fish to escape its needle-sharp teeth. With its long, flexible neck, *Elasmosaurus* could have reached deep down into the water.

IS IT BIRD...IS IT A SNAKE?

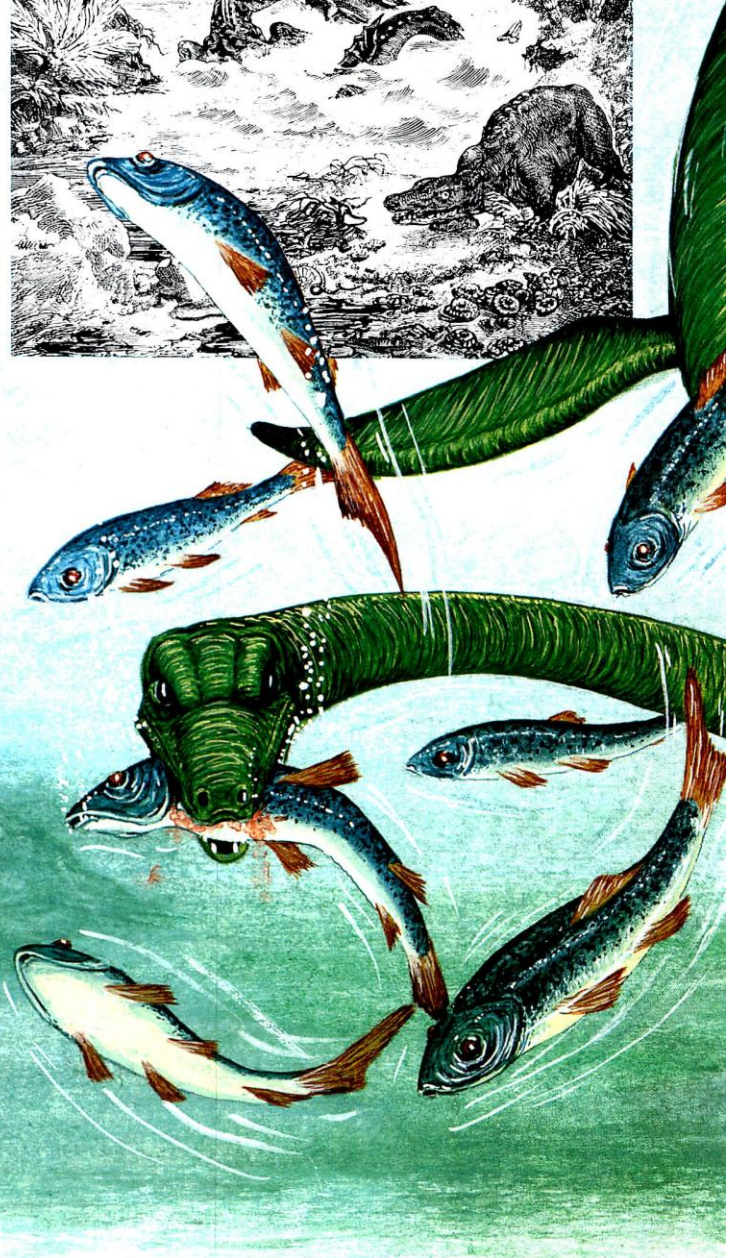
There is a bird called a darter, which is nicknamed the 'snakebird'. Like *Elasmosaurus*, this bird swims along with its body just under the water when it is hunting. All you can see is its long neck and head, so it looks just like a snake. *Elasmosaurus* must have looked like an enormous snake when it was out hunting!

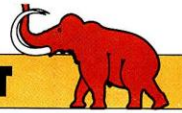
This engraving shows what people in 1881 imagined the Earth looked like in the time of the dinosaurs. You can see a creature just like *Elasmosaurus* in the centre.



MONSTER FACTS

- **NAME:** *Elasmosaurus* (eh-laz-mo-saw-rus) means 'plate reptile'
- **GROUP:** reptile
- **SIZE:** up to 14m long
- **FOOD:** fish
- **LIVED:** about 80 million years ago in the Late Cretaceous Period in Asia and North America





IT'S A FACT

IN AT THE END

Elasmosaurus was the last of the plesiosaurs. It lived at the same time as the last of the dinosaurs. Like the dinosaurs, it died out at the end of the Cretaceous Period.

FLIP FLAP

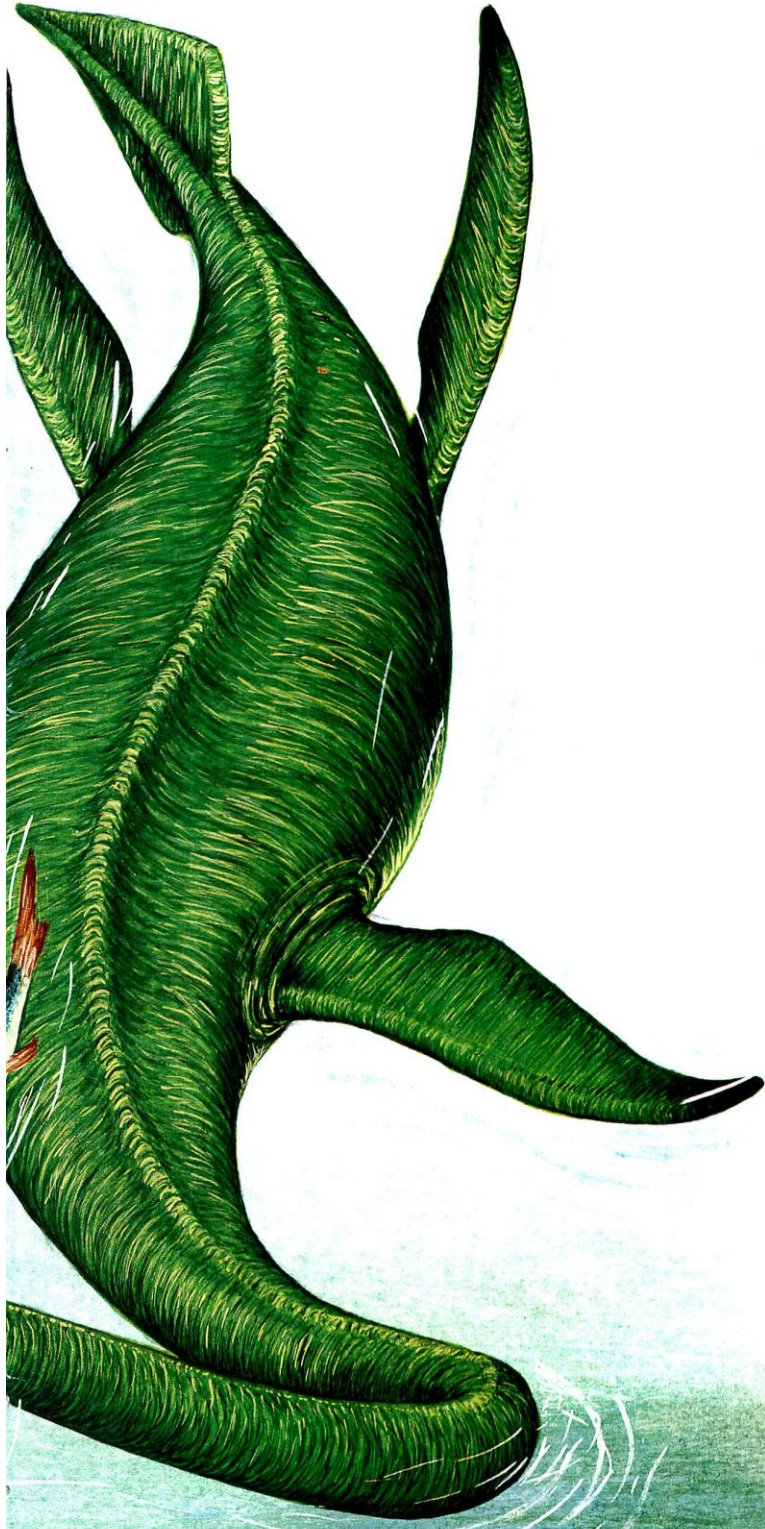
Elasmosaurus had very long front flippers and shorter back flippers. Early experts thought the plesiosaur must have used them like giant oars to row through the water. Scientists now believe *Elasmosaurus* moved more like today's sea turtle. They think it swam through the water in the same way that a bird flies through the air. The great creature could have flapped its flippers up and down with slow, steady strokes to move itself along.

AROUND AND ABOUT

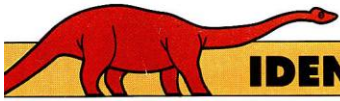
A row of belly ribs helped to make the plesiosaur's short, barrel-like body stronger. *Elasmosaurus* needed a strong, sturdy body because of the strain it was put under by the beating movements of its massive flippers.

HIGH AND DRY

The belly ribs gave *Elasmosaurus* extra protection when it left the water. Like today's sea turtle, the plesiosaur probably laid its eggs in a nest dug out of the sand. The cage-like arrangement of its rib bones would have protected its soft underside when the huge creature pushed itself clumsily up the beach with its flippers.

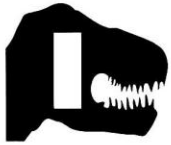


Elasmosaurus swims along on the water's surface, alert for any movement in the watery depths. As soon as it sees its prey, the plesiosaur dives down using its long, flexible neck to reach out and grab the victim with its sharp teeth.



ARGENTINOSAURUS

This gigantic plant-eater is South America's largest known dinosaur.



In 1989, scientists were thrilled to discover a gigantic new dinosaur. *Argentinosaurus* must have been longer than a tennis court.

BACK TO BACK

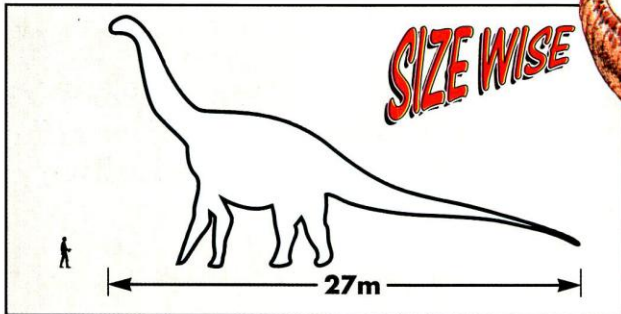
All that was found of *Argentinosaurus* were six enormous vertebrae and part of its pelvis. But this was enough to prove that the dinosaur belonged to a new genus. It had extra joints between the vertebrae, which looked different from any seen before. This mighty plant-eater needed them to make its back strong enough to support its great weight.

HIGHER AND HIGHER

Like other sauropods, such as *Saltasaurus*, *Argentinosaurus* probably craned its long neck upwards to graze among the tree tops. It might have used its tail as a support if it leaned back onto its rear legs to reach even higher.

EARTH SHAKER

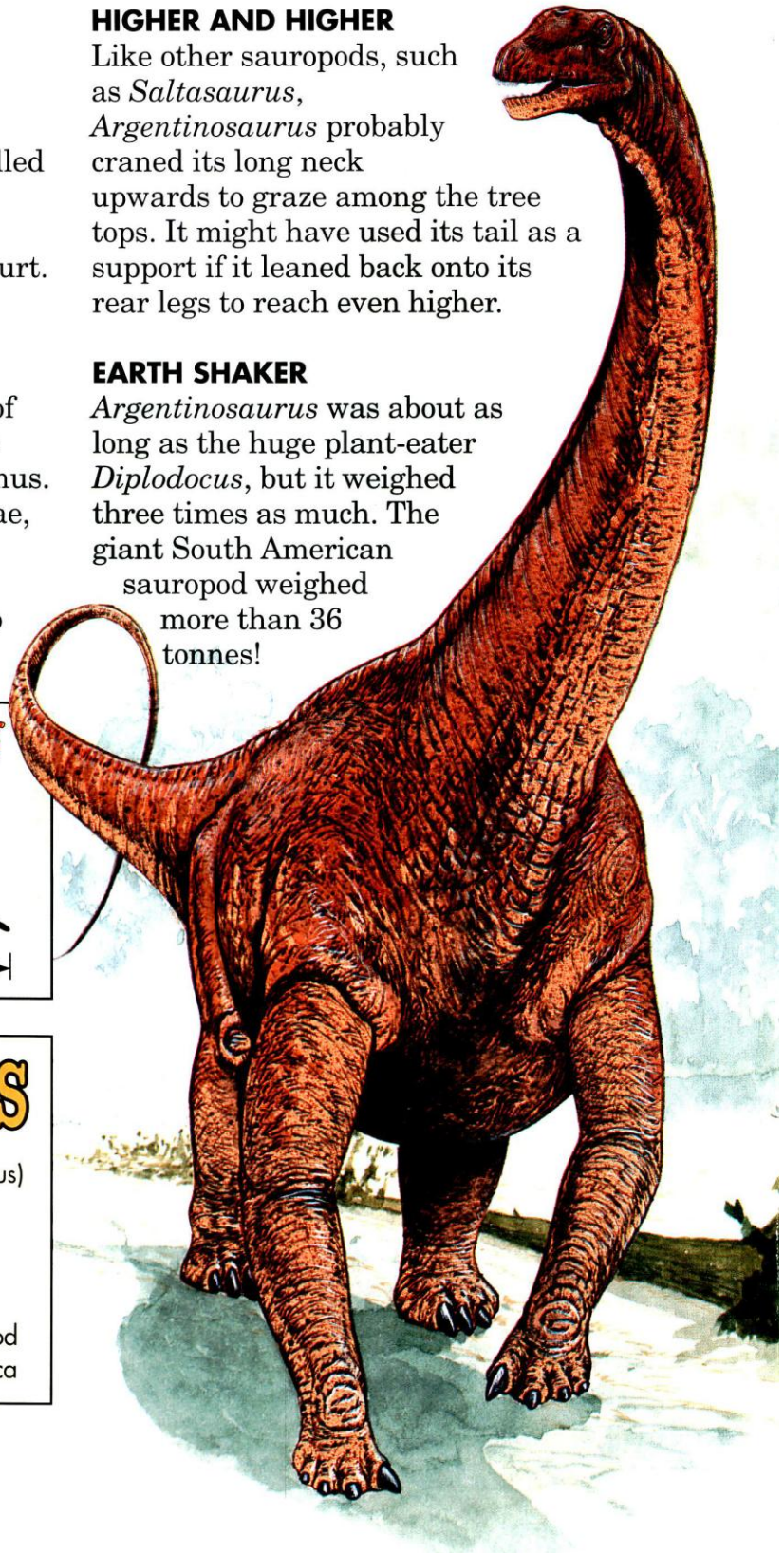
Argentinosaurus was about as long as the huge plant-eater *Diplodocus*, but it weighed three times as much. The giant South American sauropod weighed more than 36 tonnes!

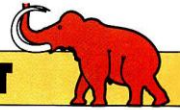


MONSTER FACTS

- **NAME:** *Argentinosaurus* (ar-jent-eno-saw-rus) means 'Argentina lizard'
- **GROUP:** dinosaur
- **SIZE:** 27m long
- **FOOD:** plants
- **LIVED:** in the middle of the Cretaceous Period about 100 million years ago in South America

1948





ANDREWSARCHUS

Andrewsarchus was a frightening meat-eater with giant jaws.



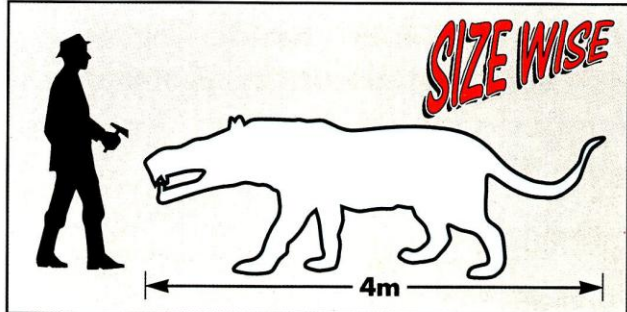
Andrewsarchus had a huge skull, nearly 1m long – four times bigger than the head of a lion. As far as we know, *Andrewsarchus* was the biggest meat-eating mammal that ever lived on land.

ENTER THE HUNTER

In the Early Palaeocene, about 65 million years ago, there were no meat-eating mammals. This meant that the plant-eaters flourished. But about 5 million years later, a new order of carnivores called the acrodi evolved. *Andrewsarchus* was the biggest meat-eater of that order.

BONE CRUSHER

The fearsome jaws of *Andrewsarchus* were filled with very large teeth. It had tusk-like front teeth to tear off chunks of flesh. Its broad cheek teeth were used to crush up bones.

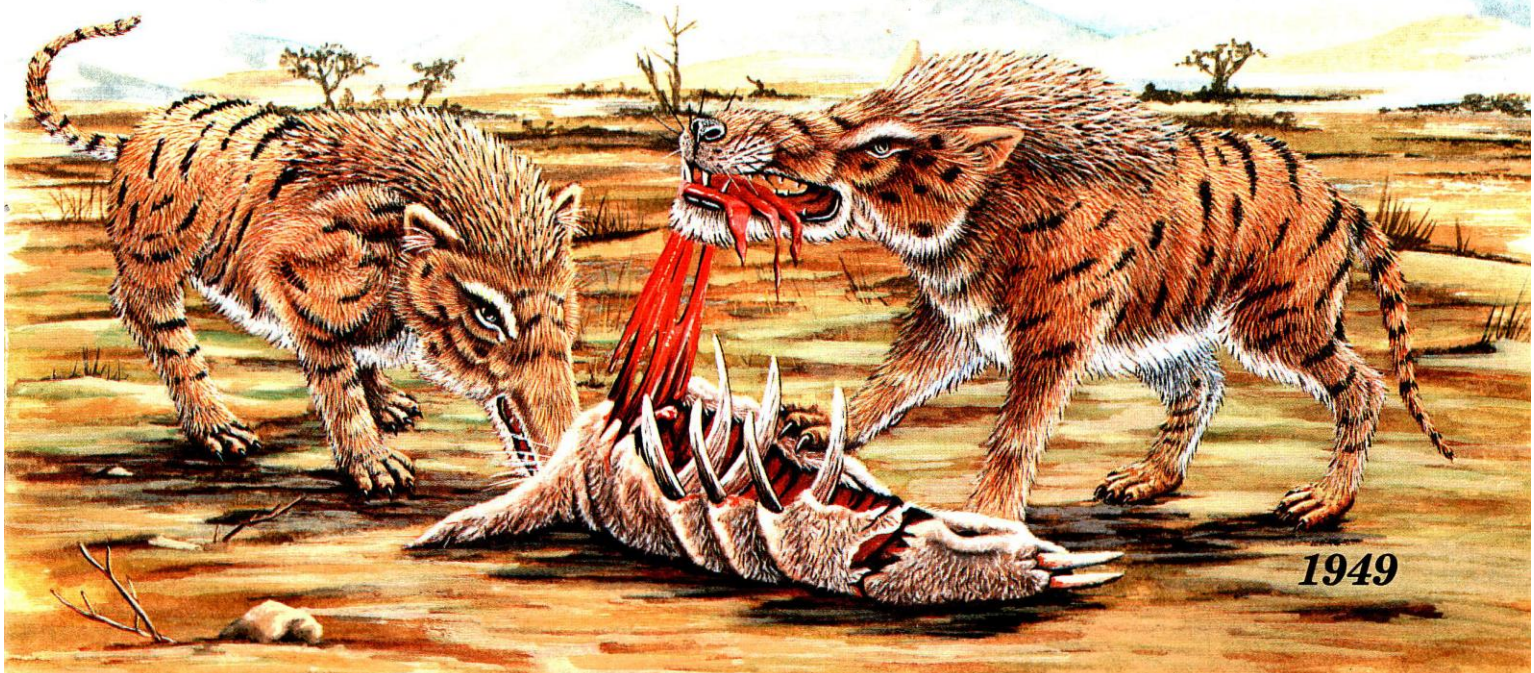


MONSTER FACTS

- **NAME:** *Andrewsarchus* (an-drew-sark-us) means 'Andrews' ruler'
- **GROUP:** mammal
- **SIZE:** 4m long
- **FOOD:** meat
- **LIVED:** about 40 million years ago in the Late Eocene in Asia

PACK ATTACK

Andrewsarchus may have looked like a giant hyena. Like hyenas, it may have been a scavenger, or it may have actively hunted in packs for food.



1949



Oceans of food

Just as some land animals eat meat and some eat plants, so sea creatures feed on a variety of things – including each other.



list of who eats what is called a food chain. All food chains start with

plants, which make their food using the energy of the sun. Fossil evidence shows that food chains in the prehistoric seas were similar to the ocean food chains of today.

IN THE PREHISTORIC SEAS

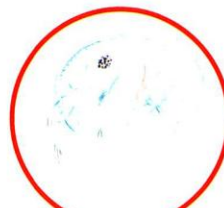
Sea snails and sea urchins grazed on plants and tiny animals. Sponges filtered the water for bits of food. Corals and sea anemones waved their tentacles to grab small prey. Starfishes hunted shellfishes such as mussels. Worms, crabs and lobsters were scavengers. Sharks and other large fishes hunted for victims. However, the large top carnivores were different in prehistoric times. Then, reptiles such as plesiosaurs and mosasaurs ruled the seas.



Hesperornis

Jellyfish

Plankton



Cypridea

Hybodus



Macropoma



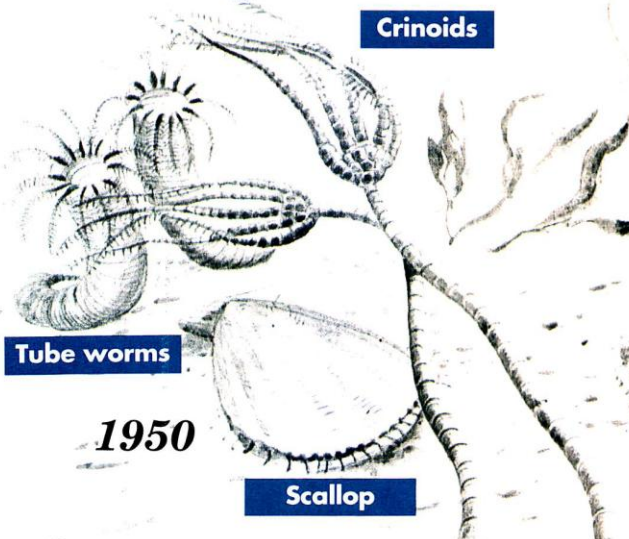
Lepidotes

Belemnites



Ammonite

Lampshells



Tube worms

Crinoids

1950

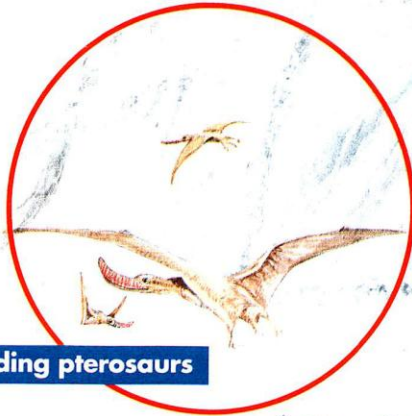
Scallop

Sponge



It is the end of the Mesozoic Era. Dinosaurs are lords of the land. Pterosaurs soar in the skies. In the seas, a huge variety of animals go about their daily lives.

Pterosaurs



Archelon

Filter-feeding pterosaurs

Leptolepis

Mosasaurus

Plesiosaur

Lobster

Shrimp

Platecarpus

Oysters

Starfish

Sea urchin

Bivalve

Snails

Corals

Crab



INVISIBLE LINKS

Most of the early links in the food chains of the open ocean are too small to see with the naked eye. They start with microscopic plants and animals, called plankton. The tiny plants are called phytoplankton, the animals zooplankton. These are preyed on by tiny carnivorous animals and by small larvae (young forms) of crabs, starfishes, jellyfishes, fishes and other animals.

BIG FISHES EAT LITTLE FISHES

Prehistoric fishes formed the main links in ocean food chains, as they do today. From plankton-filterers to huge carnivores, they fed in many different ways. *Macropoma* (below right), was a kind of coelacanth and may have fed on smaller fishes in the ocean depths.

MICRO-MONSTERS

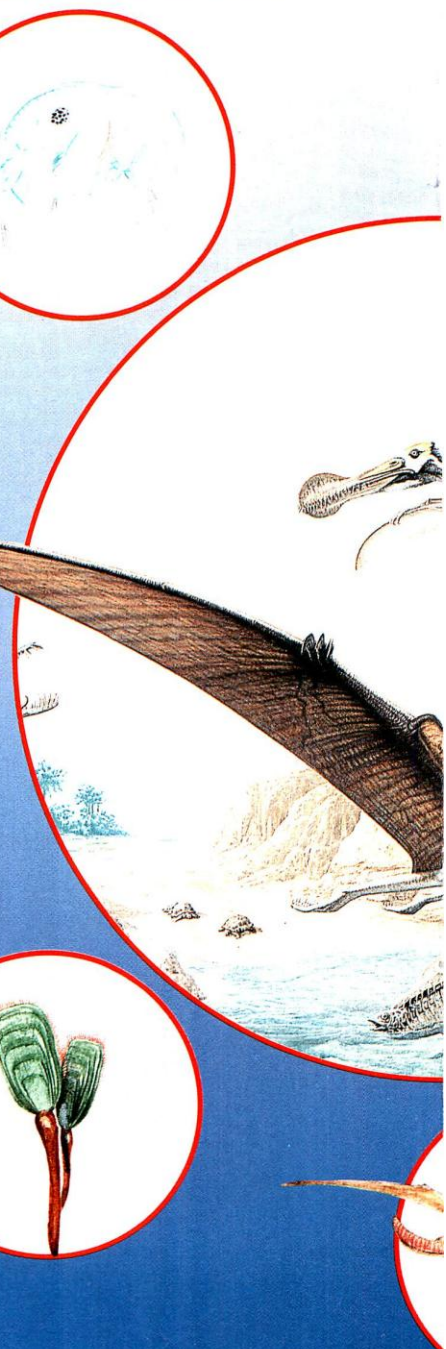
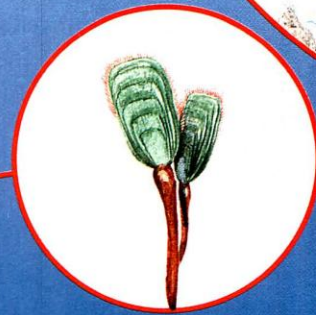
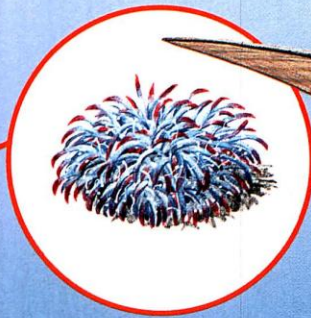
Ostracods are mini-relatives of crabs that live in the plankton. *Cypridea* (right), a Mesozoic ostracod like a small water flea, had two hinged shells. It swam by rowing with its branched antennae. It grabbed tiny pieces of food with its mouthparts.

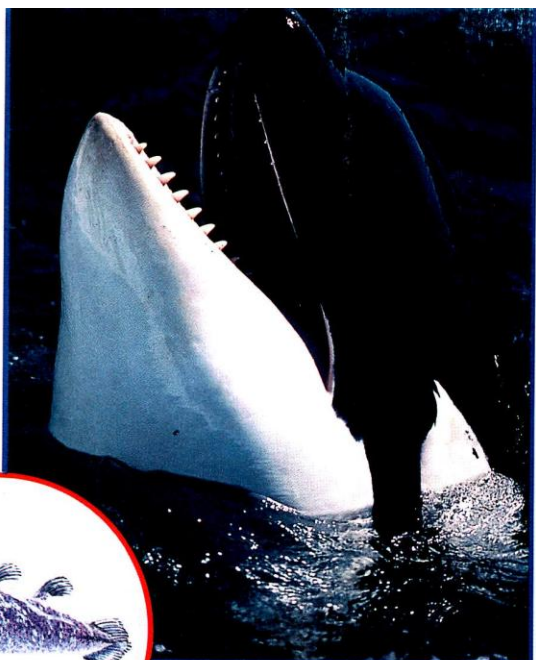
PEACEFUL GRAZERS

Seaweeds grew at the shallow edges of the ancient seas. These plants were grazed by wandering snails and limpets with toothy tongues called radulas. *Diadema* sea urchins (right) crept about with their rocking spines and long tube feet. They grazed on corals, sponges and seaweeds, using their circular, five-toothed mouths.

SEA SOUP

Sea water is like a soup of tiny particles. Corals, fanworms and brittlestars had feathery fans to strain food from the water. Some fishes swam about open-mouthed, taking in food as they went. Lampshells (right) had a crown of feeding tentacles covered in strands of sticky mucus. Food particles stuck to the strands





Is it true

that food chains never come to an end?

Yes. Even top carnivores, such as killer whales (left), eventually die. Scavengers feast on their rotting flesh. Carnivores eat the scavengers, and the whole cycle starts again. So, in a sense, food chains never end.



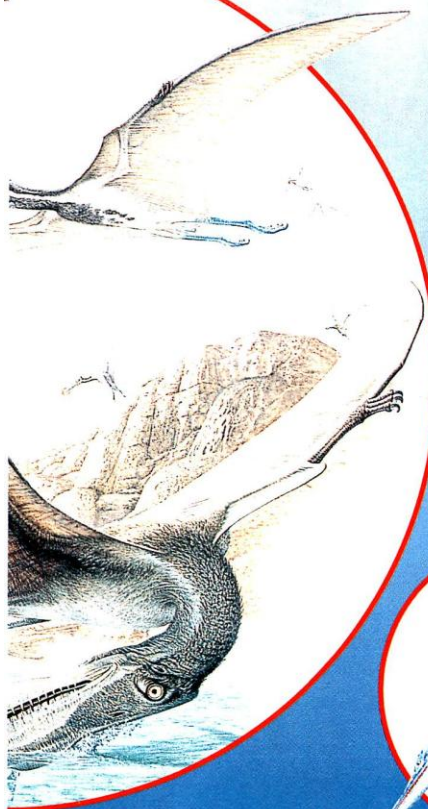
SHELLS, TENTACLES AND BEAKS

Ammonites (below left), relatives of today's squid and octopus, lived in coiled shells. They were active swimmers with the large eyes of a hunter. They caught fishes and other creatures with their tentacles, and tore them up with a horny beak.



RULING REPTILES

Mosasaur, plesiosaurs, sea-going crocodiles and marine turtles, cruised the seas. Mosasaurs were probably among the fiercest hunters. Some grew to over 15m, eating fishes, other reptiles, diving birds and even ammonites. Plesiosaurs were fast, agile swimmers. Long-necked plesiosaurs were skilled fishers, feeding near the surface. Short-necked plesiosaurs (left) were expert divers, preying on deep-sea fishes.



DANGER FROM ABOVE

Diving birds, such as *Hesperornis*, fed on small fishes. The role of the large predatory sea birds of today was filled by pterosaurs. These flying reptiles swooped above the waves, diving into the water for fishes and other prey, then soaring on the rising air currents back to the land.



GIANTS OF THE PAST



1954

ELASMOSAURUS

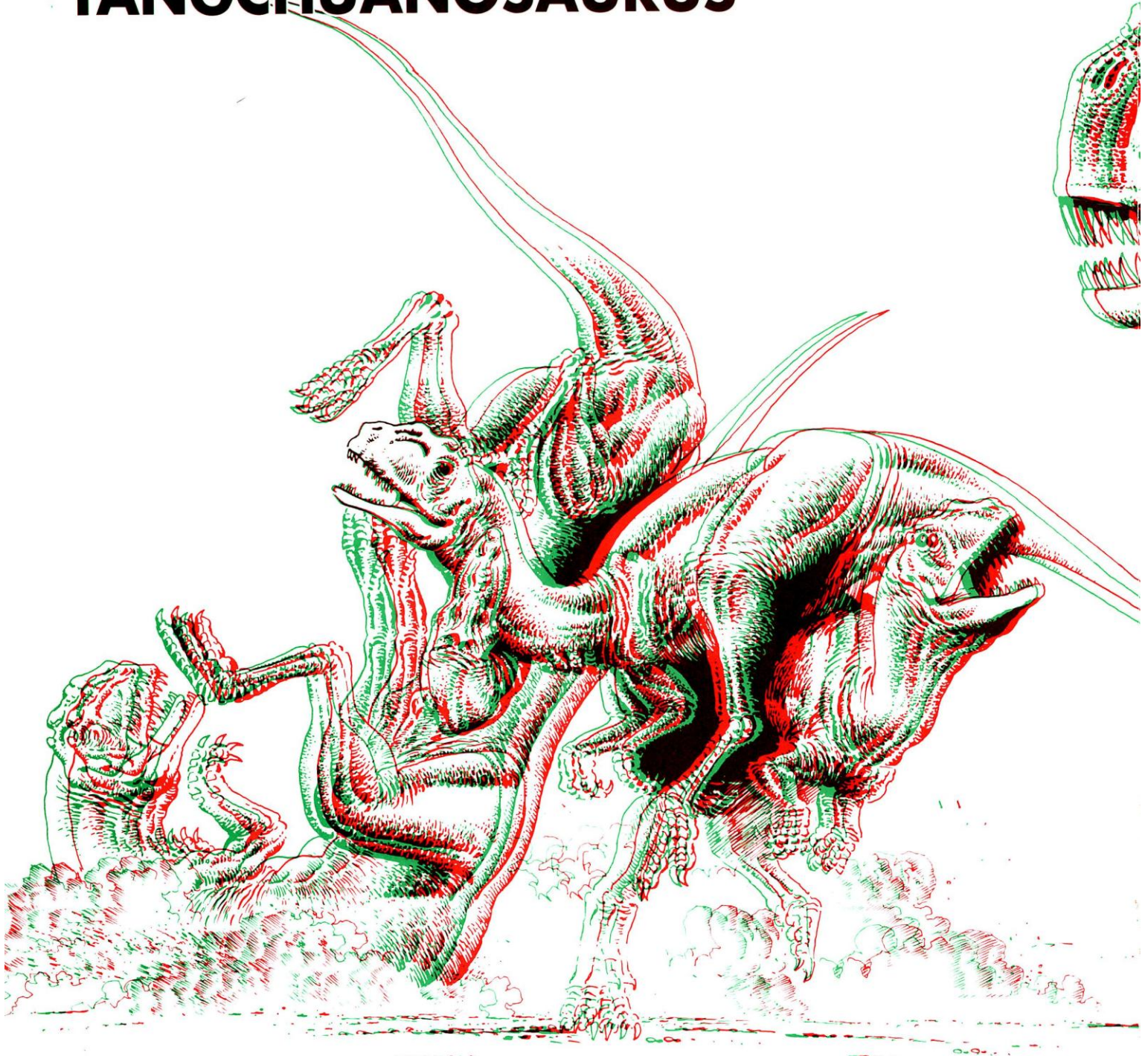



Off the coast of Late Cretaceous North America, a gigantic plesiosaur is on the hunt for food. *Elasmosaurus* paddles through the rough coastal seas, using its strong front flippers. As soon as it spots a tasty fish, it plunges its long, snake-like neck into the water, taking its victim by surprise. Grabbing the struggling fish with its sharp teeth, *Elasmosaurus* quickly comes to the surface to gulp down its snack. A flock of pterosaurs hover in the sky above the plesiosaur's head, waiting to swoop down to grab their own fish supper.

1955

3-D Gallery 91

YANGCHUANOSAURUS





In Late Jurassic China, a *Yangchuanosaurus* takes a rest, while watching three of her children wrestle with each other. She knows this kind of play-fighting is vital training for their adult life, when they will have to fight both prey and predators to survive.



What's in a name?

From the shortest dinosaur name, *Minmi*, named after the place where it was found, to the longest, *Micropachycephalosaurus*, meaning 'little lizard with the thick head', all dinosaur names mean something.



Dinosaurs may be named after famous people. *Iguanodon mantelli* means 'iguana-tooth found by Mantell'. *Megalosaurus bucklandi* means 'big lizard found by Buckland'. Scientists do not name dinosaurs after themselves, but in scientific papers we often see the names of the people that gave the dinosaur its name. These names are written after the dinosaur's name, and usually the date the name was given is included as well.



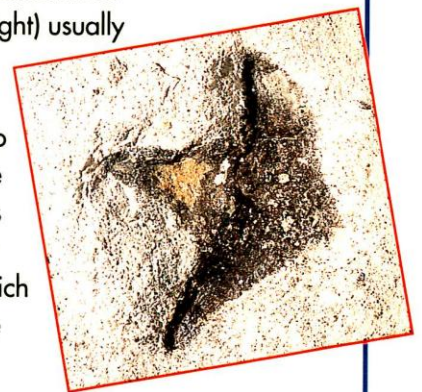
EGGS AND LEGS

Fossil dinosaur eggs are usually given their own names, names that often have '-oolithus' (egg stone) in them. Scientists call these *Protoceratops*' eggs (left),

Elongatoolithus. Other dinosaur eggs include *Faveoolithus* and *Ovaloolithus*.

Dinosaur footprints (right) usually have their own

names too. This is because it is difficult to tell what animal made them. Footprint names usually have '-pus' or '-ichnites' in them, which indicate that the name refers to footprints.



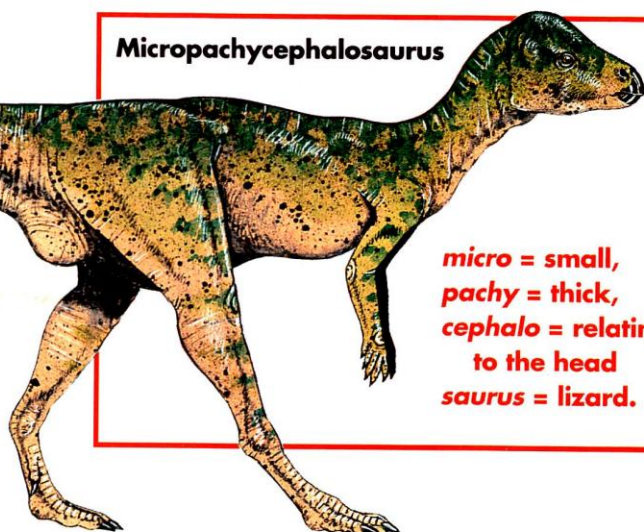
GOT IT!

So, the name '*Baryonyx walkeri*, Charig & Milner, 1986' means 'Big claw discovered by Walker, named by Doctors Alan Charig and Angela Milner in 1986'.



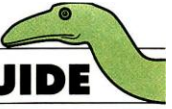
Tiny rabbit-sized *Micropachycephalosaurus* was named for its small size and flat, dome-shaped skull.

Micropachycephalosaurus



**micro = small,
pachy = thick,
cephalo = relating
to the head
saurus = lizard.**

1958

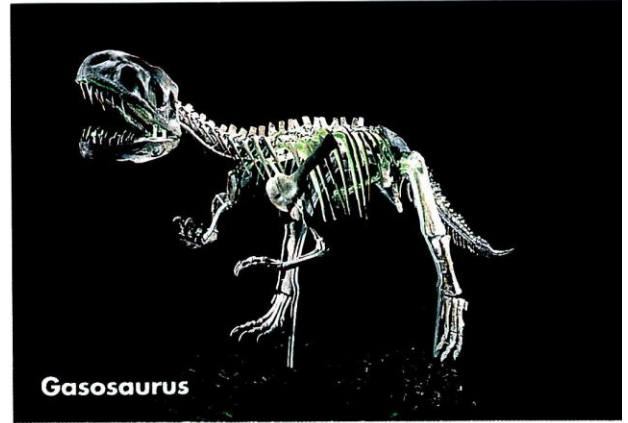


Meet the 'spiny demon god from the river of death!' In spite of its fierce looking horns, this *Stygomoloch spinifer* is a plant-eater.

EASY NAMES

Sometimes names are more straightforward. *Spinosaurus* had spines. *Gasosaurus* was found when engineers were drilling for gas. Names that describe the animal usually come from Greek or Latin. *Heterodontosaurus* is based on *hetero* = different, *don* = teeth, *saurus* = lizard, giving us a 'lizard with different types of teeth'.

Microceratops means 'small horned head' because *micro* = small, *cera* = horn, *tops* = head.



Gasosaurus

IT'S HARD TO SAY

Often, a dinosaur is named after the place where it was found. This means that with all the new discoveries made in China over the last 20 years, many of the new dinosaurs' names sound strange to Western ears. They are also difficult to pronounce! These dinosaurs have names such as *Xiaosaurus dashanpensis*, *Yangchuanosaurus shangyuensis* and *Yaxartosaurus fuyanensis*!

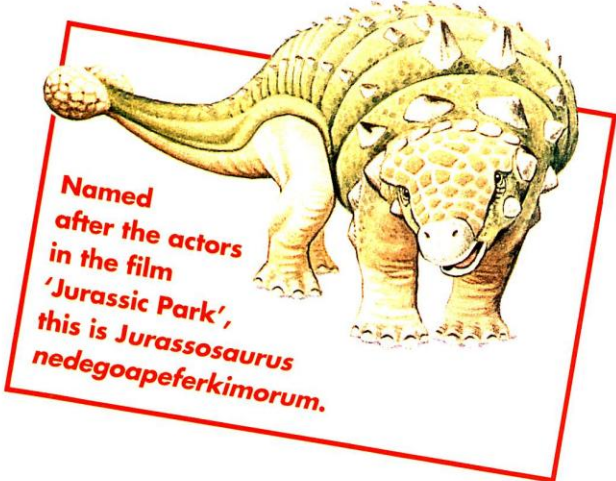
THE NAME GAME

Here are three more complicated dinosaur names, together with their explanations:

Protoceratops andrewsi Granger & Gregory, 1923
Meaning: 'Early horned head discovered by Andrews, named by Granger and Gregory in 1923'

Tuojiangosaurus multispinus Dong, Li, Zhou & Zhang, 1977
Meaning: 'Lizard from Tuojiang with lots of spines, named by Dong, Li, Zhou and Zhang in 1977'

Othnielia rex Galton, 1977
Meaning: 'King animal named by Galton in 1977 to honour the palaeontologist Othniel Charles Marsh'



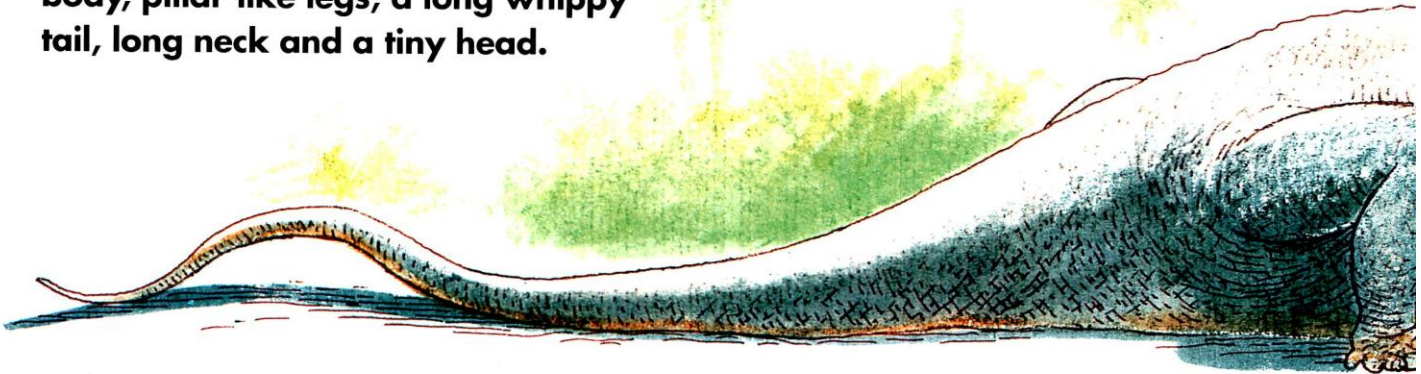
Named after the actors in the film 'Jurassic Park', this is *Jurassosaurus nedegoapeferkimorum*.



The changing image of

sauropods

We all know what a sauropod looks like, don't we? A big elephant-like body, pillar-like legs, a long whippy tail, long neck and a tiny head.



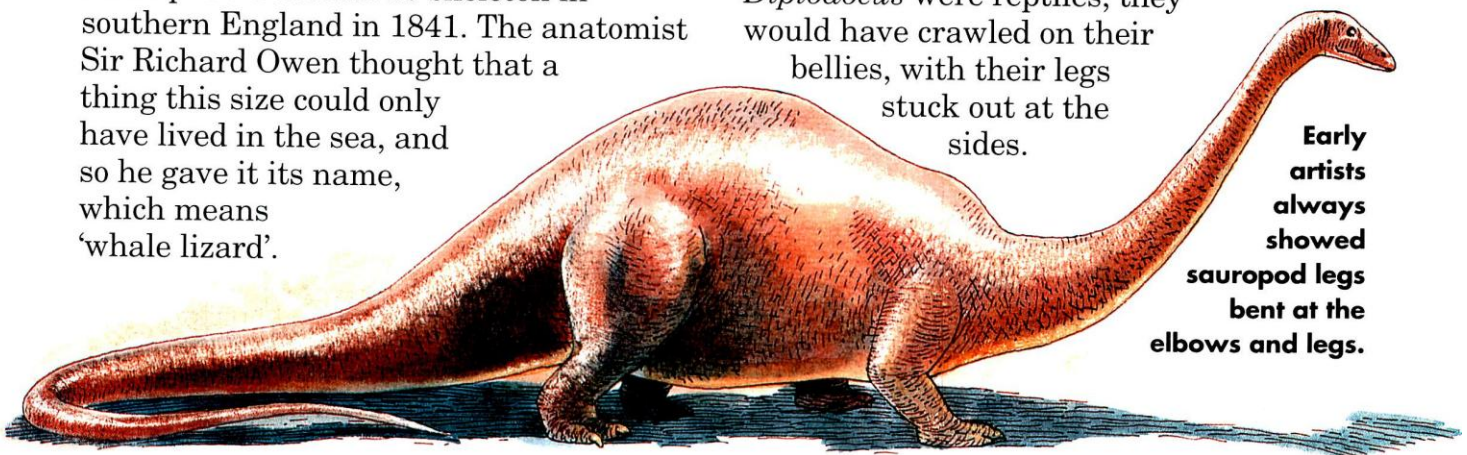
But we also know that there were different types of sauropod, each with different characteristics. *Diplodocus* was lighter and longer than *Apatosaurus*, *Brachiosaurus* was tall rather than long, *Camarasaurus* had a big, box-like head, and so on. However, we were not always aware of these differences.

FIRST GUESS

The first sauropod to be found was an incomplete *Cetiosaurus* skeleton in southern England in 1841. The anatomist Sir Richard Owen thought that a thing this size could only have lived in the sea, and so he gave it its name, which means 'whale lizard'.

FIRST GOOD LOOK

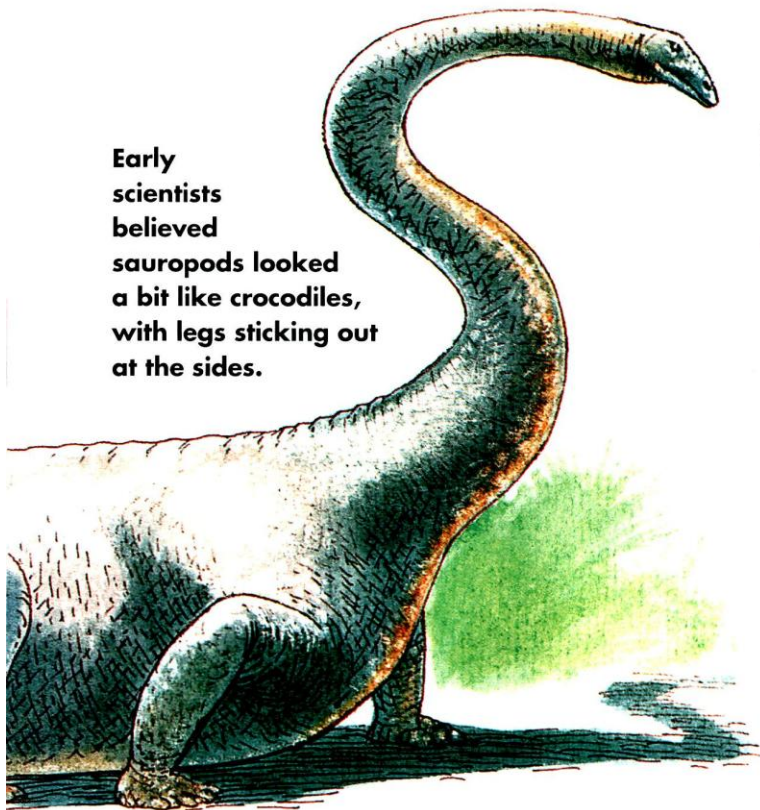
It was not until the 1880s, when American palaeontologists Othniel Charles Marsh and Edward Drinker Cope were battling to find the best dinosaurs, that a whole sauropod skeleton was found. But even with complete skeletons, there was a lot of uncertainty about what these animals actually looked like and how they lived. Some scientists, including Oliver Hay at the Smithsonian Institution, believed that, because sauropods like *Diplodocus* were reptiles, they would have crawled on their bellies, with their legs stuck out at the sides.



Early artists always showed sauropod legs bent at the elbows and legs.

1960

Early scientists believed sauropods looked a bit like crocodiles, with legs sticking out at the sides.



Is it true

that *Apatosaurus* once had another name?

When Othniel Marsh found the first good skeleton, he gave it the magnificent name, *Brontosaurus*, which means 'thunder lizard'. Many years later, it was found that *Brontosaurus* was actually a second specimen of an animal he had already found, called *Apatosaurus*. When an animal ends up with two names like this, the first name is accepted as the true one. *Brontosaurus* was dropped in favour of *Apatosaurus*.

STRAIGHT LEGS

Then William J. Holland, at the Carnegie Museum in Pittsburgh, USA, built a sauropod skeleton with straight legs that looked like an elephant's. This model worked much better.

WALLOWING BEAST

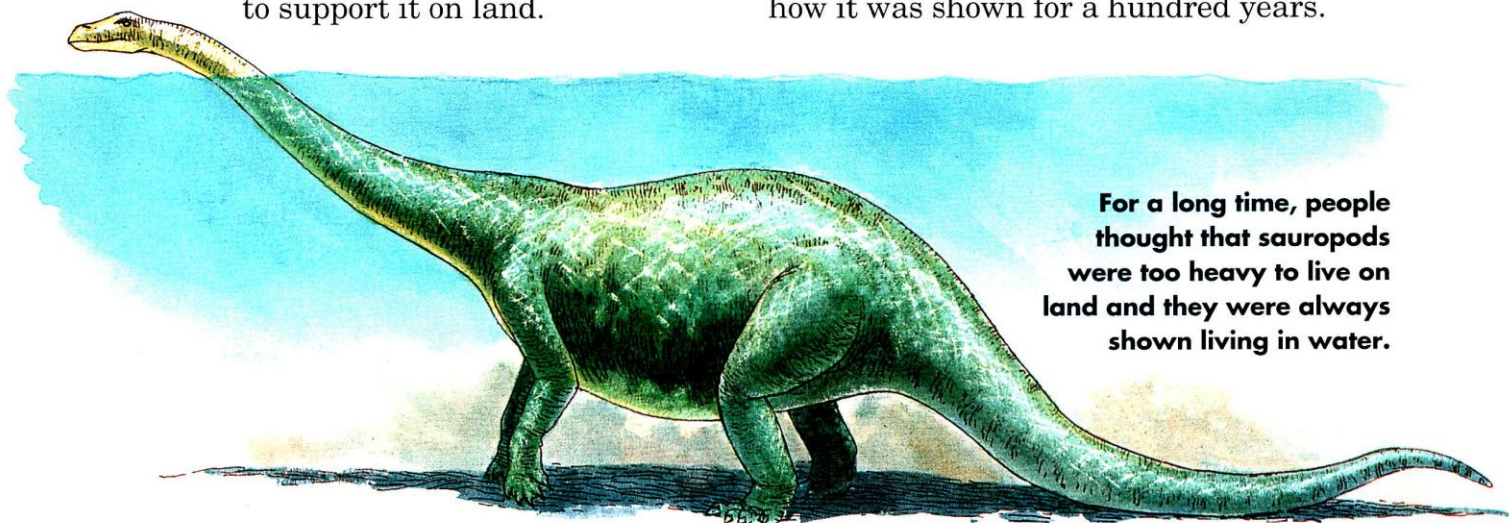
For many years, people thought that sauropods must have lived in water. The animal's body was so big that they thought it must have been too heavy for the legs to support it on land.

NOSE IN THE AIR

Another reason for believing sauropods lived in the water was that the nostrils were on top of the skull. People thought this meant that the animal could remain underwater with just the nostrils showing.

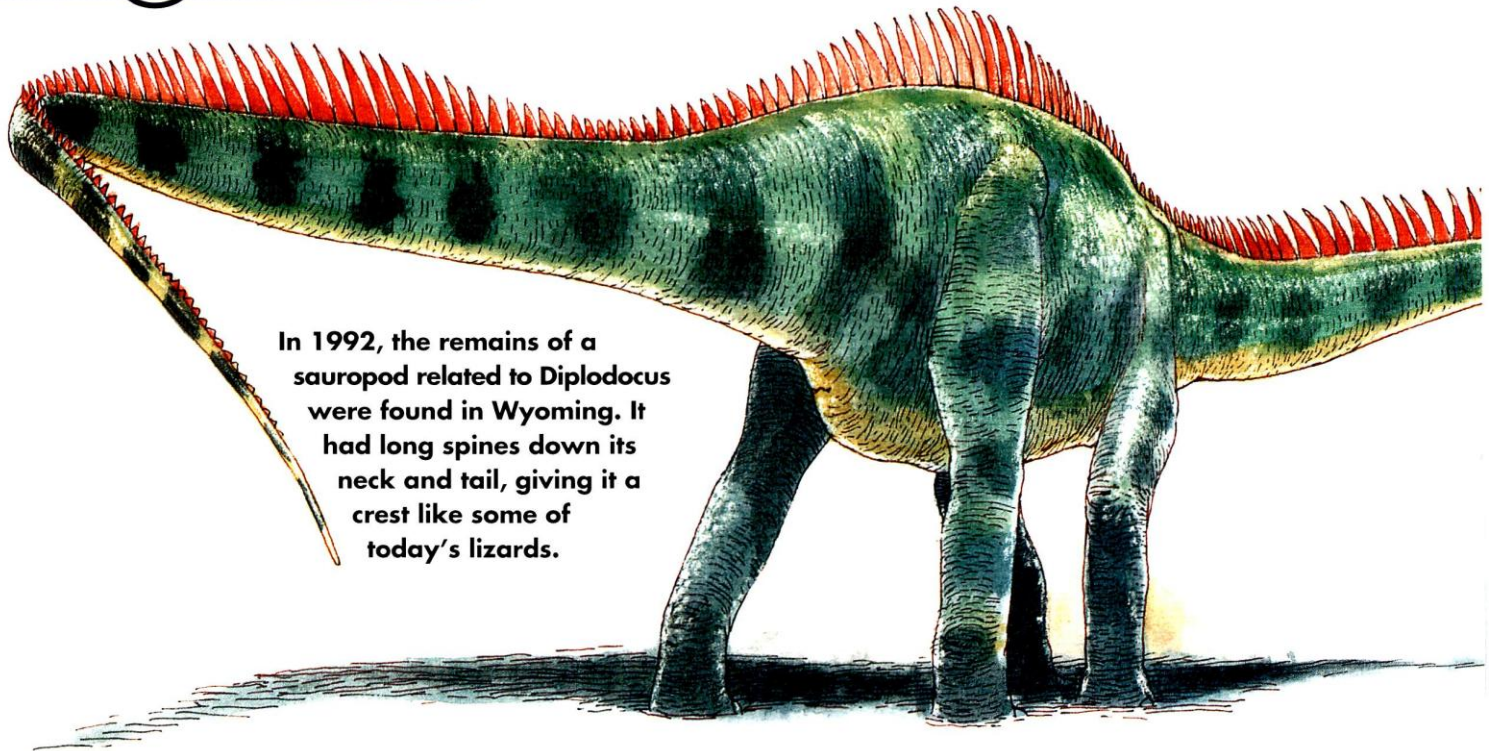
WRONG-HEADED

The first skeleton of *Apatosaurus* was discovered by Marsh, and was missing its skull. He guessed the head would have been short and shaped like a box. Thirty years later, Earl Douglass found a complete skeleton, with a long and narrow skull. But no-one believed him. Marsh was supposed to be the expert, and he said that *Apatosaurus* had a short skull, so that was how it was shown for a hundred years.



For a long time, people thought that sauropods were too heavy to live on land and they were always shown living in water.

1961



In 1992, the remains of a sauropod related to *Diplodocus* were found in Wyoming. It had long spines down its neck and tail, giving it a crest like some of today's lizards.

THE MODERN IMAGE DAWNS

In 1981, people realised that Douglass was right all along. *Apatosaurus* was now shown with a long, narrow head.

OUT OF THE WATER

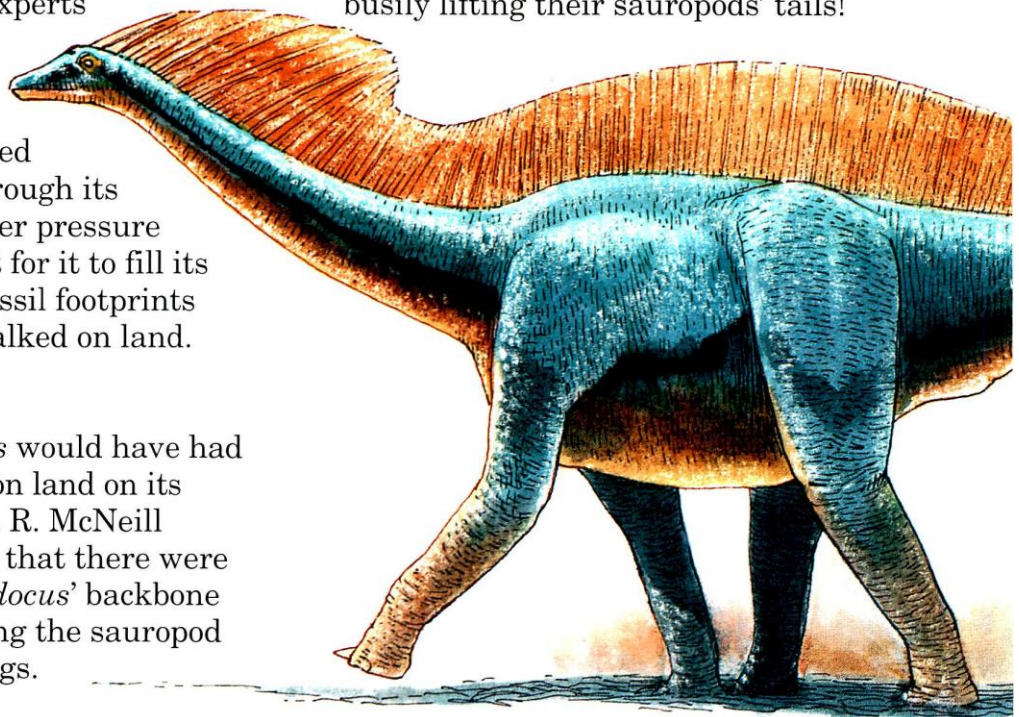
At about the same time, experts stopped believing that sauropods lived in the water. If something as big as *Brachiosaurus* stayed underwater, breathing through its snorkel-like neck, the water pressure would have been too great for it to fill its lungs with air. Anyway, fossil footprints showed that sauropods walked on land.

MORE AGILE

A creature like *Diplodocus* would have had no trouble walking about on land on its four legs – or even on two. R. McNeill Alexander found evidence that there were muscles going from *Diplodocus*'s backbone to its hips and tail, allowing the sauropod to rear up on to its hind legs.

KEEP YOUR TAIL UP

The arrangement of muscles and tendons also showed that the tail was usually held off the ground. This is totally different from the traditional picture of a sauropod's tail dragging behind it. Now museums are busily lifting their sauropods' tails!



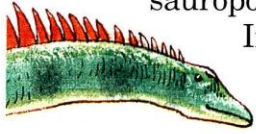
1962

NEW-LOOK SAUROPODS

There have been some more surprises in the last 15 years, and our ideas on what sauropods looked like are still changing.

In 1980, Jose Bonaparte found *Saltasaurus* – an Argentinian sauropod that was covered in armour. In 1991, he found

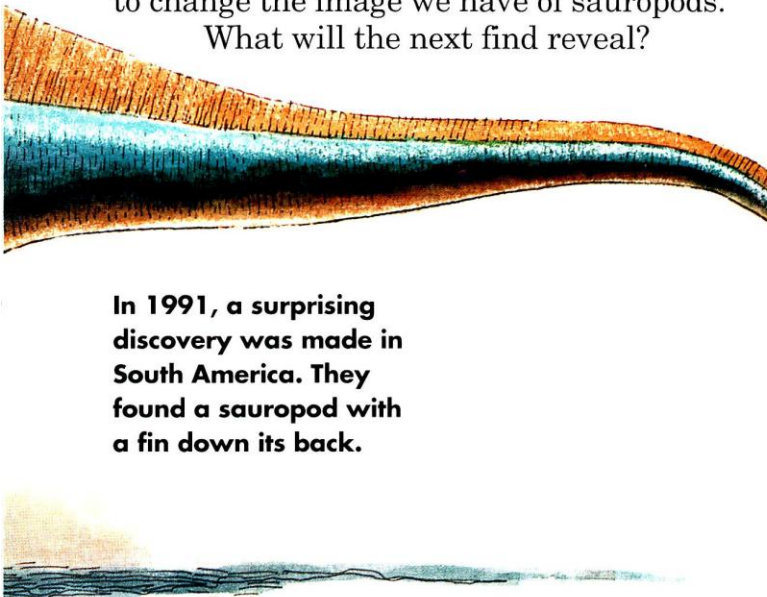
Amargasaurus. This sauropod, which was also from Argentina, had a fin down its neck and back. *Shunosaurus*, found in China in 1983, had a club on the end of its tail, just like *Ankylosaurus*. Then, in 1992, the American palaeontologist Steve Czerkas found the remains of a sauropod related to *Diplodocus*, in Wyoming, USA. It had long spines down its back and tail, giving it a crest like one of today’s lizards.



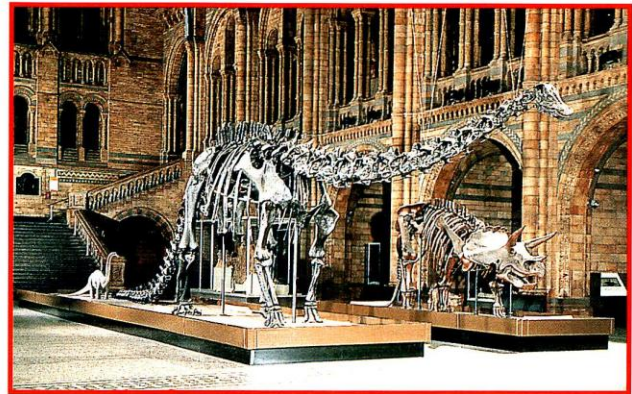
THE OUTER COVERING

The experts have always had to guess what kind of skin the sauropods had. Paintings usually show them with thick, wrinkled, leathery skin, like an elephant’s. However, along with the spiny sauropods found in Wyoming in 1992, there were impressions of its skin. This showed that the sauropod’s skin was covered in lots of little bumps. Every new discovery seems to change the image we have of sauropods.

What will the next find reveal?



In 1991, a surprising discovery was made in South America. They found a sauropod with a fin down its back.



Sauropods used to be shown as plodding, slow animals, dragging their tails on the ground (above). Now, they are shown as active creatures that could rear up on two legs (below)



IT'S A FACT

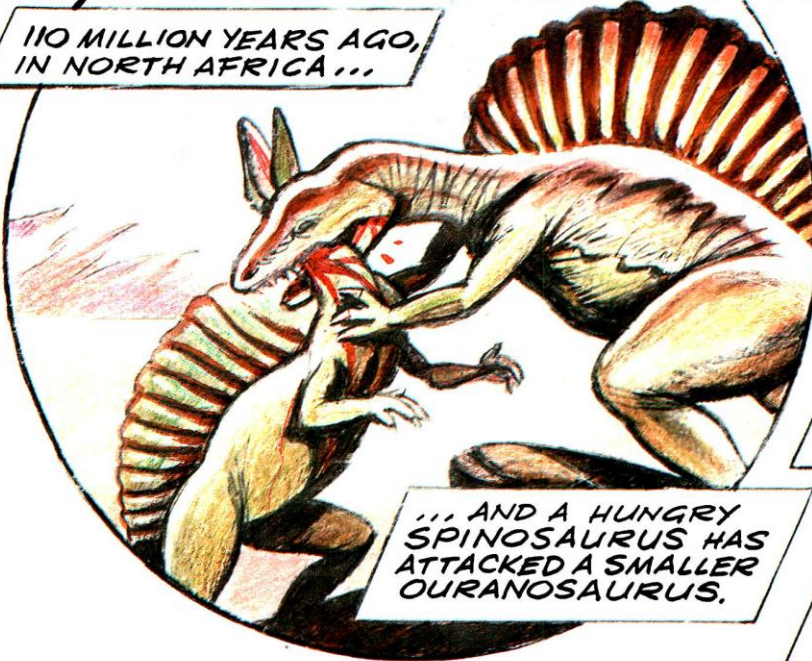
ACTIVE BIRTH

Sauropods probably laid their eggs on the move. *Hypselosaurus* eggs have been found lying in pairs along a line, as though the animal dropped them as it walked along. But some palaeontologists now think the gaps in the hip bones were large enough for them to give birth to live young.



A DAY IN THE LIFE OF SPINOSAURUS

110 MILLION YEARS AGO, IN NORTH AFRICA...



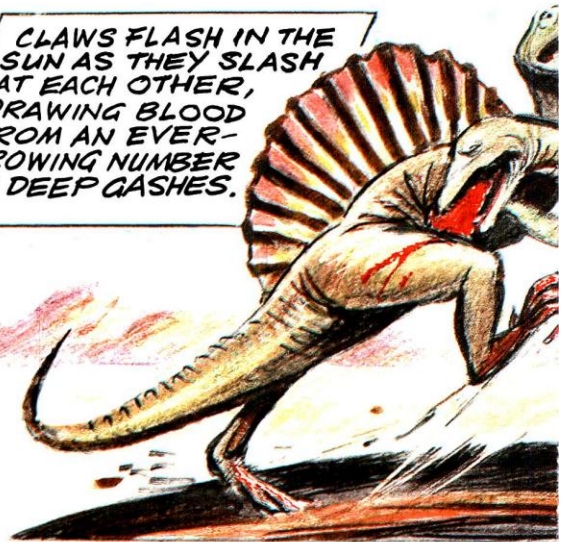
... AND A HUNGRY SPINOSAURUS HAS ATTACKED A SMALLER OURANOSAURUS.

THE OURANOSAURUS HAS LITTLE DEFENCE AGAINST THE SHARP CLAWS AND RAZOR TEETH OF THE VICIOUS SPINOSAURUS.



SOON THE OURANOSAURUS IS ON THE GROUND. SPINOSAURUS GOUGES MOUTHFULS OF FLESH FROM THE STRICKEN BEAST. WHEN IT HAS EATEN ITS FILL, IT WILL REJOIN ITS PACK.

CLAWS FLASH IN THE SUN AS THEY SLASH AT EACH OTHER, DRAWING BLOOD FROM AN EVER-GROWING NUMBER OF DEEP GASHES.



THE DEFEATED SPINOSAURUS SINKS TO THE GROUND, BRUISED AND WEAKENED BY COUNTLESS BLOWS. LOSS OF BLOOD WEAKENS HIM EVEN MORE, AND HIS ASSAILANT CONTINUES TO KICK AND GOUGE HIM MERCILESSLY...



WITH ONE LAST KICK, THE VICTORIOUS SPINOSAURUS STOMPS OFF TO THE WATCHING FEMALES. SIMILAR STRUGGLES WILL HAVE TAKEN PLACE AMONG ALL OTHER PACKS.



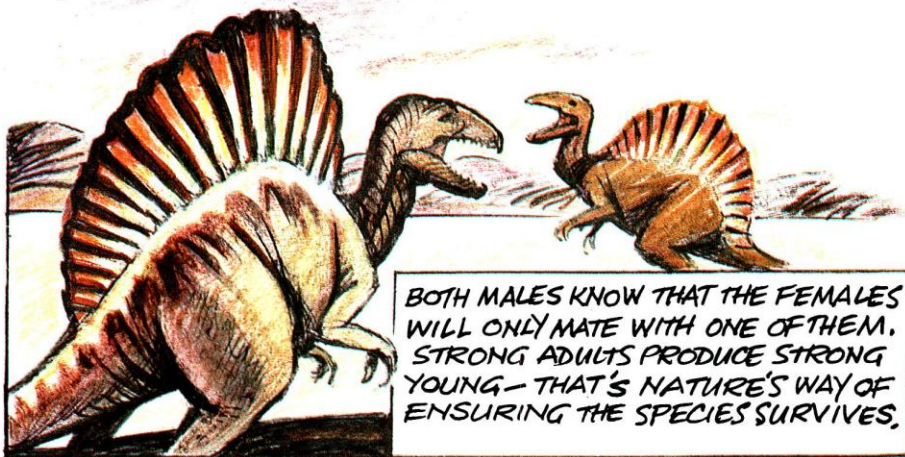


AS THE SUN RISES IN THE SKY, THE TEMPERATURE GETS HOTTER AND HOTTER. THERE ARE FEW PLACES TO SHELTER.

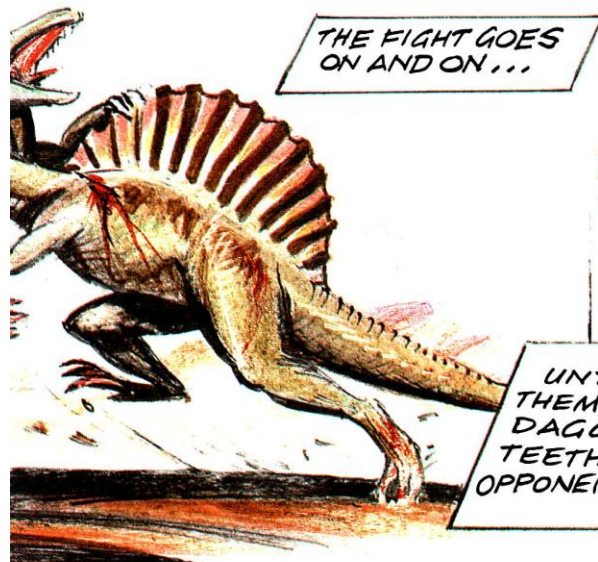


TO KEEP THEMSELVES COOL, THE SPINOSAURUS STAND WITH THEIR SAILS ERECT TO CATCH WHAT LITTLE BREEZE THERE IS.

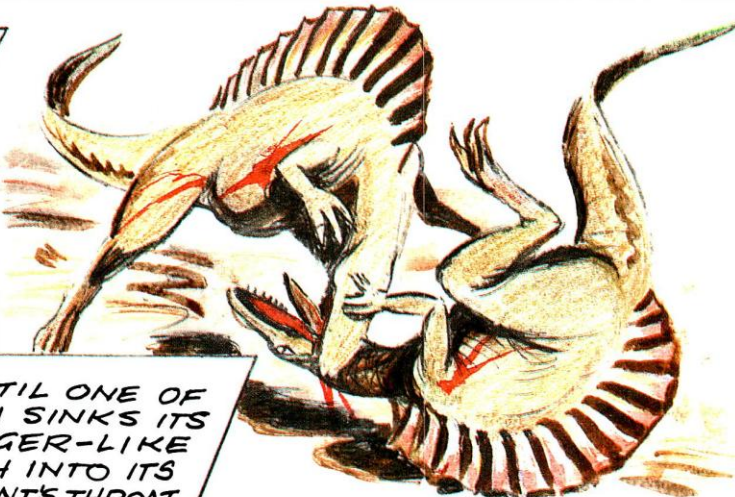
TWO OF THE SPINOSAURUS HAVE MORE BRIGHTLY COLOURED SAILS. THEY ARE MALES. THE MORE COLOURFUL FRILLS HERALD THE START OF THE MATING SEASON.



BOTH MALES KNOW THAT THE FEMALES WILL ONLY MATE WITH ONE OF THEM. STRONG ADULTS PRODUCE STRONG YOUNG - THAT'S NATURE'S WAY OF ENSURING THE SPECIES SURVIVES.



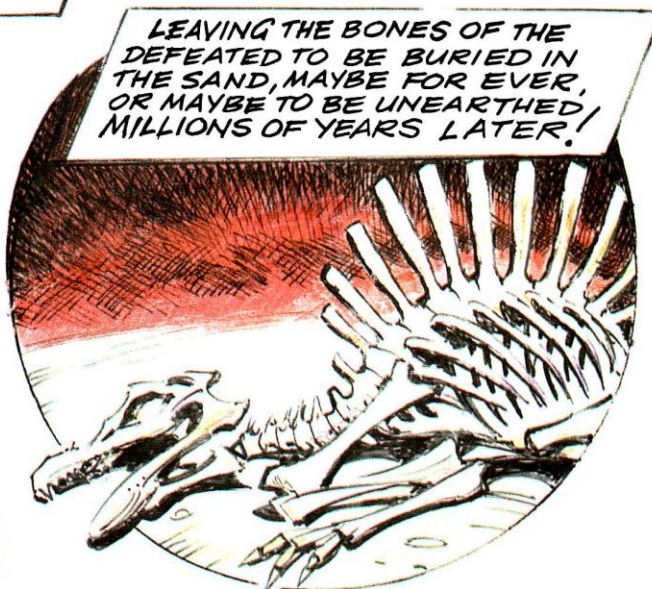
THE FIGHT GOES ON AND ON...



UNTIL ONE OF THEM SINKS ITS DAGGER-LIKE TEETH INTO ITS OPPONENT'S THROAT.



SOME TIME LATER, THE EGGS FERTILISED BY THE VICTORIOUS MALE WILL HATCH, PRODUCING A NEW GENERATION, HOPEFULLY STRONG ENOUGH TO SURVIVE AND GROW UP, WHEN THE SAME RITUAL WILL BE REPEATED...



LEAVING THE BONES OF THE DEFEATED TO BE BURIED IN THE SAND, MAYBE FOR EVER, OR MAYBE TO BE UNEARTHED! MILLIONS OF YEARS LATER!

Improve and test your knowledge with... **FACT FILE**

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

Dino dustbin?

In Utah, North America, scientists found a *Diplodocus* skeleton with clam shells, bits of broken bone and pieces of wood lying in its stomach area. One study based on this find suggested that *Diplodocus* must have eaten anything and everything it could find! Now we know that these bits of rubbish were washed into the skeleton after the *Diplodocus* died.

Noisy beasts

Dinosaurs could probably hear very well because they had quite complicated ear structures. This would mean they may have made loud noises to communicate with each other.

5

Elongatoolithus is the name for:

- a) *Protoceratops*' eggs
- b) *Protoceratops*' footprints
- c) any dinosaur eggs

4

Elasmosaurus was the biggest:

- a) dinosaur
- b) plesiosaur
- c) pterosaur

3

Gasosaurus was named because it was found:

- a) at a place called Gaso
- b) when drilling for gas
- c) after a scientist called Gasos

2

Microceratops means:

- a) 'small horned head'
- b) 'large pointed feet'
- c) 'found on a small mountain'

1

How long was the biggest mammal that existed at the time of the dinosaurs?

- a) about 10m
- b) about 1m
- c) more than 20m

1966

Early movers

The first full-sized, moving dinosaur models went on display in 1933. They were exhibited at the World's Fair in New York.

6

South America's largest-known dinosaur is:

- a) *Argentinosaurus*
- b) *Diplodocus*
- c) *Hesperornis*

7

Ostracods are mini-relatives of:

- a) crabs
- b) sea urchins
- c) snails

8

Andrewsarchus was probably the biggest:

- a) prehistoric cat
- b) mosasaur
- c) meat-eating mammal

9

Museums are doing what to the tails on their sauropods?

- a) lifting them
- b) lowering them
- c) cutting them off

10

Microscopic creatures in the sea are called:

- a) phytoplankton
- b) zooplankton
- c) soup-plankton

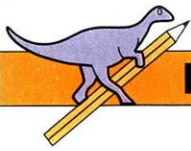
It wasn't just dinos in the Jurassic you know!



Oligokyphus was a little reptile that lived by the side of rivers and streams. It was a bit like today's water vole. *Oligokyphus* lived in Europe, Africa, the Americas and Asia during the Jurassic. It had sharp front teeth for biting and a row of cheek teeth for grinding.

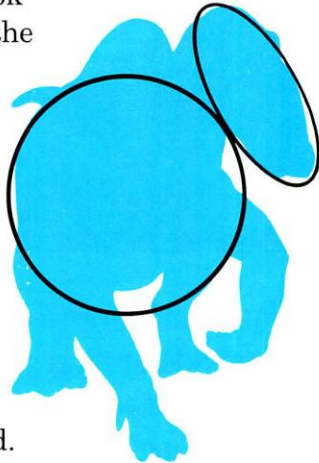
Answers to the questions on inside back cover

1967

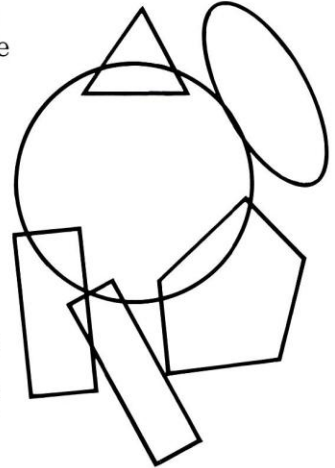


ARALOSAURUS

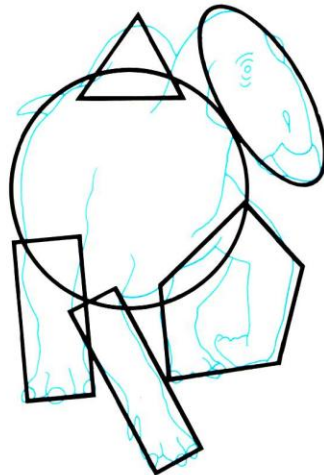
1 Have a good look at a picture of the dinosaur you want to copy. Get your paper and a pencil ready and start drawing! Draw a large circle where you want the main part of the body to go. Then, on top of the body, draw in a long egg shape for the head.



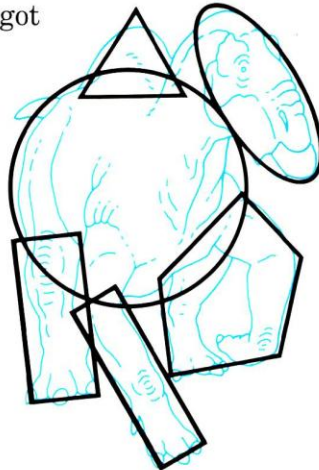
2 Now for the legs, draw some simple shapes to show where the legs are going to go. Make sure you put them in at the correct angle. In our picture of *Aralosaurus*, the two legs on the right make a five-sided shape called a pentagon. Next, draw a triangle to show the curve of its back.



3 When you are sure you have got the basic shape of your dinosaur right, start filling in the outline of the head, body and legs. Do not press too hard with your pencil, so you can rub out any mistakes you make.



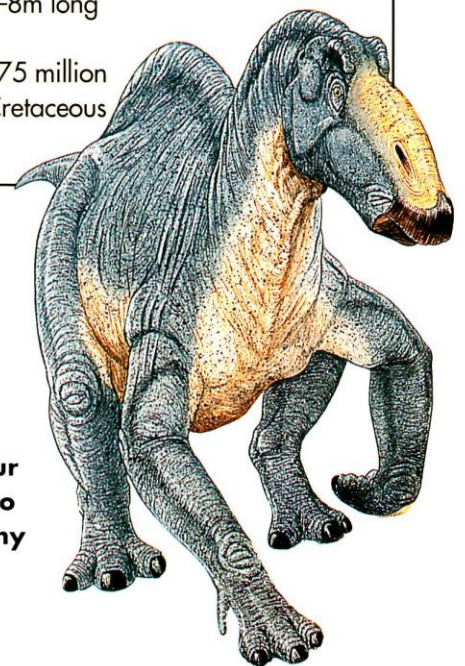
4 Once you have got the outline right, start filling in all the little details. Have another careful look at the dinosaur you are copying. Can you see the way the skin wrinkles where the knees are bent?



Fact box

Aralosaurus had a ridge above its eyes and was longer than an elephant.

- **NAME:** *Aralosaurus* (a-rol-o-saw-rus) means 'Aral reptile'; it was found near the Aral sea
- **GROUP:** dinosaur
- **SIZE:** about 6–8m long
- **FOOD:** plants
- **LIVED:** about 75 million years ago in Late Cretaceous central Asia



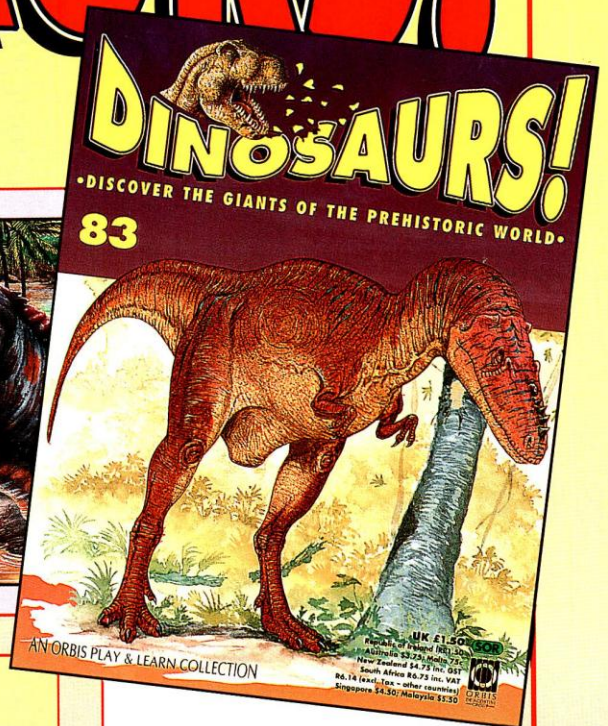
Colour in your drawing to make it look really professional. Nobody really knows what colour dinosaurs were, so you can choose any colours you like!

1968

COMING IN PART 83 OF

DINOSAURS!

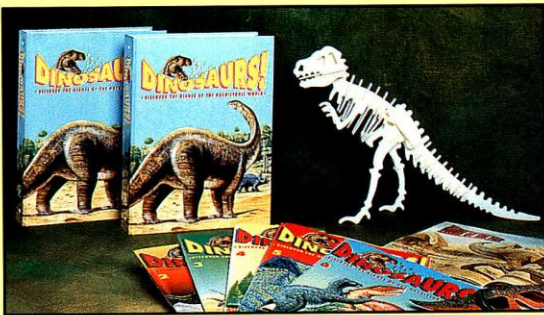
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PLUS

ASK THE EXPERT – your questions answered by **Dr David Norman** And **SPOTTER'S GUIDE** **HISTORY IN PICTURES** **3-D GALLERY**

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

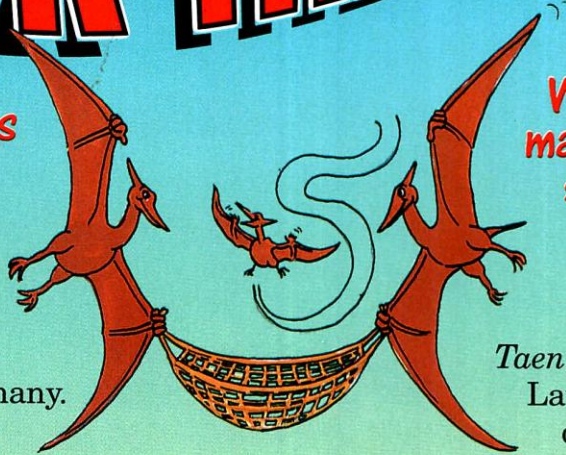


Dr David Norman of Cambridge University answers your dinosaur questions

ASK THE EXPERT

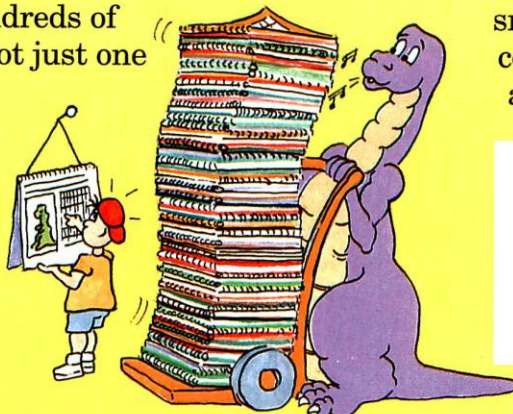
How small was the smallest pterosaur?

The smallest pterosaur was discovered in Solnhofen, Germany. This was a baby pterosaur with a wingspan of 18cm and a body only 2cm long. It was probably just a few weeks old when it died. Of the adult pterosaurs, *Pterodactylus elegans* is one of the smallest, with a wingspan of about 25cm.



How much longer would people have to exist for them to be around as long as the dinosaurs were?

Human beings have been around for about 200,000 years. Dinosaurs existed for about 170 million years. So, humans would have to exist for another 169.8 million years to equal the length of time spent on Earth by dinosaurs. But, this is not a fair comparison. There were hundreds of different dinosaur species, not just one as in the case of the human species. Each dinosaur species lasted between two and four million years, so we only have about 1.8 million years to go!



What was the biggest mammal alive when dinosaurs still walked the earth?

The largest mammal that lived alongside the dinosaurs was probably a creature called *Taeniolabis*, which lived during the Late Cretaceous Period, at the end of the Age of the Dinosaurs.

Taeniolabis' skull is known to have reached lengths of about 18cm.

Unfortunately, very little is known about the rest of its body, so we can only guess how long it was. *Taeniolabis* was a multituberculate mammal, which means it had lots of little points on its teeth. Experts think that multituberculates looked like large rodents, so it is likely that *Taeniolabis* was about the size of a small capybara or a large coypu. These animals are about 1m long.

