

Fossils: myths, mystery and magic

Fossils have fired the human imagination for thousands of years. To ancient civilisations they were objects of fear and wonder. Now, the legends these strange, beautiful relics inspired are celebrated in a major exhibition. Steve Connor digs up the facts – and the fiction

Monday, 12 February 2007

¹ Ancient bones and other *fossilised* remains have been known to humans for millennia but it is only over the past 300 years or so that their true origins have been revealed. Until then, a rich *folklore sought* to explain these enigmatic relics from the past. Every culture in every country, it seems, wanted an explanation for the unusual objects and bizarre shapes that often seemed to *emerge*, as if by magic, from the ground.

² Imagine a group of *prehistoric* hunters, whose trail has brought them to a remote cave in northern Europe. They discover a cave and in it they find the empty skull of a huge, unrecognisable beast sitting on top of a pile of bones. It is easy to see how the myth of cave-dwelling dragons who fed on other large creatures might have come about.

³ In fact, the mysterious beast would have been a woolly rhinoceros, which *roamed* Ice Age Europe

before it went *extinct* about 10,000 years ago. Like many animals before it, the rhino would have used caves to take *refuge* from the *elements* – unaware that its bones would become entombed for thousands of years.

⁴ In Japan, fossilised sharks' teeth were said to be the pointed thumbnails of Tengu Man, a mythical mountain goblin. In India, the fossilised shell of ammonites – marine molluscs – were known as saligrams, symbols of the god Vishnu, which were kept in temples to purify water. In China, the fossils of mollusc-like brachiopods were known as Shih-yen, or stone swallows, which were said to be able to fly during thunderstorms.

⁵ Some fossils were ground into powder and taken as a potion to cure a rich variety of *ailments*. Other, like the saligrams of Hindus and the 'tonguestones' of Christians, were dipped into drink to ward off evil.

'Every culture in every country ... wanted an explanation'

⁶ Fossils were given exotic names in the many attempts to try to explain their existence. 'Names such as thunderbolts, tonguestones, toadstones, snakestones and devil's toenails became widely used for different types of fossils in Britain,' says Paul Taylor, a fossils expert at the Natural History Museum in London. Many resembled parts of the human body, and so became associated with the practice of sympathetic medicine – curing like with like. In Chinese medicine, the 'dragon's teeth' used in some recipes were in fact the teeth and bones of common animals.

⁷ It was not until the mid-18th century that the true nature of ➡

English in Mind Second edition

Level 5 Unit 1

Article

THE  INDEPENDENT

➡ fossils began to emerge. A physician called Steno, who lived and worked in Florence, realised that the peculiar stone tongues that fell out of rocks were actually the teeth of ancient sharks. He was able to prove his theory after dissecting the head of a huge shark caught near Livorno in 1666. His 'eureka' moment was the beginning of the end for fossil folklore – and the rest, as they say, is palaeontology.

⁸ An exhibition, Fossil Folklore, opens today at the Walter Rothschild Zoological Museum in Tring, Hertfordshire, and runs until 8 July.

⁹Protoceratops and the griffin

The fossil Protoceratops, which means 'first horned face', was a sheep-sized herbivorous ceratopsian dinosaur from the Upper Cretaceous period (about 100 million years ago), that lived in what is now Mongolia. Protoceratops had a large neck-frill but, unlike later ceratopsians, lacked well-developed horns.

The folklore Fossilised skulls of this dinosaur with a bird-like beak have been unearthed in the Gobi desert, which is where the myth of the gold-guarding griffin originates – a ferocious beast with the body of a lion, the head and wings of an eagle and talons as big as bull-horns.

The griffin myth probably originated from the tales of Scythian gold miners who may have come across Protoceratops skulls on the edge of the Altai mountains, in

what is now Siberia. The uncanny resemblance between these two creatures suggests that the fossilised skull and bones of the real dinosaur may have been the inspiration for the vivid descriptions of the mythological beast.

¹⁰Pyramids, slave's lentils and angel's money

The fossil Nummulites are disc- or lenticle-shaped fossils with a complex system of internal chambers arranged in a coil. Despite the fact that they can reach 6cm in diameter, nummulites are the skeletons of single-celled organisms (Foraminifera) that resembled the amoeba. They lived on the sea-bed mostly during the Eocene and Oligocene periods (about 50 to 25 million years ago).

The folklore The Egyptian pyramids of Giza are built of limestone packed with nummulites. Strabo the Geographer in the first-century BC was told that the lentil-shaped fossils were remnants of the food of the slaves who built the pyramids. Other nummulites have flat shells resembling coins in shape and size; in folklore, they have been dubbed 'angel's money'.

¹¹Echinoids and jewstones

The fossil Balanocidaris is a sea urchin from the late Jurassic period (about 160 to 145 million years ago). The delicate bodies of these animals, distantly related to the starfish, often disintegrated after

death. However, club-like spines attached to the bodies of the living were more robust, and survived to become fossilised.

The folklore Crusaders collected Balanocidaris fossils, which they called 'jewstones', from the Holy Lands and wore them as lucky amulets. The fossils have also been traced back to Ancient Egyptian communities from around 650BC. Sometimes apothecaries would grind the bladder-like stones into a powder, to be used as a cure for various urinary-tract problems.

¹²Insects in amber and the DNA myth

The fossil When resin oozed from ancient trees, it sometimes trapped insects and other small animals and plants. When it fossilised, the organism was often perfectly preserved.

The folklore We can blame Michael Crichton, author of Jurassic Park, for the myth that it is possible to extract dinosaur DNA from the last blood-meal of a prehistoric mosquito trapped in amber, and use it to reconstruct a dinosaur's genome and from that the animal itself.

In fact, any DNA that survived in amber would be so fragmented that it would be impossible to recreate living dinosaurs from it. That didn't stop Steven Spielberg from cashing in on the idea when he made the hugely successful 1993 film of Crichton's book.

English in Mind Second edition

Level 5 Unit 1

Article

THE  INDEPENDENT**¹³Fish teeth and toadstones**

The fossil *Lepidotes* is an extinct genus of ray-finned fish that lived during the Jurassic and Cretaceous periods. Their bodies were covered with thick scales and they had batteries of hard, round teeth to crush the shells of their molluscan prey.

The folklore *Lepidotes*' teeth would often become separated from their jaws and, when fossilised, took on the appearance of perfectly formed little stones. Legend linked them to the mythical 'jewels' that were said to exist in the heads of toads. This myth can be traced back to at least the time of the Roman natural historian Pliny the Elder (AD23 to 79), and the idea is mentioned in *As You Like It*.

'Like tonguestones, toadstones were considered to be antidotes for poison and were also used in the treatment of epilepsy,' says Paul Taylor of the Natural History Museum. From the 14th century, toadstones were set in rings for their magical properties. The toadstone had to be taken from an old toad that was still alive, and, according to the 17th-century naturalist Edward Topsell, this could be done by placing a toad on a piece of red cloth, which caused it to cast out its stone.

¹⁴Fossil trees and giant serpents

The fossil *Lepidodendron* is an extinct genus of a tree-like plant related to club mosses. They could

sometimes grow to heights of 30 metres and have trunks a metre thick, and thrived during the Carboniferous period (360 to 300 million years ago).

Lepidodendrons had tall, thick trunks that rarely branched and were topped with a crown of branches bearing leaves. The leaf scars on their trunks and stems looked like tyre tracks or alligator skin.

The folklore *Lepidodendrons*' rotted and compacted remains formed the coal seams exploited in Britain. After their leaves had fallen off, their trunks became covered with diamond-shaped scars, which resembled the scales of a reptile. As late as 1851 a specimen of this fossil tree was exhibited in Neath as a gigantic fossilised serpent. Visitors could view the 8ft-long specimen for the sum of one shilling (tradesmen six pence and working classes three pence).

Lepidodendrons are now known as scale trees.

¹⁵Oysters and devil's toenails

The fossil *Gryphaea* is an extinct genus of oyster from the Jurassic period (200 to 145 million years ago). They lived on the seabed in shallow waters, often in large numbers, feeding on plankton. Their fleshy parts occupied the cavity between the two valves of their shells, just like modern oysters, although the valves of *Gryphaea* were much thicker than those of most modern oysters. The larger,

curved valve rested on the mud of the sea floor.

The folklore The thick, curved shells of *Gryphaea* were reminiscent of a badly manicured 'devil's toenail'. The contorted shape of the fossils also resembled arthritic joints, and in Scotland, devil's toenails were used to cure joint pain, on the basis of the sympathetic-medicine approach of like curing like.

Other local folkloric names for these fossils are 'crouching stones', 'cuckoo shells' and 'Milner's thumbs'. According to the diary of Abraham de la Pryme for 10 April 1696, burnt and powdered Milner's thumbs could cure the sore back of a horse in two or three days.

¹⁶Belemnites and thunderbolts

The fossil Belemnites are an extinct group of marine molluscs. Like squid, belemnites had torpedo-shaped bodies with long tentacles, but, unlike squid, their arms, apparently, had hooks. Belemnites are common in rocks formed during the Jurassic and Cretaceous periods, vanishing in the mass extinction 65 million years ago.

The folklore When fossilised, Belemnites look like the sharpened tip of a spear. In the Middle Ages, when fields in the Norfolk chalk and Oxford clay outcrops of England were ploughed, they would appear after a thunderstorm. The myth soon emerged that they were thunderbolts. It is more likely that the heavy downpour had ➡

English in Mind Second edition

Level 5 Unit 1

Article

THE  INDEPENDENT

➡ washed away the surrounding soil to reveal the fossils. Belemnites are also known as 'St Peter's fingers', 'devil's fingers' and 'ghostly candles'.

17 Trilobites and water bugs

The fossil Trilobites are extinct arthropods that populated Palaeozoic seas from the Cambrian (540 million years ago) to the Permian (250 million years ago). More than 15,000 species have been described. The typical trilobite was a woodlouse-like sea-floor creature; some species sifted food particles from the mud, while others were active predators or scavengers.

The folklore Fossil trilobites are common throughout the world. In North America, the Pahrump people believed these little 'water bugs' had medicinal properties if worn as a necklace. Many trilobite fossils have been found with small holes drilled into them to hold a thread. It was believed that these fossils could guard against anything from a sore throat to diphtheria and even stray bullets during the days of the Wild West.

A trilobite called Calymene was so abundant in the limestone once quarried and mined around Dudley in the West Midlands that, until recently, it appeared on the town's coat-of-arms. It became known locally as the Dudley Bug or Dudley Insect and, during the 18th century, Dudley miners supplemented their incomes by selling these attractive fossils.

18 Sharks' teeth and tonguestones

The fossil This fossilised shark's tooth is from Carcharodon megalodon, a giant prehistoric shark from the Neogene (between about 23 and five million years ago). Reaching an estimated 50 feet in length, it may have been the largest predatory fish to have ever lived.

The folklore Fossilised sharks' teeth are fairly common. To the ill-informed they must have been peculiar objects, often seeming eerily well-polished even when dug fresh from the ground. Their similarity to tongues led to the idea that they were the petrified tongues of serpents a creature associated with the devil. It became a fairly common medieval practice to dip a tonguestone in a glass of wine proffered at a banquet to neutralise any poison that an enemy may have added to the drink.

Many tonguestones were unearthed on the island of Malta and their appearance was used as evidence to support the folklore of St Paul, who was said to have been shipwrecked on the island in AD60. 'After being bitten by a snake that rose out of a fire built to warm the shipwrecked sailors, St Paul is said to have flung the snake back into the fire and cursed all of the snakes on the island, causing them to lose their eyes and tongues,' says the Natural History Museum's Paul Taylor.

19 Ammonites and snakestones

The fossil Ammonites are an extinct group of marine animals of great value to geologists for correlating rocks of the same age in different places. Their living relatives include octopus, squid, cuttlefish and the pearly nautilus. The heyday of ammonites was during the Jurassic (200 to 145 million years ago).

The folklore Ammonites are one of the most common fossils found in Britain. According to Paul Taylor, they were originally called Cornu ammonis, or horns of Ammon, a Greek god with curled horns. 'Ammonites must have been puzzling objects to people unfamiliar with the existence in the Indian and Pacific oceans of a living analogue the pearly nautilus,' he says.

So ammonites became known as 'snakestones' and were used as evidence to back up stories of snakes being cast out by Christian saints, from St Hilda, the Saxon abbess of Whitby, who turned out all the snakes before building an abbey, to St Patrick of Ireland which has no native snakes.

Snakes and serpents were seen as devilish, so it was important to cast them out before building on a sacred place. Sometimes people carved a head of a snake on the ammonite to reinforce the mythical story.

Hindus call ammonites from the Gandaki river in Nepal ➡

English in Mind Second edition

Level 5 Unit 1

Article

THE  INDEPENDENT

➡ ‘saligrams’. They are believed to represent the discus or chakra held in one of the six hands of the god Vishnu.

20 Pygmy elephants and Cyclops

The fossil Several species of dwarf elephant evolved on different Mediterranean islands during the Pleistocene (about two million to 10,000 years ago). Most of these originated from populations of normal-sized elephants (*Elephas antiquus*) that colonised these regions when sea-levels were low, and became isolated when they rose again.

The folklore Ancient people must have encountered the skulls of extinct pygmy elephants on islands such as Malta and Sicily, where the species thrived before the arrival of prehistoric humans. Although they had evolved to become smaller, they were still relatively large animals with bigger skulls than any

other living animal in the vicinity. Anyone unfamiliar with elephants could have easily imagined that the central nasal opening in the animal's forehead was an eye socket. This interpretation may have given rise to legends about a race of one-eyed giants. Intriguingly, Homer's hero, Odysseus, lands on an island where there is a large cave, the home of Polyphemus the Cyclops. It is possible that the fossils of pygmy elephants were first discovered in remote caves on islands such as Sicily.

21 Woolly rhinos and dragons

The fossil The woolly rhinoceros (*Coelodonta antiquitatis*) is an extinct species that lived mostly during the Pleistocene (1.8 million to 10,000 years ago), surviving beyond the last ice age before becoming extinct. It inhabited the northern steppes of Eurasia and this one was found in Cambridgeshire. This plant-eater was about

3.5 metres (11 feet) long and had a flat horn that enabled it to push aside snow to graze. The woolly rhino had thick fur and fat to keep it warm in the cold.

The folklore There is strong evidence to suggest the fossilised bones of woolly rhinos were taken to be the bones of dragons. The rhinoceros would have been unfamiliar to ancient Europeans and its large, unusually shaped skull could have easily inspired frightening fantasies about fire-breathing creatures.

‘The historical spread of dragons is the same as that of Pleistocene fossil rhinos,’ says Andy Currant, ice age mammal curator at the Natural History Museum. ‘The fact that no one recognised their anatomy until about 1700 is significant. Dragons are usually linked to caves where woolly rhinos are often found and rhino skulls have been found on bone heaps.’ ■