

= Crystal Palace Dinosaurs =

The Crystal Palace Dinosaurs , also known as Dinosaur Court , are a series of sculptures of extinct animals (including dinosaurs) and mammals in Crystal Palace Park , now in the London borough of Bromley . Commissioned in 1852 to accompany the Crystal Palace after its move from the Great Exhibition in Hyde Park and unveiled in 1854 , they were the first dinosaur sculptures in the world , pre-dating the publication of Charles Darwin 's *On the Origin of Species* by six years . While to varying degrees inaccurate by modern standards , the models were designed and sculpted by Benjamin Waterhouse Hawkins under the scientific direction of Sir Richard Owen , representing the latest scientific knowledge at the time . The models were classed as Grade II listed buildings from 1973 , extensively restored in 2002 , and upgraded to Grade I listed in 2007 .

The models represent fifteen genera of extinct animals , not all dinosaurs . They are from a wide range of geological ages , and include true dinosaurs , ichthyosaurs , and plesiosaurs mainly from the Mesozoic era , and some mammals from the more recent Cenozoic era .

= History =

Following the closure of the Great Exhibition in October 1851 , Joseph Paxton 's Crystal Palace was bought and moved to Penge Place atop Sydenham Hill , South London by the newly formed Crystal Palace Company . The grounds that surrounded it were then extensively renovated and turned into a public park with ornamental gardens , replicas of statues and two new man-made lakes . As part of this renovation , Benjamin Waterhouse Hawkins was commissioned to build the first ever life-sized models of extinct animals . He had originally planned to just re-create extinct mammals before deciding on building dinosaurs as well , which he did with advice from Sir Richard Owen , a celebrated biologist and palaeontologist of the time . Hawkins set up a workshop on site at the park and built the models there . The models were displayed on three islands acting as a rough timeline , the first island for the Paleozoic era , a second for the Mesozoic , and a third for the Cenozoic . The models were given more realism by making the water level in the lake rise and fall , revealing different amounts of the dinosaurs . To mark the launch of the models , Hawkins held a dinner on New Year 's Eve 1853 inside the mould of one of the *Iguanodon* models .

Hawkins benefited greatly from the public 's reaction to the dinosaurs , which was so strong it allowed for the sale of sets of small versions of the dinosaur models , priced at £ 30 for educational use . But the building of the models was costly (having cost around £ 13 @, @ 729) and in 1855 , the Crystal Palace Company cut Hawkins 's funding . Several planned models were never made , while those half finished were scrapped , despite protest from sources including the Sunday newspaper , *The Observer* .

With progress in palaeontology , the reputation of the models declined . In 1895 , the American fossil hunter Othniel Charles Marsh scorned the dinosaurs ' friends as doing them a great injustice , and spoke angrily of the models . The models and the park fell into disrepair as the years went by , a process aided by the fire that destroyed the Crystal Palace itself in 1936 , and the models became obscured by overgrown foliage . A full restoration of the animals was carried out in 1952 by Victor H.C. Martin , at which time the mammals on the third island were moved to less well-protected locations in the park , where they were exposed to wear and tear . The limestone cliff was blown up in the 1960s .

In 2002 , the display was totally renovated . The destroyed limestone cliff was completely replaced using 130 large blocks of Derbyshire limestone , many weighing over 1 tonne (0 @. @ 98 long tons ; 1 @. @ 1 short tons) , rebuilt according to a small model made from the same number of polystyrene blocks . Fibreglass replacements were created for the missing sculptures , and badly damaged parts of the surviving models were recast . For example , some of the animals ' legs had been modelled in lead , fixed to the bodies with iron rods ; the iron had rusted , splitting the lead open .

The models and other elements of Crystal Palace Park were classed as Grade II listed buildings from 1973 . The models were extensively restored in 2002 , and upgraded to Grade I listed in 2007 .

= = The Dinosaur Park = =

Fifteen genera of extinct animals , not all dinosaurs , are represented in the park . At least three other genera (*Dinornis* , a mastodon , and *Glyptodon*) were planned , and Hawkins began to build at least the mastodon before the Crystal Palace Company cut his funding in 1855 . An inaccurate map of the time shows planned locations of the *Dinornis* and mastodon .

= = = Palaeozoic era = = =

The Palaeozoic era is represented in the park by the model rock exposure showing a succession of beds , namely the Carboniferous (including Coal Measures and limestone) and Permian .

Crystal Palace 's two *Dicynodon* models are based on incomplete Permian fossils found in South Africa , along with Owen 's guess that they were similar to turtles . There is no evidence of any shelled *Dicynodon* , and recent more complete fossils show that they looked more like Hippopotamus .

= = = Mesozoic era = = =

The Mesozoic era is represented in the park by the model rock exposure showing a succession of beds , namely the Jurassic and Cretaceous , by models of dinosaurs and other animals known from mesozoic fossils , and by suitable vegetation - both living plants and models .

Curiously , it is *Hylaeosaurus* , from the Cretaceous of England , not *Iguanodon* , that most resembles the giant iguana stereotype of early ideas of dinosaurs . The model *Hylaeosaurus* is depicted much like *Ankylosaurus* , as a smallish quadrupedal herbivore with a knobbed armoured back , and spines along its sides . Hawkins 's depiction is of a large Iguana @-@ like beast with long sharp spines along its back , which Owen noted were " accurately given in the restoration [by Hawkins , to Owen 's instructions , but] necessarily at present conjectural " . The head of the *Hylaeosaurus* model is a fiberglass replica ; the original head is on the ground , on a hill above the ichthyosaur end of the lake .

The Ichthyosaurus models are based on Triassic or Jurassic fossils from Europe . Though the three ichthyosaurs are partly in water , they are implausibly shown basking on land like seals . Owen supposed they resembled crocodiles or plesiosaurs . Better fossil evidence shows that they have more in common with sharks , having a dorsal fin and fish @-@ like tail , whereas in Hawkins 's models the tail is a flat protuberance from a straight backbone . A further discrepancy is that the models ' eyes have exposed bony sclerotic plates , Owen conjecturing that with such large eyes they had " great powers of vision , especially in the dusk " . They became one of the three mascots of Crystal Palace Park , along with the *Iguanodon* and *Megalosaurus* (although ichthyosaurs are not dinosaurs) . The models more closely resemble more basic ichthyosaurs such as *Cymbospondylus* .

The *Iguanodon* models represent fossils from the Jurassic and Cretaceous of Europe . Gideon Mantell sketched the original fossil , found in Sussex in 1822 by his wife , Mary Ann Mantell , as like a long slender lizard climbing a branch (on four legs) , balancing with a whiplike tail ; lacking a skull , he conjectured that the thumb bone was a nose horn . The nose horn in particular is used repeatedly in popular textbooks and documentaries about dinosaurs to make fun of Victorian inaccuracies ; actually , even in 1854 , Owen commented " the horn [is] more than doubtful " .

Three *Labyrinthodon* models were made for Crystal Palace , based on Owen 's guess that , being amphibian in lifestyle , the Triassic animals might have resembled frogs ; he named them *Batrachia* , from the Greek ' *Batrachios* ' , frog . One is smooth skinned and is based on the species " *Labyrinthodon salamandroides* " (*Mastodonsaurus jaegeri*) ; the other two were based on " *Labyrinthodon pachygnathus* " (*Cyclotosaurus pachygnathus*) . Casts of *Chirotherium* footprints that Owen thought were made by the animals were included in the ground around the models .

Gigantic and visually impressive , the Megalosaurus became one of the park 's three ' mascot dinosaurs ' along with the Iguanodon and (less so) the Ichthyosaurs . Working from fragmentary evidence from Jurassic fossils found in England , consisting mainly of a hip and femur (thigh bone) , with a rib and a few vertebrae , Owen conjectured the animal was quadrupedal ; palaeontologists now believe it to have been bipedal (standing like Tyrannosaurus rex) . The first suggestion that some dinosaurs might have been bipedal came in 1858 , just too late to influence the model .

When the models were built , only skulls of the Cretaceous fossil Mosasaurus had been discovered in the Netherlands , so Hawkins only built the head and back of the animal . He submerged the model deep in the lake , leaving the body unseen and undefined . The Mosasaurus at Crystal Palace is positioned in an odd place near the secondary island that was originally a waterfall , and much of it is not visible from the lakeside path .

The three Plesiosaurus models represents three species of marine reptile , *P. macrocephalus* , *P. dolichoderius* and *P. hawkinsii* , from the Jurassic of England . Two of them have implausibly @-@ flexible necks .

Owen noted that the Pterodactylus fossils from the Jurassic of Germany had scales , not feathers , and while " somewhat bird @-@ like " they had conical teeth , suggesting they were predatory . The two surviving models are perched on a rock outcrop ; there were originally two more ' pterodactyls of the Oolite ' .

Owen correctly identified Teleosaurus as slender Jurassic Crocodilians with very long thin jaws and small eyes , inferring from the sediment in which they were found that they were " more strictly marine than the crocodile of the Ganges [the gharial] . "

= = = Cenozoic era = = =

Anoplotherium is an extinct mammal from the Eocene to Oligocene epochs , first found near Paris . Hawkins 's models draw on Owen 's speculation about its camel @-@ like appearance . (They are now thought to be related to hippopotamus and pigs) . Three models were made , forming a small herd .

Megaloceros or Irish Elk is a species from the Pliocene to Pleistocene epochs in Eurasia . Hawkins built a family unit of male , female and fawn ; the adult male bore antlers made from actual fossil antlers , long since replaced . Moved from the third island , they had fallen into disrepair as they were in a place easily accessible by vandals . With their original but fragile antlers , the Irish Elks were the most accurate of the models ; since they are of recent geological age (dying out 11 @,@ 000 years ago) , Hawkins was able to model them on living deer .

The giant ground sloth Megatherium is from the Pliocene to Pleistocene epochs in South America , where Charles Darwin had excavated some fossils in 1835 . The model was built hugging a live tree which subsequently grew and broke the model 's arm . The arm was replaced and later the tree died . This model used to be in the children 's zoo which has now been demolished .

The models of Palaeotherium represent an extinct Eocene mammal thought by Cuvier to be tapir @-@ like . They have suffered the most wear and tear of all of the models , and the standing model no longer looked much like the original made by Hawkins . During the 1960s these models were lying discarded in the bushes about fifty yards from the original site and , prior to the 2002 restoration , they were in such bad shape that they were removed and put into store . Some sources state that these models were added at a later date , but an Illustrated London News illustration of Hawkins 's workshop shows them in the background . Models of the " fearfully great bird " Dinornis of New Zealand (extinct by 1500 AD) , and of the extinct elephant @-@ like Mastodon (Deinotherium) of the Miocene and Pliocene of America , were planned for the ' Tertiary Islands ' but not completed .

= = In literature and popular culture = =

Charles Dickens 's 1853 novel , Bleak House , begins with a description of muddy streets , whose primordial character is emphasized by the first ever mention of any dinosaur in a popular work ,

Megalosaurus :

" Implacable November weather . As much mud in the streets as if the waters had but newly retired from the face of the earth , and it would not be wonderful to meet a Megalosaurus , forty feet long or so , waddling like an elephantine lizard up Holborn Hill . "

George Baxter , a pioneer of colour printing , made a well @-@ known engraving which imagines Crystal Palace , set in its landscaped grounds with tall fountains and the dinosaurs in the foreground , before the 1854 opening .

In H G Wells 's 1905 novel Kipps , Kipps and Ann visit Crystal Palace and sit " in the presence of the green and gold Labyrinthodon that looms so splendidly above the lake " to discuss their future . There is a brief description of the dinosaurs and their surroundings and the impact they have on the characters . Several of E. Nesbit 's children 's books reference the Crystal Palace dinosaur sculptures , and their coming to life , including The Enchanted Castle of 1907 . The 1932 novel Have His Carcase , by Dorothy L. Sayers , has the character Lord Peter Wimsey mention the " antediluvian monsters " of the Crystal Palace . Ann Coates 's 1970 children 's book Dinosaurs Don 't Die , illustrated by John Vernon Lord , tells the story of a young boy who lives near Crystal Palace Park and discovers that Hawkins ' models come to life ; he befriends one of the Iguanodon and names it ' Rock ' and they visit the Natural History Museum .

In travel writer Paul Theroux 's 1989 novel My Secret History , the novel 's narrator , Andre Parent , accidentally learns of his wife 's infidelity when his young son , Jack , reveals that he has visited the dinosaurs in the company of his mother 's ' friend ' during Andre 's prolonged absence gathering material for a travel book . The title story in Penelope Lively 's 1991 novel Fanny and the Monsters is about a Victorian girl who visits the Crystal Palace dinosaurs and becomes fascinated by prehistoric creatures . Brett Anderson used the line " So I went and sat in Crystal Palace , by the plastic dinosaurs " on his solo track To The Winter , from his 2007 self @-@ titled album . The Lie Tree , a 2015 children 's mystery @-@ fantasy by Frances Hardinge features a dream scene with some of the dinosaur models coming to life .