



Main picture: the Natural History Museum railing after the completion of the project. Above: One of a number of iron-maker's stamps. Top: an advertisement from the Portfield Ironworks – makers of at least some of the wrought iron



THE VERY BEST OF BRITISH RAIL

Completed in 1881, the Natural History Museum is the best-known work of Alfred Waterhouse, who has been described as one of the most successful Victorian architects. The building is celebrated for the high quality of its constituent materials and craftsmanship, notably the exquisite terracotta work of Gibbs and Canning of Tamworth. It is known that the detailing of the building, including every one of the many terracotta animals and plants, was

Superb craftsmanship that created railings at the National History Museum came under scrutiny during a frontage project in London, writes **Chris Topp**

designed and sketched by the architect himself. It seems likely then that Waterhouse also designed the detail of the iron perimeter gates and railings. This is borne out by his signature on one of the few surviving sketch drawings. We can assume, then, that over and above the necessity to provide security, the ironwork was conceived as a vital part of Waterhouse's "work of art" – the total concept of the Natural History Museum. We do not know who was responsible for the manufacture of the railings, but the quality is

such that we can say that they were made by superb craftsmen from puddled wrought iron and that the designer was fully conversant with the art of the smith. There are various marks stamped into the iron, which, owing to the presence of crowns in most cases, can be taken to denote the various iron manufacturers, rather than the smith. Further research into these marks might well prove fruitful in identifying at least the area in which the railings were made. Certainly the mark "Holcroft" is from the Portfield ironworks of

James and Charles Holcroft, Tipton and means that at least some of the iron originates in the West Midlands. The perimeter railings, and gates, especially alongside Cromwell Road, came under scrutiny as part of a landscaping and re-ordering of the frontage to the Museum. The works have been designed and supervised by Donald Insall Associates, working with the Museum's own project management team. TOPP & Co. were appointed to do the conservation work by initial

tender. Given the magnitude of the project, over 50 bays in total, the work is taking place in phases. We are currently working on phase one and two which involves the removal of panels for repair work to be carried out at our workshops. The railings appear, for the most part, to be original, dating from the construction of the building during the 1870s. The work was done in wrought iron, with decorative embellishments incorporated throughout in typical Victorian style. Thus the work was forged by hand by



Waterhouse Building: Railing at the main entrance on Cromwell Road in 1951



Waterhouse Building: View of the museum from southwest in 1953

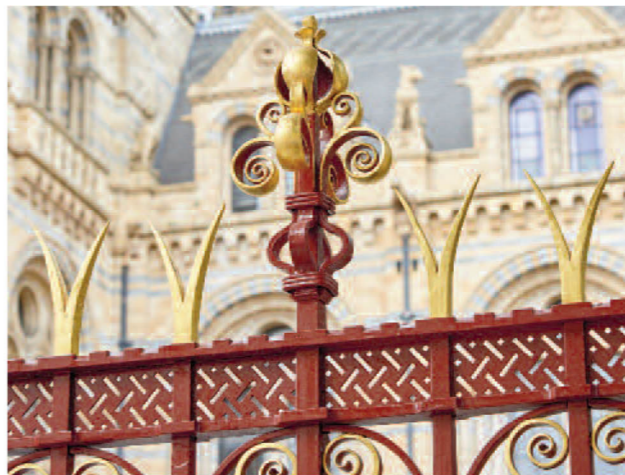


Waterhouse Building: Notices of Game Animals exhibition on the museum railings in 1932

PHOTOS: THE TRUSTEES OF THE NATURAL HISTORY MUSEUM, LONDON

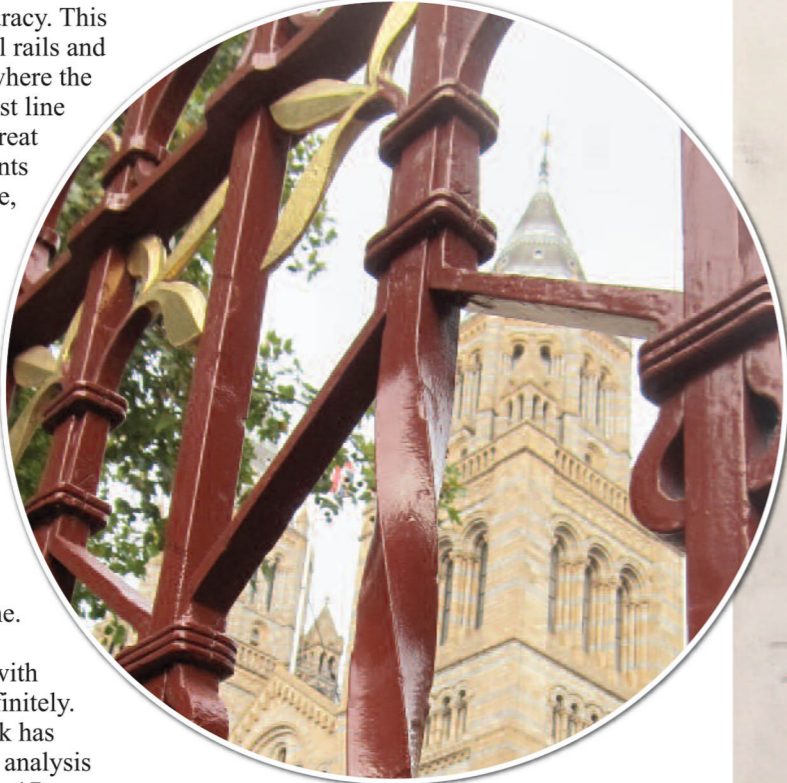


Above: Typical corrosion of bottom scrollwork.
Right: photographs showing the railings after the completion of the Natural History Museum project earlier this year



blacksmiths to a high standard of accuracy. This is evident particularly in the horizontal rails and the transom frames to the gate piers, where the holes to pass the vertical members must line up precisely. The design called for a great deal of forge welding where components are welded together, using only the fire, a hammer and an anvil, while still preserving precise dimensions. The welds are so well done that they are seldom visible. Having said that, some of the decorative elements appear to be castings, probably in malleable iron, which was in vogue at the time.

Considering the age of the railings – 136 years – they are in good condition, significant loss of metal through corrosion has occurred in only a few places, notably where water can lodge between iron and stone. This is consistent with our experience elsewhere with wrought iron, which, with reasonable maintenance will last indefinitely. The Natural History Museum ironwork has definitely been well maintained. Paint analysis proves that there have been as many as 17 re-decorations. There have been many different colour schemes, but the original colour seems to have been an orange brown, pigmented with iron oxide. Photographs of the railings from the 1930s



Above: Second World War shrapnel damage left intact. **Right:** Original concept sketch by Alfred Waterhouse showing initial idea for lanterns



show that the paint layers had already built up to a considerable thickness.

The Museum was hit by several bombs during the Second World War, as evidenced by numerous examples of damage to the ironwork by flying shrapnel. There is evidence that several panels of the railings were partially destroyed and have been reconstructed. Interestingly, the construction methods used after the war were not altogether up to the standard of the Victorian originals, there being some use of electric welding, but by modern standards they were not too bad. Despite the use of a good deal of cast bronze rather than forged iron, the work was good enough to largely pass unnoticed and hence has been left intact in the current conservation. Where there is evident damage by shrapnel, holes and gouges in the otherwise undamaged original ironwork, these have been left unrepaired as an interesting part of the history of the railings.

The same cannot be said of some other modern repairs and alterations, where intrusive and obvious electric welds do not respect the original craftsmanship.

The ironwork was removed from site, where possible by dismantling old construction joints rather than cutting out, which would often have been quicker. Unusually, the original designers had built-in joints, particularly adjacent to

stonework, which helped a lot with the dismantling. The metal stubs, often in bronze, fixed by caulking poured lead into the stonework, were left in place to be re-used when the railing panels were returned to site.

In order to reveal the original detail of the ironwork, it was decided to remove all the paint. The Museum had previously commissioned a full paint analysis and report, so that all previous paints and colours are fully recorded and these will form a part of the conservation record. There are less invasive methods, such as cleaning by chemical strippers, or flame cleaning, but as there is so much ironwork, in excess of 50 tons to date, we were left with no practical alternative to grit-blasting, in order that the work could be done within a reasonable time and budget. Abrasive blasting does, however, preserve the paint cover within the many hundreds of feather-edge joints, for instance between scrolls and rails, and this helps with continued exclusion of water from such areas.

Where remedial work was required, for example where corroded bottom rails and scrollwork were in need of replacement, the work has been guided by the National Heritage Ironwork Group's Conservation Principles, as published on their website www.nhig.org.uk. Examples would be replacements made in

original type materials – puddled iron was used throughout. Replacement elements were created by forging and forge welding etc as per the original techniques.

We are great believers in doing the work properly. By emulating the superb craftsmanship evident in the original, and using identical materials, our smiths get to practise their skills, which are often not required in new work to anywhere near the same extent. It is conservation work of this kind which helps to keep the blacksmith's craft alive, and maintains the team of skilled workers who will be needed for the next project. Practice makes perfect!

The Natural History Museum ironwork was formerly very drab. There seems to be modern presumption that all ironwork has to be black. Of course this was far from the case in the past, particularly in the 19th century when vibrant "fun" colours were in vogue for all the new work, as evidenced by the Albert Memorial, or Skidmore's screen from Hereford Cathedral, now the centrepiece of the V&A's Ironwork Gallery. Thank goodness the tide is turning, and the new colour scheme, in red and gold for good historical reasons for the NHM railings, has been rapturously applauded. Let's hope that the trend continues.

Away with so much black ironwork!