What was different about 1851 in London was that it was international. Paris in 1849 had 4,494 exhibitors; London had over 14,000. In the UK the Royal Society of Arts (RSA) had held this type of national exhibition in London in 1828, 1832 and 1833, while Dublin had held such events every three years from 1834 to 1853, and Birmingham had one at Bingley Hall in 1849.

The driving force behind London’s Great Exhibition was a handful of committee members of the RSA who responded in 1845 to a proposal by William Cooke (inventor of the electric telegraph) for a ‘periodical Exhibition of Works of Industry’. The RSA Secretary, Henry Cole, reported this to their President, Prince Albert, who encouraged them to prepare a plan.

Fundraising began and included a pledge of £1,000 from Robert Stephenson, but the public were not responsive and few applicants put forward designs for a suitable temporary building. They had even proposed a site in Hyde Park. However, in May 1847 the RSA
held a successful exhibition of British manufactures and decorative arts which drew 20,000 visitors to see 200 exhibits. The following year did even better, attracting 700 exhibits and over seven weeks they welcomed 73,000 visitors. In 1849 RSA member John Scott Russell proposed a large National Exhibition to be held in 1851.

Prince Albert summoned Russell to the Palace on 20 June to elaborate the plan; Russell was accompanied by RSA committee members Henry Cole, Francis Fuller and Thomas Cubitt. Cole and Digby Wyatt had been to the Paris exhibition that Spring so had a good idea of the potential. Cole asked the Prince whether it should be a national or international exhibition, to which Albert insisted it should be international. Thus the seeds were sown and once again Hyde Park was suggested as the venue.

A Royal Commission and a Design Competition

This time the nation’s mood was better and the architectural competition for a building attracted 245 entries. It was also decided it would be privately funded from donations, fundraising events and dinners! No government money was forthcoming, but a Royal Commission was set up under the title of “The Great Exhibition of the Works of Industry of All Nations, 1851”. The opening ceremony was to be Thursday 1 May 1851, with the closing ceremony on Wednesday 15 October.

The famous iron and glass building had a long pedigree, with the structural use of cast iron dating back to the Iron Bridge of 1779, and iron-framed buildings developing from the 1797 Ditherington flax mill in Shrewsbury. Glass had first been used for walls and roofs in small conservatories from around 1800. Large spaces were spanned in railway stations of the 1830s and 40s, supported on cast-iron columns and beams, with wrought iron tie bars and glass roof lights. Between 1833 and 1848 the Duke of Devonshire’s gardener, Joseph Paxton, had erected enormous glasshouses at Chatsworth. He used ‘ridge & furrow’
glazing with wooden sash bars and hollow cast-iron columns
doubling as drainpipes, all of which reappeared in the Crystal
Palace. Paxton knew Robert Lucas Chance of Chance Bros in
Birmingham who supplied the glass. A typical iron and glass roof
was used in 1845 at Victoria Hunts Bank station, Manchester,
built by Charles Fox of Fox Henderson who were based in
Birmingham, and who would later become the contractor for the
exhibition building. Paxton, as a director of the Midland Railway
Company, knew Fox Henderson’s work. And so iron, glass,
designer and contractor all came together in the Midlands.

The Winning Design
Despite the large number of competition entries the Building
Committee rejected them all and produced a much derided
hybrid of their own. The public claimed that Hyde Park would
be “turned into something between Wolverhampton and
Greenwich Fair”. Wolverhampton, with a population of only
50,000 was considered to be squalid and crowded; Greenwich
Fair was a 3-day rowdy festival in London. However, Paxton
doodled a sketch of a more suitable building on 11 June 1850
while at a Midland Railway board meeting. It was his Victoria
Regina lily house of 1848 at Chatsworth which was to be his
inspiration for the Crystal Palace. His proposal was published
in the Illustrated London News on 6 July 1850, though it had
to be denied at that stage. Nevertheless, the design won great
public support. The central barrelled vault was suggested in
the second week of July 1850 by John Henderson of Fox
Henderson. Paxton’s alternative proposal was submitted to the
committee nine days before the deadline, strongly supported
by four Commissioners – Robert Stephenson, Isambard
Kingdom Brunel, Sir Robert Peel and Prince Albert, though
the Building Committee did not like it. But Paxton had already
got public support by publishing his design before it was seen
by the Commissioners and they approved it on 15 July. He was
then allowed only 11 days to supply all the detailed and costed
drawings, which was done in time! Estimated at £150,000, it
actually cost £170,000 to build (£20 million at today’s prices).
However, Fox Henderson offered to do the job for £79,800
and own the materials. They later sold them for £75,000 to be
re-used for 1854 Exhibition, a contract they won. Paxton’s plans
were accepted.

Even by modern standards the pace of building was rapid. Just
15 days after the design was approved site work began, laying
the foundations and column bases. On 14 September the first
delivery of the 3,300 cast-iron columns arrived in London from
Cochrane’s foundry at Holly Hull in Dudley, coming by rail
The building was divided into areas (spaces of 24 feet square, between 4 columns) which were marked at each corner of the square, and by numbers along the sides of the Building; these letters and numbers were marked on every column in the building in white characters at about 7 feet from the ground.

Right. The first-floor gallery displays.

Overall the Great Exhibition held over 100,000 items provided by nearly 14,000 exhibitors. Half were from Britain and its Empire and the other half from other countries.

Below. The ground floor of the Great Exhibition.

As well as displays from British, imperial and overseas countries, it contained refreshment courts and lavatories.
to Euston and then by Pickford’s wagons to Hyde Park. Erection of the columns began on 26 September and six weeks later the glazing began, 293,655 panes of glass coming by the same route from Chance Brothers Glassworks at Spon Lane in Birmingham. Prior to this stage Punch had described the architectural style as ‘Early English Shed’, but once the glass began to twinkle in the sun Punch dubbed it ‘Crystal Palace’ and the name stuck. On 4 December the erection of the laminated timber arches of the Nave began, completed in one week. By March the building was finished though painting went on till 19 April, just 11 days before the opening. Digby Wyatt was the Superintendent of Architecture while Owen Jones as Superintendent of Works was responsible for the colour scheme. Only three serious accidents were reported during the entire construction process and only one of these was fatal. It had taken just 9½ months after approval of the plans! It was open to the public on 141 days, during which a total of 6,039,195 visitors passed through the turnstiles.

Similar exhibitions in temporary buildings followed in rapid succession with ones in New York and Dublin in 1853, Munich in 1854, Paris in 1855 with 4,162,350 visitors, and in London in 1862 with 6,211,000 visitors. The American Centennial Exhibition in Philadelphia in 1876 had 8,004,250 visitors, while somewhat later in Paris in 1889 (an exhibition that included the Eiffel Tower) the visitors numbered 27,722,000.
The Legacy

The building contract had cost £79,800; the fitting out, staffing and security, catalogue printing, medals, etc., had cost £255,942; total £335,742 (£40.3 million today). Nothing was allowed to be sold inside except guides and catalogues, refreshments, flowers and medals struck on a great press. Yet the receipts came to £522,179, a profit of £186,436, out of which came £5,000 to Paxton and a knighthood. The bulk went to purchase 87 acres of South Kensington and in 1890 a scholarship and grant scheme was set up. There had been no fee to exhibit, over 7,000 items had been selected by 330 local committees across Britain and £100,000-worth of them were presented to the nation. In 1852 the building was dismantled and rebuilding started in Sydenham.

Some of the original exhibits were shown in an exhibition of the ‘Ornamental Art Collection’ held in Marlborough House on the Mall near Buckingham Palace in 1852. In 1853 a permanent museum was opened in South Kensington which formed the nucleus of what was later to become the V&A and the Science Museum. The Commissioners developed the South Kensington estate which initially included a horticultural garden and exhibition galleries behind the 1862 Exhibition building where now stands the Natural History Museum. Other buildings included the Imperial Institute (now Imperial College), the Royal College of Arts, the Albert Hall and housing estates. The Albert Hall opened in 1871 and included a picture gallery running round the top of the gallery, with the main hall originally conceived as an exhibition space that might occasionally be used for music. New art schools were started all over the country to improve the teaching of design.

On a broader scale, excursion travel blossomed from the success of Thomas Cook’s trips to the Great Exhibition; large public spaces like St Pancras Station of 1865 were covered using iron and glass; and trade exhibitions and Expos followed all over the world.

David de Haan recently retired Senior Curator and Director of Learning at the Ironbridge Gorge Museum Trust, and until 2012 Programme Director of the Ironbridge Institute, University of Birmingham.

Further Reading


Celina Fox, The Arts of Industry in the Age of Enlightenment (Yale University Press, 2009).

