



**LONDON MATHEMATICAL SOCIETY
DURHAM SYMPOSIUM**

**MATHEMATICAL AND COMPUTATIONAL ASPECTS
OF MAXWELL'S EQUATIONS**
Monday 11th - Thursday 21st July 2016



Day Trip Information

CRAGSIDE & HEXHAM

Sunday 17th July 2016



LMS DURHAM SYMPOSIUM

Mathematical and Computational Aspects of Maxwell's Equations

DAY TRIP ITINERARY

Sunday 17th July 2016

CRAGSIDE & HEXHAM

- Bus leaves Grey College, Main Entrance at 9.15 am
- Arrive Cragside at approximately 10.45 am
- Leave for Hexham at 2 pm
- Arrive at Hexham at approximately 3 pm
- Leave Hexham at 5 pm
- Arrival at Grey for approximately 6 pm

Please note all times are approximate.

CRAGSIDE HOUSE

Cragside is a country house near Rothbury in Northumberland, England. It was the first house in the world to be lit using hydroelectric power. Built into a rocky hillside above a 4 km² forest garden, it was the country home of Lord Armstrong and has been in the care of the National Trust since 1977. Named after *Cragend Hill* above the house, Cragside was built in 1863 as a modest, two-storey country lodge, but was subsequently extended to designs by Norman Shaw, transforming it into an elaborate mansion in the Free Tudor style. At one point, the building included an astronomical observatory and a scientific laboratory.



In 1868, a hydraulic engine was installed, with water being used to power labour-saving machines such as laundry equipment, a rotisserie and a hydraulic lift. In 1870, water from one of the estate's lakes was used to drive a Siemens



dynamo in what was the world's first hydroelectric power station. The resultant electricity was used to power an arc lamp installed in the Gallery in 1878. The arc lamp was replaced in 1880 by Joseph Swan's incandescent lamps in what Swan considered 'the first proper installation' of electric lighting. The generators, which also provided power for the farm buildings on the estate, were constantly extended and improved to match the increasing electrical demand in the house.

The Gardens

The house is surrounded by one of Europe's largest rock gardens, a large number of rhododendrons, and a large collection of mostly coniferous trees, among which one Douglas-fir is the tallest tree in England, at 59 m tall. Cragside is one of the red squirrel's last strongholds and also boasts a tricky rhododendron maze and adventure playground.

The National Trust now owns 1,000 acres of this estate and has completed the immense task of restoring the vast rock garden installed by Lord Armstrong, exposing the enormous boulders and planting alpine and moorland plants in the crevices. A range of rhododendrons, azaleas, brooms, berberis, roses and rowans have been planted to add variety and colour to the scene as the visitor progresses down the Debdon Valley. In the lower reaches of the valley is an open pinetum of huge specimen North American conifers, some 200 of which were provided by the Royal Botanic Gardens in Edinburgh, and which, in the favourable damp conditions, have attained enormous heights and girths. The Trust acquired the formal garden in 1991 and has restored the Orchard House with its extraordinary system of rotating pots towards the light to provide balanced growth, as





well as the Display House and Palm House, (formerly glazed). But the glory of the formal gardens is the display of Victorian carpet bedding. Almost literally 'carpet' in this case as several of the beds copy the pattern of carpets in the house.

Across the valley, hidden amongst the trees is the clock tower. This clock not only struck the hours, but also used to chime the starting, finishing and meal times of the estate workers. It can still be heard across the estate.

Nearby lies the terraced garden, where exotic fruits were nurtured throughout the year in glasshouses. You can visit the Orchard House and Rose Loggia and walk beside the dahlias and carpet bedding.

Seven million trees and bushes were planted to cover the bare hillside and create the wooded estate you can explore today. Over 30 miles of footpaths and lakeside walks lead you through the woods to the estate's secret hide-aways.



Accessibility



Set on a rocky hillside, Cragside is a place of adventure and not without its own perils. The main hazards are vehicles, uneven ground, slippery steps, sheer drops and water. Help us to look after you by wearing sturdy shoes and taking special care walking on the estate. Pedestrians and vehicles share the same route in places, so please be vigilant. Admission to the estate will be suspended when car parks are full. Hop on, hop off courtesy minibus service between main facilities and selected attractions

HEXHAM

Hexham and its surroundings have a wealth of experiences to offer the visitor. Overlooking the beautiful Tyne valley, its medieval buildings form an imposing skyline. At the centre of these is Hexham Abbey, dating from 674AD and a must for any visitor, its Saxon crypt may still be seen. The town's market is held in its shadow every Tuesday, and its narrow streets are a magnet for shoppers.



You can also while away the time relaxing in Hexham's award-winning parks, eating in the wide variety of pubs and restaurants, visiting the museum, library, cinema or theatre, and simply taking in the atmosphere of a bustling market town.



Hexham is regarded as 'The Capital of Tynedale'. Other historic buildings include the Old Gaol, the oldest purpose-built gaol (jail) in England, which now houses the Border History Museum; and Moothall, which was once the administrative centre for the medieval County of Hexhamshire and was controlled by the Bishop of York. Hexhamshire was a separate county for almost 300 years until Queen Elizabeth I annexed it to Northumberland in 1571.

In the 17th century Hexham was one of England's leading centres for leatherwork, especially leather gloves, but the industry has long since departed. Today, the sporting attractions include Hexham National Hunt (jumps) Horse Race Course, three golf courses (including the PGA-approved Slaley Hall) and a country park providing boating and fishing at Tyne Green. There is a wide range of shops, including a large number of antique shops selling everything from furniture and jewellery to books and prints. Market day (in the shadow of the abbey) is on Tuesdays.

Please see the following websites for further information:

www.nationaltrust.org.uk

en.wikipedia.org/wiki/Cragside

www.aboutbritain.com/Cragside

www.visitnorthumberland.com

www.visitbritain.com

www.hexhamnet.co.uk