

## The bicentenary of a pioneering account of the Geology of Cambridgeshire

The first account of the geology of Cambridgeshire was published 200 years ago. Written by the Reverend Professor John Hailstone FRS (1759-1847), the 'Outline of the Geology of Cambridgeshire' appeared in the third volume of the *Transactions of the Geological Society of London*. The author was Sedgwick's predecessor as Woodwardian Professor but today hardly anyone has heard of John Hailstone and he has been completely eclipsed by his eminent successor. However, to dismiss him 'out of hand' as a geologist is not entirely fair.

Typical of its time, Hailstone's geology of Cambridgeshire takes a topographical approach, commenting that the county showed nothing significantly different from the rest of the region's outcrop with a succession from the Chalk Hills down through the 'lower or grey chalk...known in this county as *clunch*...into the 'blue clay, provincially called *gault*'. Hailstone makes no reference to any earlier work, notably that of William Smith.

The most innovative part of the paper is Hailstone's description of how 'upon some of the highest hills near Cambridge, a deposit of gravel and loose stones in horizontal layers, has lately been found, resting immediately upon the chalk.' He reports on the composition of the gravels of Harston Hill south of Cambridge, taken from an account supplied by Mr Henry Warburton, FRS (1784-1858, see note below). Hailstone comments that Warburton's 'conjectures as to the cause of these alluvial deposits, will be read with great interest by Geologists'.

Warburton argued that the outcrop source of the gravel pebbles of '...toadstone, the coral rag and the lower oolite, are found...only in a direction west of Cambridge; so that we are led to explain the accumulation of these alluvia by the agency of a powerful current flowing from west to east'. The nature of 'this powerful current' is not speculated upon and Hailstone's 'Outline' contains no map or section and was very much the work of someone steeped in the geognostic tradition.

### Who was John Hailstone?

John Hailstone graduated from Trinity College in 1782 as second wrangler, was elected a fellow in 1783 and five years later appointed as the sixth Woodwardian Professor upon the death of the previous incumbent Thomas Green (1738-1788). Not long after his appointment, the 23 year old Hailstone obtained permission from the University authorities to make a geological 'pilgrimage' to Freiburg where he, like other early British geologists came to hear the lectures of the most famous teacher of geology and mineralogy at the time, Adolph Gottlob Werner (1750-1817).

Hailstone was sufficiently impressed to compose and publish in 1792 his own '*Plan of a Course of Lectures*', which may be the earliest prospectus for geological teaching in a British university. In his introduction Hailstone tried to excuse his predecessors failure to lecture on the grounds that unlike the general attention given to '*...Botany and Zoology ...the sister branch of Minerals seems to have been totally overlooked. It consisted of a few scattered unconnected facts, incapable of being reduced to a system. And what is incapable of being reduced to a system cannot be made the subject of public instruction.*'

The notoriously combative Dr Woodward would doubtless have taken issue with Hailstone. Having published a book on *Fossils of All Kinds Digested into a Method* in 1728, Woodward would not have agreed with Hailstone about the lack of system in the study of Earth's natural history. Hailstone's explanation was that '*the rapid progress which has since been made in Mineralogical knowledge has however made ample amends for the neglect with which it was first treated.*'

However, Clark and Hughes (*The Life and Letters of the Reverend Adam Sedgwick*, 1890, volume 1, p.196), claim that 'notwithstanding this elaborate syllabus (*A Plan of a Course of Lectures*), we believe that Hailstone never lectured'. This opinion is reinforced by the *Cambridge Calendar* for 1803 'No *systematic* Lectures are delivered but the Professor constantly attends to demonstrate and explain the subjects of this Branch of Natural History..'

Hailstone also used his German visit to procure 'a typical series of rocks and minerals, and on his return home to Cambridge founded a separate collection' to supplement Woodward's, which emphasized fossils. He also translated and published an essay of Werner's on mineral collections and subsequently devoted himself to collecting minerals, especially on Cornwall and Scotland.

Nevertheless, Hailstone's standing in the early 19<sup>th</sup> century development of the natural sciences was sufficiently well established for him to be elected to the Royal Society in 1807 and to become one of the first honorary members of the Geological Society along with his fellow Cambridge mineralogist, antiquary, traveller, writer and collector Edward Daniel Clarke (1769-1822).

Hailstone was married in 1818 and consequently to resign the Woodwardian lectureship. As Sedgwick himself ruefully noted in 1858 'Woodward put the ban of domestic sterility upon his Professor, but my Museum is in the place of wife and children'.

Hailstone was given the Trinity College living of Trumpington, from where he was able to pursue a variety of interests apart from his parishioners, who he is reported to have served well for the remaining 29 years of his life. As well chemistry and mineralogy he was fascinated by the weather and kept a detailed meteorological diary. And, like many of his contemporary naturalists and antiquaries, including Clarke, he travelled extensively and kept detailed journals his perambulations at home and abroad.

It also appears that the Reverend John Hailstone was more of a 'Georgian' than a 'Victorian' despite his clerical collar. A pupil of his, Robert Grosvenor (1767-1845, later Marquess of Westminster) had introduced him to the delights of the turf and Hailstone may have used his mathematical skills to play the odds or may be he just had some 'hot' tips and was very lucky. Anyway, it is reported that he made a great deal of money from the horses. And, may have fathered four illegitimate children according to the Cambridge diarist, the Rev. Joseph Romilly (1791-1864), who was a well known university administrator and friend of Adam Sedgwick. Again, according to Romilly, Hailstone neither acknowledged his illegitimate children nor made provision for them in his will. Perhaps it was as much Hailstone's lifestyle as his lack of geological publications that diminished his significance in the eyes of succeeding generations of Victorians.

**Note: Henry Warburton**, FRS 1784-1858, was a Cambridge graduate (Trinity College), a successful businessman and a founding member of the Geological Society from 1808, Secretary from 1815-1817, one of the first Fellows in 1825, MP for Bridport from 1826-1841 and President of the Geological Society (in 1843-5).

References:

Clark, J.W. and McKenny Hughes, T. 1890. *The Life and Letters of the Reverend Adam Sedgwick*. Cambridge University Press, 2 vols. Cambridge.

John D. Pickles, 'Hailstone, John (1759–1847)', *Oxford Dictionary of National Biography*, Oxford University Press, 2004

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