Biography of Henry de la Beche (1796-1855)

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Henry de la Beche was born in 1796 in Wimpole Street, London, an area popular with wealthy slave-owners. When his father inherited the family sugar plantation in Jamaica in 1800 he took his wife and children on a visit but, unfortunately, died on the trip. This wasn't the only mishap, as the returning family were shipwrecked in the Bahamas on the return voyage, though clearly they survived. Henry then inherited the property, which would be held in trust until he reached his majority.

In 1809 Henry entered the Royal Military College at Marlow where he honed his talents as an observer and draftsman, talents which would later stand him in good stead as a geologist. However, in 1811 his military career was cut short when he was expelled for insubordination, ending his formal education. He then moved with his mother and her new husband to the Devon/Dorset area and in future referred to himself as 'of Lyme Regis'.

He arrived in Lyme Regis at a crucial time in the development of the new science of geology. It was just after Mary Anning, a young woman whose family business was collecting curious fossil remains and selling them to tourists, had completed the recovery of a hitherto unknown fossil reptile, the ichthyosaurus or 'fish lizard'. Henry's interest was sparked and he developed the 'habit of exploring the cliffs of Lyme Regis with Mary Anning' (ref: Coneybeare 1855, letter to Hamilton, President of Geological Society of London). Despite this, in his later obituary of Mary he failed to mention their earlier association.

Henry's 'geologising' began in earnest when he accompanied two amateur scientists of Lyme Regis (T. C. Carpenter and G. Holland) on a trip to Scotland. Here they made a 'grand geological discovery' (ref: DLB Journal no 1, 3 April 1816) relating to the formation of granite which challenged the dominant theory of the day, that of the German geologist Werner, that granite was formed by crystallization from a solution. Instead it appeared to have been formed by the solidification of liquid rock. This led him to realise that his own observations could call into question the ideas of those claiming authority in the field. In this way he developed his own education, by reading about the latest discoveries in science, by associating with amateur scientists and by his own observations. Because of the income from his Jamaican plantations he could focus on his own interests and by 1817 he had gained sufficient stature in the field to join the main hub of geological opinion, the Geological Society of London. In 1819

he read his first paper to the Society, on the geology of the coast from Bridport to Babbacombe.

At the age of 21, Henry came into control of his Jamaican plantation, giving him freedom to spend his money as he wished. In 1818 he married an Irishwoman, Letitia Whyte, and in 1819 he set off on a grand continental tour with his wife and mother-in-law. Leaving them in Geneva, where his daughter Elizabeth was born, he took the opportunity to study the geological formations he had previously read about. He was especially taken with the Alps and the evidence of 'debacles' which was evident there, where avalanches and glaciers had moved heavy material great distances from its original site. He met well known geologists (such as G. Cuvier in Paris) and examined their collections of minerals and fossils. On communicating his findings on his return to England he was made a Fellow of the Royal Society.

Henry had little patience with the religious culture of the day, deriding the hypocrisy, snobbery and superstition of the established churches and universities, preferring to rely on common sense, reasoning and observable 'facts'. In geology, too, he was reluctant to align himself with any of the competing theories of the various schools of geological opinion, and focussed on collecting detailed descriptive 'facts'.

In 1823, Henry set out to visit his Halse Hall sugar plantation in Jamaica, where he took a keen interest in the geology of the island and in the condition of his enslaved labourers (more

about this later). He seemed to be both indefatigable and immune to the tropical diseases that decimated the British troops stationed there. Making journeys on horseback covering most of the central and eastern parts of the island, he made geological observations which he communicated regularly to William Coneybeare at Oxford. In his published 'Remarks on the geology of Jamaica' (1827) he took Robertson's 1804 map of Jamaica and coloured the eastern section according to the types of rocks he found, which accords closely to modern geological maps. This was the first geological map of any part of the New World. He also gave a detailed description of the rocks in stratigraphical order, as well as listing 22 fossil genera and noting their general resemblance to those in London clay. He described the magnetic sand at Halse Hall (the black sand of the beaches of the south coast?), the gravel of the Liguanea plain, the topography of the limestone area of central Jamaica with its dry valleys and sink holes (karst scenery?), gypsum at Yallahs, and the pockets of red 'ferruginous sandstone' now known to be bauxite. This bauxite was to be the basis of the short-lived prosperity of parts of Jamaica in the 1950s to 1970s, when North American companies such as Alcan exploited the mineral to make Jamaica the world's largest exporter in 1957.[1]

Henry was the first geologist to study Jamaica and remained the only expert on Jamaican geology until his death. Later, the study of Jamaican geology was extended by visiting geologists, Barrett in 1859, Sawkins in 1869 and Hill in 1899; however, it

[1] 'Development of the bauxite/alumina sector', Jamaica Bauxite Institute

was not until 1961 that the Department of Geology was founded at the University of the West Indies and geology became a group rather than an individual pursuit. This was no doubt prompted by the development of the bauxite industry.

On returning from Jamaica at the end of 1824 his marriage had foundered and in 1826 he was divorced from his wife. The treatment which she had received at the hands of her husband had made it impossible for her to live with him, according to her mother.

Henry set out on several geological expeditions to the European continent, followed by publications: 'Geological notes, 1830', 'Sections and views, 1830' and, most importantly, 'A geological manual, 1831'. The latter book co-ordinated his life-time's observations and research with those of other geologists of Europe; it was a great success, translated into several languages and used as a university textbook. These were followed by 'Researches in theoretical geology, 1834', in which he related aspects of geology to other sciences such as chemistry, and 'How to observe in geology, 1835' demonstrating his great talent as an observer. It was in 1834, too, that he had a daughter born in Taunton, Rosalie Torre. A photograph taken 20 years later shows Henry with his two daughters.

It was at this time, approaching Emancipation, that the income stream from Halse Hall dried up; he could no longer benefit from the unpaid labour of his 200-odd enslaved workers (more

on this later). Instead of being the self-financing gentleman geologist, he now needed to work for a salary and, fortunately for him and as a result of much self-promotion, he was able to obtain the sum of £300 to carry out his detailed, one inch to the mile, Ordnance Survey map of the geology of Devon, completed in 1834, which 'for extent and minuteness of information and beauty of execution, has a very high claim to regard' (G. B. Greenough, First President of the Geological Society). From here on, Henry was able to earn his living as a geologist employed by the government. His ambition was to use the newly drawn one inch to the mile Ordnance Survey maps of the whole country as the basis for compiling detailed geological maps; thus was born the Geological Survey of Great Britain, of which Henry was the director. Out of this survey he wrote the 'Report on the geology of Cornwall, Devon and Somerset' in 1839, a copy of which is seen in the display in the RAMM.

As a government geologist, Henry turned his attention towards the utility of geology. During his survey work, Henry had collected specimens of rocks and fossils which he wanted to use as the basis of a museum. After a deal of self-promotion, the Treasury agreed to give him the use of two floors of a house at Craig's Court, Charing Cross and thus, in 1835, the Museum of Economic Geology was born. The space soon became too limited and in 1851 a grand new building was erected for the museum, on Jermyn Street, opened by Prince Albert. This eventually became the Geological Museum, now incorporated into the Natural History Museum. The specimens

were divided into classes showing the agricultural character of rocks, the best materials for roads, rocks for architectural purposes, ores of useful metals, and stones for personal ornaments. Henry was moving away from the more theoretical interests of the Oxford academics towards the practical applications of his knowledge for the industrialising nation.

Henry played a key role in the organisation of geology as an essential science in the modern world. Here his skills in persuading officials to follow his suggestions came into play. Not only did he get the Geological Survey and the Museum of Economic Geology established, but also the Government School of Mines and the Mining Record Office. He advised the Admiralty on the efficient use of fuel, the Board of Health on the sanitation of towns, and pioneered enquiry into the prevention of explosions in coal mines. In 1842 he was knighted and in 1848 made a Companion of the Order of the Bath.

Henry had artistic talents which he used, not only in drawing maps and fossils, but also to bring geology to life. His best known drawing is ‘Duria Antiquior’ or ‘Ancient Dorset’, showing a scene of the various reptiles of the Liassic period as they might have lived, busily preying on each other. This was probably the first imaginary vision of ‘Jurassic Park’. Some of his drawings were cartoon-like and intended to make a point, such as that of a woman shining a strong light on to a globe ‘Science dispelling the darkness from the earth’, and the ‘Geological goblin’ suggested as a seal for the Geological

Society showing a goblin-like geologist splitting a globe with hammer and chisel to discover what was inside it (ref: DRO 138 M/F 73). Some of his drawings were used as a basis for Buckland's popular Oxford lectures.

Henry was said to be a handsome man of strong frame, a swimmer and walker, with a cheery nature and inexhaustible enthusiasm which stimulated those around him (except his wife?). In 1851 he developed a paralysing disease from which he died in 1855. His younger daughter Rosalie died soon after (1858) and is buried with him in Kensal Green cemetery. His papers remained with his elder daughter's family who lived in South Wales and were eventually left to the Museum of Wales in Cardiff in the 1930s.

The place of Henry de la Beche in the history of geological ideas

The first half of the nineteenth century saw a complete overhaul of ideas about the history of the earth and of mankind's place in it. This change was a result of the scientific study of rocks. At the beginning of this period, a literal interpretation of the Bible was held to be the actual history of the earth, but by the mid nineteenth century the view had expanded to be much more like the one we hold today.

The Biblical view was that the earth and its inhabitants were formed over a short time span a few thousand years ago, that the animals alive today were those originally created, that

there was no death before the sin of Adam and Eve, and that Noah's flood had covered the whole earth. Early geologists made discoveries that contested all these ideas, and Henry de la Beche played his part in this intellectual revolution.

There were various competing schools of geological thought at that time: the German school led by Werner, the French led by Cuvier, the Scots Hutton and Lyell, and the English led by Buckland at the University of Oxford. They developed rather different ideas based, to some extent, on the local geology of their home countries but also on the relationship of their universities to the church. These academics corresponded regularly and could be extremely rude about each other's theories.

The particular slant of the English school was a result of the geological composition of England as a series of mainly sedimentary rocks in a regular sequence. This was especially manifest on what we now call the Jurassic Coast of Devon and Dorset, Henry's stomping ground, now recognised as a nearly continuous 185 million year record of earth's history of the Mesozoic era and one of the world's best sequences of layers, rich in fossils. The stratigraphy, or sequencing, of these rocks and their palaeontology, the fossils they contain, were the particular achievement of the English school, to which Henry made important contributions by his careful descriptions, drawings and mapping.

Another factor in the development of the English school of geology was that Oxford University was an institution for the education of Anglican clergymen, whereas in other countries the universities and church were separate. In studying geology themselves and introducing it as part of the curriculum, Buckland and colleagues such as Coneybeare had to justify it as relevant for the education of the clergy. While the subject was at first seen as giving insight into God's creation, towards the middle of the nineteenth century the science was increasingly contested by those holding more traditional Christian views. In the meantime, geology was at its zenith, was the leading science of the day and the one most exciting to be part of. Since Henry was an outsider to the academy he was not constrained by having to compromise his opinions with those of the church; this gave him a freer rein to follow the ideas indicated by the facts displayed in the rocks before him. Nevertheless, he worked in close cooperation with the Oxford academics.

Actually, though, Henry was more inclined to disdain the too early formulation of theories based on only a few facts, unlike the academics. He directed his energy into detailed observation and recording of limited local areas, such as Devon, Dorset and Eastern Jamaica. These careful observations could form evidence for theories at a later date.

The geology of Lyme Regis, in which Henry was a key player (along with Mary Anning, William Buckland and William Coneybeare) contested two key Biblical ideas. The discovery of

fossils of ‘remarkable creatures’, the dinosaurs, was clear evidence that there had been earlier worlds in which animals quite different from those of today had lived. And the discovery of coprolites, the fossilised faeces of these dinosaurs, which could be examined under the microscope to reveal the remains of their last dinners, showed that these animals had eaten other animals; thus death had existed before the sin of Adam and Eve.

Other geologists amassed evidence for the great age of the earth and the long slow processes which had formed its crust as we know it today (especially Hutton, Lyell, William Smith). Much effort in the early days went into trying to explain the presence of ‘diluvium’, that is surface gravel and ‘erratics’ (boulders found far from their parent rocks), as resulting from a universal flood, but this was eventually abandoned. Instead, local flooding and glaciation were accepted as explanations. Henry’s geological observations in Jamaica showed that similar rocks existed in the New World as in Europe, indicating the universality of the processes that formed the earth’s crust.

In conclusion, Henry de la Beche was a close participant in the development of geological ideas in the first half of the nineteenth century. He was not so much an originator of these ideas as a critical supporter of them through his careful descriptive work and his correspondence with the academic geologists at Oxford and continental universities.[2]

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[2] Ref: Rupke, N. A. (1983). The great chain of history: William Buckland and the English School of Geology 1814 – 1849. Oxford: Clarendon Press

Legacies of Sir Henry Thomas de la Beche

Physical legacies

The Geological Museum

The Geological Museum developed out of Henry de la Beche's collection of rocks. To begin with, in 1835, his collection was housed on two floors of a house in Craig's Court, Charing Cross, but he eventually persuaded the government to finance the grand building of the Museum of Economic Geology on Jermyn Street in 1851. The Museum was moved to Exhibition Road in 1935 and formally linked with the neighbouring Natural History Museum in 1988, where it is now known as the Red Zone. He further persuaded the government to institute the Mining Records Office, housed in the Museum from 1840 and then, from 1851, the Government School of Mines.

The Royal School of Mines

The Government School of Mines became the Royal School of Mines in 1863 and in 1907 was incorporated into Imperial College, but its classically designed building is still found on Prince Consort Road, London.

The Geological Survey of Great Britain 1839

This began with Henry de la Beche's 1832 survey of Devon. In 1835 his survey was integrated with the new Ordnance Survey one inch to the mile maps and gradually extended to cover the whole of the country. He was the first director of the first national geological survey in the world.

Thus de la Beche left a legacy of national institutions which embodied the science of geology as an essential component of the nation's industrial development.

Cultural legacies

Publications

Among his very many publications, the following stand out:

- 1825: *Notes on the present conditions of the negroes in Jamaica.* De la Beche contributed to the heated contemporary debate on slavery by attempting to describe objectively the conditions of enslaved people on his Halse Hall estate and compare them with those on other estates.
- 1827 *Remarks on the geology of Jamaica*. The first geological description and map of Jamaica, and in fact of any part of the New World. This remained the only study of Jamaican geology until that of Sawkins in 1869.

- 1831 *A geological manual.* This brought together his own life's work up to this point and co-ordinated it with that of European geologists. It was a great success, translated into several languages and used as a textbook.
- 1835 *How to observe in geology*. Here he demonstrated his great talents as an observer.
- 1839. *Report on the geology of Cornwall, Devon and west Somerset.* Careful, detailed descriptions and maps of this local area, which would be extended to the whole country in the Geological Survey.
- 1851 *The geological observer*. An update of his 1835 publication.

Through these publications he made key contributions to the academic study of geology and to the early nineteenth century debate on the question of slavery.

Artistic

De la Beche was a keen observer, an accurate draftsman, imaginative illustrator and witty caricaturist. His drawings contributed to the science of geology by accurate representation of rock and fossil specimens, maps and geological sections, before the days of photography. An example is his drawing of the *Head of an Ichthyosaur* found in Lyme Regis by Mary Anning and included in his joint publication with William Coneybeare (1821). His drawings could bring to life ancient scenes, especially his *Duria Antiquior (Ancient Dorset)*; this was an early 'Jurassic Park' type illustration of the

flora and fauna of that period, eating each other and defecating. This was used by William Buckland at Oxford to enliven his lectures. A prominent theme in this drawings was of the '*light of science'* dispelling the darkness of ignorance; one representation was of a bonneted woman shining a lamp on to a globe shrouded in clouds. Thus his artwork contributed in many ways to the advancement of the science of geology.

Ideas

De la Beche was not a theoretician. He believed in collecting detailed facts before rushing to devise theories. Nevertheless, his observations, maps and drawings contributed to the development of geological theories by his close association with academics, notably Buckland and Coneybeare of Oxford University, and also with those of continental universities, who utilised his findings in their theoretical debates. His work therefore contributed to the revolution, in the first half of the nineteenth century, of our ideas of the history of the world and of mankind's place in it, moving from a literal Biblical concept to a one more akin to our modern view of a much older earth with slowly evolving landscapes, flora and fauna.

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