Sir Richard Owen, 1804-1892

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Shortly before the publication of Darwin's *The Origin of Species* (1859) Sir Richard Owen was by far the most eminent biologist in Britain, mentioned in the same breath as Newton and Faraday. By this time he had received three gold medals from the Royal Society, of which he had been a member for many years, was an honorary member of most European Academies, had been knighted, had received honorary doctorates from Oxford, Cambridge, Edinburgh and many Continental universities, had a grace and favour house in Regent's Park and a Civil List pension. Altogether he had received the unprecedented total of over one hundred honours. Yet today he is almost forgotten and his only memorial in his home town of Lancaster is a small figure on the bronze plaque of scientists on the Victoria memorial in Dalton Square.

Apart from his remarkable innate talent as a dissector, writer and illustrator, Owen's success was due to several lucky chances. His medical career started inauspiciously. The first doctor to whom he was apprenticed soon died, the second joined the Navy, while the third was an idle drunk. Curiously, it was the last who gave Owen his first chance. As prison doctor it was his duty to carry out post mortems on the not inconsiderable number of prisoners who died in jail. He soon left this task to the young Owen. Consequently, at a time when most medical students were lucky to have a part share in a cadaver (it was the time of Burke and Hare) Owen found himself with an almost limitless supply on which to practise. As the story of the Negro head illustrates, he was clearly left to his own devices in the dungeons of Lancaster Castle.

The unusual skill that he had acquired as a dissector was observed by Dr John Barclay during Owen's short period of study in Edinburgh and this led to his second stroke of good fortune. Barclay recommended Owen for the post of Prosector, or Demonstrator, to Dr Abernethy's surgical lectures at St Bartholomew's Hospital in London. Abernethy in turn recommended him for the post of Assistant Conservator of the Hunterian Collection of the Royal College of Surgeons. The pay was poor, the living conditions so bad that he had to smoke cigars to mask the smells and he was subject to a committee of cantankerous elderly surgeons. The collection, however, was probably the finest biological collection in the world. To Hunter's original collection had been added the specimens brought back by Captain Cook, Sir Joseph Banks and other early explorers.

Owen's task was to catalogue this collection, but he did far more. A man of extraordinary energy and skill, he carried out over 4000 dissections, which he described in 600 papers and 12 books. He added to the collection by writing a small book on the preservation of specimens which he had distributed to all naval vessels and many merchant vessels, and he also collected more specimens from the London Zoo. Amongst the thousands of dissections he described were the first detailed

dissections of monotremes and marsupials, of great apes and of the pearly nautilus. The collection contained fossils as well as modern specimens and he first defined and invented the word 'dinosaur'. Within a few years he was a national figure. When he was described as the English Cuvier he modestly said that he would rather be remembered as the English Owen. He continued to live in the uncomfortable flat in the Royal College, no doubt because of the priceless opportunities for dissection. His committee at one time tried to cut his salary rather than economise on its lavish monthly meetings but *The Times* thundered to his support. When the queen gave him Sheen Lodge, a grace and favour house in Regents Park in 1852, the committee had the temerity to complain that by leaving his flat he was breaking his contract of employment.

Although he is often depicted as arrogant and petulant he must have been a remarkably pleasant and sought-after companion, at least as a young man. Although from a provincial non-Oxbridge background, he was soon accepted in all academic circles. While merely a Conservator of a museum collection he became a central figure in Victorian London's social circle, a friend of, amongst many others, Dickens, Carlyle, Tennyson, Ruskin and Sir Robert Peel. As early as 1846 he first suggested to Peel that the biological collection in the overcrowded British Museum should be combined with the Hunterian Collection in a purpose-built new museum. This project occupied many of his later years and led to the foundation of the Natural History Museum in South Kensington, which he designed.

Science advances first by the accumulation of facts, then by the development of hypotheses that relate or account for the facts and then by the testing of these hypotheses. Owen's contribution to anatomical facts was unparalleled. He was active throughout much of the nineteenth century when biological ideas were revolutionised by the theory of evolution. His own ideas changed during the course of his life and he played a major part in the revolution. *The Origin of Species* was published in 1859 but before this Owen made remarkable contributions to the theoretical framework of biology. His early anatomical work was concerned with the relation between form and function, not only in skeletal systems but in circulatory, digestive, reproductive and nervous systems. Intrigued by the similarities in basic plan in widely different animals he introduced the concept and very word 'homology' into English. This is a basic concept in biology and a vital step on the road to the theory of evolution. In attempting to make sense of the animal kingdom before the theory of evolution he developed the theory of the 'archetype' which would contain all the essential elements of an animal group. As first formulated he probably thought of this as an idea in the mind of God but soon he was thinking in evolutionary, or as he put it, 'transmutational' terms. When the bones of some large extinct Australian mammals were

sent to him for description he identified them all as marsupials, and began to consider that all Australian marsupials must have had a common ancestor, an interesting parallel to Darwin's consideration of the Galapagos finches. In a Hunterian lecture in the 1840's he presciently observed 'The problem (of the distribution of various animals) when solved will effect as great a revolution on man's ideas of time and mode of dispersal of animal life over the Earth's surface, as the Copernican revolution affected man's ideas of the place of the Earth itself'.

In 1849, ten years before the publication of *The Origin of Species*, he wrote 'Without derogation of the Divine Power . . . we learn from the past history of the Earth that she (nature) has advanced with slow and stately steps, from the first embodiment of the vertebrate idea under its old ichthyous vestment, until it became arrayed in the glorious garb of its human form'. This is clearly a cautious statement that man evolved from a primitive fish.

He was immediately attacked from all quarters. The liberal Manchester Spectator complained that Owen did not believe that God had populated the globe by successive creations but by the operation of general laws. Sedgwick, the greatest living geologist (also a local man, born in Dent), attempting to smoke him out, wrote 'Had I not known the opinion of the great comparative anatomist I should have thought that in that passage he meant to indicate some law of development from one animal type to another, along the whole ascending scale of nature.' The time was not right for such a revolutionary idea and Owen obfuscated. It is easy to accuse him of intellectual cowardice from the safety of a century and a half later but in his defence it should be remembered that he lived at a deeply religious time, he held a public position but, unlike Darwin, had no private income, he was a personal friend of the Archbishop of Canterbury, and he operated in a society where religious orthodoxy held sway. His ideas, however, continued to develop. Although he originally thought of the archetype as a plan of divine origin, in 1860 he observed 'We prefer to believe that the archetype vertebrate skeleton was once manifest in the flesh, as an objective entity, than conceive it as merely a process of the Creator's thought'.

Darwin acknowledged his debt to Owen several times in *The Origin of Species*, indeed he regarded Owen as being greatly his intellectual superior. After reading Owen's *Anatomy of Fishes* he wrote 'I have read your first chapter and been delighted with it'. On the *Archetype* he wrote 'I have read with great interest all the parts which I could follow' and later 'I followed him that there is created an archetype, the parent of his class'. In *The Origin of Species* Darwin wrote 'Our great palaeontologist Owen showed how extinct animals fall between existing groups. For example he dissolves by fine gradations the apparently wide difference between the pig and the camel.' Yet today Owen is often remembered as an opponent of evolution.

When Darwin and Wallace first presented their ideas at a meeting of the British Association, some months before *The*

Origin of Species was published, Owen commented favourably on their hypothesis. After publication Owen wrote an anonymous review of the book, though the author was easily identified. In his review he did not attack the central idea but suggested that a slow smooth progression was not the only possible mechanism. Some of his arguments were ingenious and foreshadowed some modern ideas, such as punctuated evolution. For example, he noted that foals are occasionally born with three toes. They are usually destroyed as there is little demand for three-toed horses among the equine community. Owen suggested that if two such foals were kept alive they might breed true and one generation would have reverted, at least skeletally, from *Equus* to *Hipparion*. He also wondered whether, in view of the dramatic changes of form which may occur during the life cycle of many parasites, such sudden changes might not have occurred during evolution as well.

Thomas Huxley, despite being indebted to Owen for past help, including his post as naval surgeon on a boat to Australia and support for membership of the Royal Society, bitterly attacked Owen. Huxley seems to have operated on the principle of the Greek who once asked an oracle 'What shall I do to become a great man?' and the oracle replied 'Slay one'. Huxley decided to slay Owen. He had earlier crossed swords with Owen, discovering an error in Owen's description of the brain of an ape. Before *The Origin of Species* appeared Huxley had been an opponent of the idea of evolution while Owen had been cautiously exploring it. Now, with all the fanaticism of a recent convert, he launched a furious attack on Owen, depicting him, along with Sedgwick, as an anti-evolutionary reactionary. After a meeting with Huxley Owen wrote 'Professor Huxley disgraced the discussions, by which scientific differences of opinion are rectified, by imputing falsehood on a matter in which he differed from me.'

Nevertheless Huxley's criticism were damaging and, together with the overshadowing influence of Darwin, Owen was gradually eclipsed and is now usually wrongly remembered as a old-fashioned reactionary. In fact he remained intellectually flexible and honest throughout his later years. Although always religious he adopted a rationalist attitude to the Bible and argued that the Old Testament was a product of uneducated minds and that where it was in conflict with science, as on the age of the earth, a scientific explanation was to be preferred.

He should be remembered and honoured for his outstanding contributions to anatomy, to biological theory (particularly the concept of homology) and for the British Museum of Natural History. Today his reputation is rising again, particularly in America⁽¹⁾ and once again he may be mentioned in the same breath as Newton, Faraday and Darwin.

REFERENCE

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