



Commentary

Commentary: Who was Leonard Darwin? Commentary on Darwin L: ‘Heredity and environment: a warning to eugenists’ in the *Eugenics Review* 1916

Tim M Berra

Research Institute for the Environment and Livelihoods, Charles Darwin University, Darwin, NT 0909, Australia and Department of Evolution, Ecology and Organismal Biology, The Ohio State University, Mansfield, Ohio 44906, USA. E-mail: berra.1@osu.edu

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Leonard Darwin (1850–1943) was the fourth son and eighth of 10 children born to first cousins Charles and Emma (nee Wedgwood) Darwin.¹ Leonard showed an early interest in photography and was encouraged by his father in this pursuit. He was a rather sickly child, but grew into a healthy adult who lived a long, full life. Leonard’s nearly fatal bout of scarlet fever in 1862 likely prevented Gregor Mendel from visiting Charles Darwin when Mendel was in Downe. Leonard never forgave himself for this intrusion into history, and 80 years later he reminisced ‘If I prevented my father from meeting Mendel, do you not think that I even now ought to be hung, drawn and quartered?’²

Pre-eugenics life

Leonard studied engineering at the Royal Military Academy at Woolwich and was commissioned in the Royal Engineers in 1870. The other surviving Darwin sons (William, George, Francis and Horace) were educated at Cambridge University. The latter three sons of this remarkable family were elected Fellows of the Royal Society and knighted for their contributions to science. Leonard produced many photographs of his father, including the iconic portrait of Charles in a wicker chair on the veranda of Down House in circa 1878.¹

Leonard had a 20-year career in the military, rising to the rank of major in 1889, and was sent on several expeditions to photograph various astronomical events around the world. He married Elizabeth (‘Bee’) Frances Fraser in 1882, and their honeymoon was spent near Brisbane, Queensland, Australia, as Leonard attempted to photograph a transit of Venus. The Royal Society sent Leonard to photograph a total eclipse of the sun in Grenada, West Indies, in 1886, and Bee went with him. His observations on photographing the corona and solar prominences with a prismatic camera were published in the *Philosophical Transactions of the Royal Society* in 1889.³

When doctors recommended a long sea voyage for Bee’s failing health, Leonard resigned his commission in 1890, and they sailed to New York, crossed to California and then on to Japan, China and Egypt. Leonard was the most widely travelled of the Darwin offspring. Upon returning to England, Leonard joined the Royal Geographical Society and was elected to its council in 1890. He became its President in 1908 and served until 1911. Mount Darwin, a 2500-m peak in Antarctica, is named after Leonard.²

Three of the 10 Darwin children died in childhood¹ (Anne, Mary and Charles Waring). It has been suggested that this high childhood mortality could be a result of increased homozygosity of deleterious recessive alleles

produced by the consanguineous marriages within the Darwin/Wedgwood dynasty.⁴

Much has been written about Charles Darwin's lifetime of illness. More than 40 disparate diagnoses have been offered, including gastrointestinal ailments such as Crohn's disease, irritable bowel syndrome, lactose intolerance, cyclic vomiting syndrome and the ever popular Chagas disease, to name just a few. The most recent paper reviews these diagnoses and postulates that Darwin suffered from an inherited pathological mitochondrial DNA mutation transmitted through his ailing Wedgwood maternal forebears.⁵ Leonard offered his opinion that his father was constantly ill from the systemic effects of pyorrhoea.⁶

Leonard had three careers: (i) military, (ii) politics and economics and (iii) eugenics. After leaving the army, he served on the London County Council and ran for election to Parliament as a Liberal-Unionist member for Lichfield division of Staffordshire. He won the election and served as an MP from 1892 to 1895. He became very knowledgeable in economics and authored an influential book, *Bimetallism*,⁷ in 1897, on the relationship between gold and silver prices; this earned high praise from economist John Maynard Keynes.⁸ Bee died in 1898 after a long illness. They had no children.

Leonard continued to be active in public service throughout his life. He tackled such arcane topics as Indian currency, municipal trade, and public versus private management. This latter topic led to a series of lectures at Harvard University, and another book.⁹

In 1900 Leonard married his second cousin Charlotte Mildred Massingberd, 18 years his junior. They were married for 40 years, but left no children; four of the six married Darwin siblings left no offspring. Inbreeding depression of male fertility has been suggested for this seemingly reduced fecundity.¹⁰

Eugenics

Leonard's studies led him to consider the relationship between economics and heredity, thus ushering in his third career in eugenics. Leonard was 61 years old when he turned to eugenics which was to become his major interest in life. The eugenics movement was founded by Sir Francis Galton, Charles Darwin's half-first cousin and thereby Leonard's half-first cousin once removed. Galton coined the word 'eugenics' in 1883, and founded the Eugenics Education Society in 1908 to encourage the study of human heredity. Many in the Society (including Leonard) felt that its objective should be limited 'to the creation of a public opinion favourable to the promotion of fertility among those who could enrich the biological endowment of posterity [positive eugenics] and to its restriction, by

sterilization or other means, among those whose contribution to posterity could be spared [negative eugenics]'.¹¹ After Galton's death in 1911, Leonard was persuaded, against his strong resistance, to become President of the Society, a post he held until 1928. This enabled him to combine his interest in human affairs with science.² The word 'Education' was dropped from the Eugenics Society's name. In 1912, Cambridge University bestowed an honorary degree of Doctor of Science on Leonard.

As he did in politics and economics, he steered a middle course and maintained the equality of environment and heredity. In a letter to the editor of the *New York Times*,¹² Leonard, as President of the Eugenics Society, spelled out his view of the purposes of eugenics:

We desire therefore greatly to increase the sense of responsibility in connection with all matters pertaining to human parenthood, to spread abroad knowledge of the laws of heredity as far as now known, and to encourage further research in that domain of science . . . We do not advocate any interference whatever with the free selection of normal mates in marriage . . . There will no doubt always remain a class quite outside the pale of all moral influence, and of these there will be a small proportion who, if they become parents, are certain to pass on some grievous mental or bodily defect to a considerable proportion of their progeny. Here and here only must the law step in. As to whether surgical sterilization should ever be enforced on such persons we have still an open mind, but certainly not till further information on this subject is available.

He further stated that 'sufficient control must be maintained over them [those described above] to prevent them from breeding'. He ended his letter by writing that the poor laws should be administered 'so as not to encourage reproduction on the part of degenerate paupers'.

Leonard was president during the First International Eugenics Congress in London in 1912. In 1921 he spoke at the Second International Eugenics Congress in New York. He published *The Need for Eugenic Reform* in 1926,¹³ which was followed by *What is Eugenics?*¹⁴ It was in 1932 at the Third International Eugenic Congress in New York, where a large Galton-Darwin-Wedgwood pedigree was exhibited.¹⁵

The negative eugenics advocated by Leonard is shocking to today's sensibilities, but it was a product of the times. Gwen Raverat¹⁶ (George Darwin's daughter, Leonard's niece and Margaret E Keynes's sister) described fierce arguments she had with her uncle about eugenics. She was shocked when Uncle Lenny considered a money standard for deciding who should be encouraged to breed. He reportedly said 'A man who can earn and keep money shows that he has the qualities essential to survival'. Gwen

replied that money means little to artists, philosophers and other creative people, and she did not want to see those qualities bred out of humans. Uncle Lenny and Aunt Mildred had little use for this argument. On the other hand, Raverat pointed out that Leonard intervened when the local government wanted to lock up an old man who lived wild in the woods. He knew that confinement would kill the man, and argued that he should be allowed to roam the forest freely.

Mentoring Ronald A Fisher

Perhaps Leonard's greatest contribution to science was his encouragement and support for a young scientist, Ronald A Fisher, a population geneticist and statistician. They carried on a 20-year correspondence from 1915 to 1935, often writing every few days. Many of those letters are included in Bennett's 1983 review of their relationship.¹⁷ It was Leonard who suggested the topic of Fisher's important paper 'The correlation between relatives on the supposition of Mendelian inheritance', published in 1918.¹⁸ Leonard seemed to be fulfilling the role of father figure and major professor to the brilliant, much younger Fisher;¹⁷ Leonard personally defrayed some of Fisher's publication costs.¹⁹ The two became fast friends in spite of the 40-year age difference, and Leonard was a major influence on Fisher's life and his research into biometry, heredity and selection.¹⁷ For Fisher, Leonard Darwin was a living link to Charles Darwin and Francis Galton.

With his characteristic self-effacement, Leonard referred to himself as 'muddleheaded' and 'stupid about mathematical things'. He wrote that he liked receiving Fisher's letters because they always made him think. Bennett¹⁷ wrote: "He once summed up his feelings on receiving a letter from Fisher as 'somewhat like that of a pig genuinely admiring a necklace of pearls, but not knowing quite how to put it on and feeling sure that he had not deserved such a present'". Between 1915 and 1935 Fisher published about 200 papers, book reviews and commentaries in *The Eugenics Review*, a quarterly journal of the Eugenics Society of which Leonard was president.

Fisher became part of the neo-Darwinian modern evolutionary synthesis that united natural selection with genetics. Fisher's classic work, *The Genetical Theory of Natural Selection*,²⁰ published in 1930, is dedicated 'To Major Leonard Darwin in gratitude for the encouragement, given to the author, during the last fifteen years, by discussing many of the problems dealt with in this book'. Leonard had pushed Fisher 'to write a great work on the mathematics of evolution' and he certainly got it. This book is required reading in most population genetics and

evolutionary biology classes. One of the references Fisher cited was Leonard's 1926 book, *The Need for Eugenic Reform*.¹³ About this book Fisher wrote: 'It is one of the difficulties of the subject that eugenics exercises a potent attraction for cranks of various kinds. All the more valuable is the sober judgment, detached reasoning and well-weighted earnestness of this really great book'.¹¹

Retirement

Leonard and Mildred retired to their country home, Cripps Corner, in 1921, on the outskirts of Ashdown Forest where they lived in relative isolation. It was a two-hour train ride from London. Raverat¹⁶ described Aunt Mildred as a fanatical teetotaler, but she allowed Leonard to have his shot of whisky every night as 'medicine' provided he drank it in one gulp. She would not allow electric lights or a telephone, but did grant Leonard the privilege of owning a motor car. She was an ardent feminist, but thought women should treat men kindly and not expect too much from them, 'because they are such helpless things, Poor Lambs'. Apparently the entire Darwin extended family took great delight in Mildred's idiosyncrasies.

World War II came to Cripps Corner in 1940 when part of the Battle of Britain was fought over their heads.² Mildred died in December 1940 of an illness; Leonard remained alert but became increasingly feeble. After a three-day sickness, he died peacefully from bronchial pneumonia on 26 March 1943 at the age of 93. His obituary appeared in *The Times* on 27 March 1943.²¹ He holds the record for longevity among the Darwin children. He is buried in the Forest Row cemetery.

The Eugenics Society¹¹ printed a group of comments from its members upon Leonard's death. Most pointed out that he was utterly devoid of personal ambition and was very modest, intellectually honest and unfailingly courteous to all. In a letter to Margaret Keynes, dated 11 January 1944,²² Ronald Fisher wrote about Leonard, 'He was surely the kindest and wisest man I ever knew'. Arthur Keith²³ remarked in Leonard's obituary in *Nature* that in physical appearance and attitude toward life, Leonard 'bore a closer resemblance to his father than did any of his brothers'. As reported by Raverat,¹⁶ Leonard's nephew Bernard Darwin (Francis's son) wrote this poem about his Uncle Lenny:

Serenely kind and humbly wise,
Whom each may tell the thing that's hidden
And always ready to advise
And ne'er to give advice unbidden.

Conflict of interest: None declared.

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