PERSPECTIVES
INTERNATIONAL MICROBIOLOGY (2009) 12:69-74
DOI: 10.2436/20.1501.01.83 ISSN: 1139-6709 **www.im.microbios.org**

INTERNATIONAL MICROBIOLOGY

More about Mrs. Darwin than Mr. Darwin

Mercè Piqueras

Associate Editor, INTERNATIONAL MICROBIOLOGY

After Albert Einstein, Charles Darwin (1809–1882) is perhaps the scientist best known. Several biographies have been published and many essays have been written on both men. Indeed, Darwin wrote his own autobiography, for his children, and many of the thousands of letters he sent and received throughout his life have been gathered. All this information has become readily accessible thanks to several projects that have allowed the existing documents to be digitalized and published on the web. One of the benefits of these efforts is that we have learned more about the personal and family life of this great scientist.

The popular saying, "behind a great man there is always a great woman", is often true, but the opposite less so. When a woman is considered to have been "great," it is hardly ever the case that it was because there was a great man behind her; otherwise she would have been overshadowed by him. One exception is the couple Marie and Pierre Curie, although she was almost excluded from the first Nobel Prize—Physics, 1903, which she shared with her husband—because there were those who believed that she was simply his assistant. Years after, a member of the Nobel Committee suggested that she should not accept the second one—Chemistry, 1911—, because she, already a widow, had an affair with a married man.

E-mail: mpiqueras@microbios.org

This article is based on a Distinguished Lecture given by the author at the Institute for Catalan Studies, Barcelona, on 21 January, 2009.

Knowing the life of Emma Darwin (born Wedgwood, 1808–1896, Fig. 1) helps to know more about Darwin himself, his work, and the society in which he developed his scientific theories. My interest in Emma Darwin started in London, in November 2000. At a second-hand bookshop across from the British Museum, I stopped to browse the books displayed on several shelves in the street. One of them, *Wives of Fame*, by Edna Healey [3], caught my eye. It was dedicated to Jenny Marx, Mary Livingstone, and Emma Darwin, the wives of possibly three of the most influential men of 19th century. As the author of the book stated, "genius often demands exceptional powers of concentration", and Darwin himself advised his son Francis to persist in his theories "to the death." Healey added that "the sword of the mind is too sharp for the body," and that intense mental effort can often lead to health problems, or that illness may develop in order to protect the body's vital energies.

Fig 1. Portrait of Emma Darwin from the late 1830s by George Richmond.

In a later book, devoted exclusively to Emma Darwin, Healey [3] offered the examples of Darwin and Florence Nightingale; both suffered chronic, sometimes disabling, illness and were essentially forced to conserve their energies in order to pursue their interests. Nightingale experienced bouts of Malta fever (brucellosis) [5], and Darwin, as discussed below, may have contracted Chagas disease. In addition to these two examples, there is probably a long list of famous people whose physical disabilities may have ultimately contributed to their success.

Emma: childhood and youth. In January 1839, when Emma Wedgwood married Darwin, she was already 30 years of age, almost a year older than her fiancé and of an age at which a single woman was already considered a spinster. Nevertheless, if Emma had long remained single, it was not for a lack of suitors; she had been courted by several but had rejected them. Prior to her marriage, her life had resembled that of one of Jane Austen's heroines. Even her wedding to Darwin, her first cousin, was in many ways Austenian. Emma was born in 1808 in Maer (Staffordshire, UK), the seventh daughter of a well-to-do family. Her grandfather Josiah Wedgwood, who was also Darwin's grandfather, had amassed a fortune in the pottery industry (the brand still exists nowadays; pieces of Wedgwood jasper ware have decorated dining rooms of homes around the world, and are even exhibited in museums). In spite of living far from London and the fact that her father was an industrialist, Emma was raised in a home that had an intellectual and quite liberal atmosphere. Her father (also named Josiah) had supported Darwin when the latter was invited by Captain Robert Fitzroy to accompany him, without a salary, on a two-year journey of exploration, which, in the end, lasted five years (Davenport, 27 December 1831–Falmouth, 2 October 1836).

Emma and her sisters received a liberal education, rare for girls of that time. When she was 10 years old she spent six months with her family in Paris; afterwards, while the rest of the family continued on a long trip to Switzerland and Italy, she and her sister Fanny attended a boarding school in Paris, accompanied by a servant. Four years later, the two sisters completed a course in a boarding school in Paddington Green, located on the outskirts of London. There they did not learn very much, but during that time Emma developed her natural talent for music. Back in the family home, they were taught by their mother and by the distinguished visitors who came to stay at the house, where the atmosphere was one of freedom and culture and which had a well-supplied library with books for all interests. For their Darwin cousins, whose home had a rather restrictive atmosphere, the Wedgwood house was paradise. Emma herself was quite educated, she spoke French, Italian and German, and was interested in history as well as politics.

During the years that Darwin journeyed on the *Beagle*, he kept a diary, from which he would copy fragments into the letters he sent to family and friends. These were very long letters containing detailed descriptions of the landscapes over which he had traveled, the human populations he had observed, and the phenomena he had experienced, such as earthquakes in Chile. He recorded his discovery of fossils in South America and his observations of the coral reefs in the Pacific. The Wedgwood relatives—Emma among them—shared in the emotion, pride, and admiration that Darwin's letters evoked. Their arrival was always a special event and they were read out loud to all who were present. But they were troubling as well, because Darwin also described his continued seasickness and the other health problems that had started during the journey and that would plague him for the rest of his life.

The marriage. Darwin was methodical in everything he undertook. In considering the convenience or not of marriage, he weighed its advantages and disadvantages and the cost-benefit relation of a possible change in marital status, especially with respect to having children. He tried to imagine how he could attain an equilibrium between social life and family duties, and considered the potential gain or loss of security. On scraps of paper he scrawled a two-column list with the positive aspects of getting married and those of being a bachelor. Despite the sacrifices he would have to make because of marriage, he decided that the balance was inclined towards it. These arguments are recorded in hand-written notes dealing with aspects such as Darwin's personal and professional perspectives, his freedom to travel if he did not get married (although he was not sure he would do so, given the fragile state of his health), and where he would live. If he remained single, the best place to live would be London, near Regents Park, while during the summers he could travel to collect specimens for his studies. If he were to marry, he would have to work in order to support his family, and life in London would be difficult unless he had enough money to afford a large house. He therefore considered whether it would not be best to live outside the city, in the countryside—albeit not too far away from London—as it would allow him to devote more time to the observation of nature. Getting married and having children—if God so wished—would mean having constant companionship as well as someone who cared about him and would amuse him ("better than a dog, anyhow," he wrote). Furthermore, there would always be someone to take care of the house and there would probably be music and female chatter, both of which he felt to be good for one's health. But with marriage comes the obligation to visit relatives and to receive them at home, and that was a great waste of time. Not getting married would mean not having anyone to look after him in his old age. Among the positive aspects of bachelorhood were: going where he wanted to and being able to limit his social life, sparing oneself of worries and of visits to relatives, and avoiding financial restrictions (without children, more money would be available to buy books) and the need to take on more work to make enough money, which was not good for one's health. Furthermore, what if the woman he married did not like London?

Fig 2. Down House. In 1842, Charles Darwin and his young family moved from central London to a pleasant country house about 16 miles to the southeast, near the village of Down (now Downe). It was to be Charles and Emma's home for the rest of their lives.

Darwin concluded his notes with these thoughts: "My God, it is intolerable to think of spending one's whole life like a neuter bee, working, working, and nothing after all […] Imagine living all one's day solitary in a smoky, dirty London house. Only picture to yourself a nice soft wife on a sofa with good fire, & books, & music perhaps…" In the opposite column of his list he wrote: "It being proved necessary to Marry—when? Soon or late." He again mentions some of the inconveniences of marriage, but reassures himself: "Never mind, my boy—Cheer up—One cannot live this solitary life with groggy old age, friendless and cold and childless staring one in one's face, already beginning to wrinkle. Never mind, trust to chance—keep a sharp look out. —There is many a happy slave—" [Darwin CR, "The pencil notes" of 1837-38: "This is the Question". Available at: The Complete Work of Charles Darwin Online; http://tinyurl.com/d8y2a7].

Once he had decided he would get married, choosing a partner was not difficult at all: his cousin Emma had the necessary qualities to look after the children they might have, to care for and protect the family during illness (her mother had been sick for many years, and it was she who dedicated the time to look after her), and to maintain the solitary life he desired to work in a quite atmosphere. Also, upon her marriage, Emma would receive a dowry, which made her even more attractive, even though he did not need the money. However, Darwin did not consider himself physically graced and was afraid she would not accept him. Nonetheless, he tried his luck, and succeeded.

Family life. After their marriage, Charles and Emma settled in London. They lived there for only two years before moving to Down (now Downe), where they spent the rest of their lives (Fig. 2). Downe is in Kent, but relatively close to London; thus, it was easy to travel and for Darwin to receive the visits of friends coming from London. As was common at the time, Charles and Emma had a large family; of their ten children (6 boys and 4 girls), seven survived to adult age. Their second child (Anna) died at age ten, the third lived just a few weeks, and the tenth died when he was two years old. Due to the death of his tenth child, Darwin could not attend the meeting held at the Linnean Society on the 1st of July, 1858, at which the Darwin–Wallace papers were read [2].

Nowadays, Down House is still very much as it was when Darwin and his family lived there, even though, shortly after Darwin's death, it was briefly used as a school. Luckily, there were still many pictures of the house, which allowed its restoration, and many of Darwin's personal belongings were located and retrieved. Today, the rooms on the ground floor

of the house are furnished just as when Darwin and his family lived there. Surprisingly, on the walls are portraits of other distinguished scientists, even those whose ideas differed from Darwin's. In the office or laboratory of a scientist it may not be unusual to see photographs of, for example, his or her mentor, thesis advisor, or research director. But it is not common to see photos of colleagues who are potential competitors, and even less so of those whose ideas are considered to be wrong. This demonstrates an aspect of Darwin's personality that is far removed from the arrogance and dogmatism that society, in some cases justifiably, attributes to scientists. In fact, Darwin was well aware that his ideas on evolution could lead to a crisis in the world of science and in society itself. This unsettling premonition may have been one of the causes that stopped him from publicizing his theory for several decades.

After Darwin returned from this journey with the *Beagle*, he no longer felt the need to travel. In the memoirs that at the end of his life he wrote for his children, he confessed that "[f]ew persons can have lived a more retired life than we have done. Besides short visits to the houses of relations, and occasionally to the seaside or elsewhere, we have gone nowhere" [1]. Despite the apparent isolation, when the numerous members of the Darwin and Wedgwood families met, Down House was transformed into a rowdy place of up to fifty people.

Darwin was very disciplined and methodical in his everyday life. Even though he did not have work duties, he set himself a scrupulous schedule to be fulfilled. He had breakfast by himself at 7:45 a.m. and afterwards, in his study, he worked until 9:30 a.m. He would then pause for an hour to read his mail, which someone else often read to him while he rested on the sofa. At 10:30 a.m., he would resume his work and at 12 p.m., before having lunch, he would go for a walk in the garden with his dog. The route was always the same; he would cover, with his slow and labored walk, the quarter of a mile of the sandwalk that he called his "thinking path". After lunch, he would read the newspapers while again resting on his couch and then write letters. Nap time was at 3:00 p.m. in the afternoon and at 4 p.m. he would go for another walk in the garden, after changing his clothes. Half an hour later, he would resume working until between 5:30 and 6 p.m., when he would rest and listen to the reading of a novel until 7:30 p.m., which was dinner time. Afterwards he would read, play two games of checkers with Emma, or listen to her play the piano. At 10 p.m. he would leave the room and half an hour later he went to bed.

The diary Emma kept beginning at the age of 16 and which she continued until a few days before her death, on 7 October 1896 (Darwin had died 14 years earlier), reveal many details of the histories of the Wedgwood and Darwin families. They are a valuable social record of prosperous middle-class intellectual life in England during the 19th century. They also reflect the division of tasks in Victorian households: Emma was responsible for the female staff, including maids, nursemaids, and governess, and kept her own personal accounts concerning small expenditures, whereas Darwin took responsibility for the male staff and paid the salaries. Moreover, the diaries constitute a detailed register of the health of the entire family, especially that of her husband, who was a sickly man and the main reason why they left London in 1842 to settle in rural Downe. Although they aspired to a withdrawn life, Charles and Emma often received visits from relatives, intellectual friends of Darwin, or other scientists who wished to consult with him, express their own opinions, or who admired and were eager to meet him. Alongside the diaries, and like many other housewives, Emma kept a cookbook in which she included anecdotes and personal experiences.

Emma, Charles, and religion. Emma was a religious woman, whereas Darwin, although he had studied to be a clergyman, had progressively lost his faith as he appreciated that the tales on which Christianity was based presented a false history of the world and opposed rational thought. (One of the fears of Darwin's father, when Charles told him that he wanted to embark on the *Beagle*, was that the journey would negatively affect his son's planned life of dedication to the Church). In his autobiography he wrote: "I had gradually come […] to see that the Old Testament from its manifestly false history of the world, with the Tower of Babel, the rainbow as a sign, etc., etc., and from its attributing to God the feelings of a revengeful tyrant, was no more to be trusted than the sacred books of the Hindoos, or the beliefs of any barbarian" [1]. Emma suffered as a result of her husband's agnosticism as did Darwin himself because he was aware that his revolutionary ideas about a world that did not need a Creator God were an affront to Emma's sensibility. This was perhaps another reason why Darwin was hesitant to make his ideas about evolution public. Also from his autobiography is this quotation regarding the advise received from his father about religion and marriage: "Before I was engaged to be married, my father advised me to conceal carefully my doubts, for he said that he had known extreme misery thus caused with married persons. Things went on pretty well until the wife or husband became out of health, and then some women suffered miserably by doubting about the salvation of their husbands, thus making them likewise to suffer." Darwin, however, did not followed his father's advise. When he and Emma were already engaged, he thought that there should be no secrets between them and talk to her about his

agnosticism ("agnostic" was a word coined in the early 1860 by his friend Thomas H. Huxley).

In a letter that Emma wrote to Charles Darwin, she expressed her concern about his loss of faith. In the same letter, Emma says that the habit of a scientist to not believe anything that cannot be proven should not influence him in other things which cannot be proven, since, if they are true, they probably surpass human understanding. She also says "Don't think that it is not my affair and that it does not much signfy to me. Everything that concerns you concerns me and I should be most unhappy if I thought we did not belong to each other for ever." Sometime later, Darwin wrote, in ink, at the end of the letter the following words: "When I am dead, know that many times, I have kissed and cried over this. C.D." [This letter and Darwin's note are included in his autobiography]. In his answer, he expressed his regret on seeing that she suffered because of his thoughts on religion. In one of the books in which these letters were published, Emma Darwin's daughter (Henrietta Litchfield) recalled that her mother was extremely religious, and not only privately; she went to church and read the Bible to her children. While the young Darwins were baptized in the Anglican Church, Emma taught them the prayers recited in the Unitarian Church.

Darwin's illness. Following his return from the *Beagle* and probably a consequence of the journey, Darwin's health was delicate. Shortly before getting married, he was worried because of the proximity of his marriage and the work that still needed to be done for the publication of his books. He felt very tired and Emma recommended that he rest outside the city until the wedding. She did not want him to become sick again until they could be together and she would be able to take care of him. And indeed she cared for him all his life. After more than 40 years of marriage, Darwin, in his autobiography, expresses his deepest gratitude to Emma, who he called the "greatest blessing" of his life, someone who endured his complaints, caused by his indispositions and poor health, with great patience and "the kindest sympathy" towards him [1].

Darwin's health prevented him from sustaining the social life he had earlier imagined for himself. Several authors have tried to retrospectively diagnose the illness that Darwin suffered during most of his life. Throughout the years, the symptoms he experienced and which preoccupied him greatly were predominantly gastrointestinal, and they came and went with varying intensity. In his correspondence to friends and colleagues, Darwin sometimes mentions his health and the symptoms that afflicted him. It has been suggested that he had Chagas disease (trypanosomiasis, caused by the parasite *Trypanosoma cruzi* and common in South America), acquired during his travels on the *Beagle*. The chronic form of Chagas disease is marked, after a period of latency, by myocarditis as well as neurological and gastrointestinal symptoms. At the second half of the 20th century, when a psychosomatic origin was attributed to many illnesses (gastric ulcer, for example), there were authors who saw a psychological origin in Darwin's illness and nearly constant fragile health. More recently, it has been suggested that his symptoms can be explained by lactose intolerance. Darwin's methodical and meticulous character led him to register the state of his health daily. Every day, in the morning and again in the evening, he would write down in a notebook how he was feeling, with a system of annotation that simplified the task of describing his symptoms exactly. There were activities that worsened his state; for example, spending the day in London would cause him to vomit, and merely the idea of having to go to the city would bring on an attack of anxiety.

Intense intellectual work also caused him to fall ill. In 1838, Darwin was already completing the corrections of his *Journal of Researches* (later known as *Voyage of the Beagle*) and writing the book's preface. He worked secretively, reluctant to explain many of his ideas to other naturalists, particularly geologists; the only person he dared speak to openly was his brother Erasmus. He thought that if he made his ideas public they would brand him as irresponsible, a heretic, or something even worse. This brought on a relapse of his illness, including palpitations. In Juny 1839, doctors forced him to stop all his work and to leave for a period of rest in the countryside (he and Emma lived in London at the time). He chose the family house in Shrewsbury, where his father, a physician, doctored him [4]. On another occasion, his friend Joseph D. Hooker spent a week in Down House; he and Darwin had long discussions about the nature of species, while Darwin was ill a great deal of the time, with the intellectual effort leaving him physically exhausted. Perhaps there have been more recent interpretations of Darwin's illness, but his symptoms are highly reminiscent of those of chronic fatigue syndrome, a systemic condition that for a long time was not clearly defined or was thought to be psychosomatic, but which finally was recognized as a true physical illness by the World Health Organization. Darwin tried many of the treatments of the time and spent periods in spas, where his health seemed to improve somewhat.

With the passing of the years, Darwin became increasingly reclusive because of his poor health. Visits and dinners with friends disturbed him greatly such that in the last years of his life he complained about losing touch even with close and beloved friends, among them Hooker and Huxley. Darwin withdrew from society because he associated conversation with fatigue and pain, unless he was speaking to

Emma or his children. Despite the precariousness of his health, Darwin lived to be 73, which at the time was a very advanced age. In October 1881, Darwin and Emma went to Cambridge to visit their son Horace and his wife in the new home where they had settled after their marriage. He took advantage of the chance to visit old friends, but as often occurred when he was excited about something, he became ill. From that time on, Darwin's life ebbed away slowly; he died on 19 April 1882.

A very special couple. From science's point of view, Emma's influence on her husband can, on the one hand, be considered negative, since she indirectly restrained Darwin, over a period of decades, from publicly stating his theory on the evolution of species by natural selection, for fear of hurting her religious feelings. It is necessary to consider, however, his decision in the context of 19th century Victorian England. On the other hand, Emma was Darwin's essential source of support, a dedicated wife and mother to their children, and his great friend and caretaker. Darwin wrote of her in his autobiography: "She has been my wise adviser and cheerful comforter throughout life, which without her would have been during a very long period a miserable one from ill-health" [1]. She was also the secretary who read him letters and the newspapers, who revised the proofs of his books, and who, when he was not feeling well—which was often—wrote letters to her husband's scientist friends in his name. It is therefore likely that without Emma Darwin would not have been able to achieve many of the things that he did. If Darwin was a great man, then Emma was certainly a great woman.

References

1. Darwin CR (1958) The autobiography of Charles Darwin 1809-1882. With the original omissions restored. Edited and with appendix and notes by his grand-daughter Nora Barlow. London, Collins. Available at The Complete Work of Charles Darwin Online. [http://tinyurl.com/37ecad]
2. Guerrero R (2008) The session that did not shake the world (the Linnean Society, 1st July 1858). Int Microbiol 11:209-212
3. Healey E (1988) Wifes of fame. Emma Darwin, Jenny Marx, Mary Livingstone. New English Library, Holder and Soughton, UK
4. Healey E (2002) Emma Darwin, The inspirational wife of a genius. Headline Book Publishing, London, UK
5. Piqueras M (2007) Microbiology: a dangerous profession? Int Microbiol 10:217-226