

On reading the amusing article 'Why I hate epigenetics' (*Physiology News* 77, Winter 2009, p. 43) Denis Noble dreamt that he was the Editor and had received the following letter, which he then translated into English for the benefit of readers of *Physiology News*:

Jardin des Plantes,
Paris, le 21 novembre 2009

Monsieur l'éditeur

I had no idea that my scientific ideas were to become so politically sensitive, though I have been told that the distinguished Edinburgh professor of genetics and developmental biology, Conrad Waddington, was ignored by his fellow American scientists during the McCarthy inquisitions of the mid-20th century because of possible association with something called Communism, largely because he invented the term 'epigenetics' and claimed to have shown that it confirmed my ideas on inheritance. He called those ideas 'Lamarckism' and was certainly not the first to do so. That damnable giraffe's neck (!) keeps returning to haunt me, whereas I thought I would be remembered for having introduced a new scientific subject, which I called biology (I was the first to do so), and for demonstrating the transformation of species and, hence, the basic truth of evolution.

I am deeply puzzled by the term 'Lamarckism' for another reason also. Your brilliant Honorary Member, Charles Darwin, elected to that position on the foundation of your esteemed Society in 1876, also espoused the idea that acquired characteristics could be inherited [DN: see note 1]. In fact, like all biologists of our time, and even earlier, we absorbed this idea from our predecessors. I am amused that an idea for which I was not the inventor should have become so strongly associated with my name. I may be a 'demented gloating little troll' – in fact, I died so poor that they had to throw my body into a common lime-pit – but I can't quite see why I am associated with

the idea any more than Mr Darwin. He never disagreed with me on this issue, since neither of us knew anything about the later discoveries of genetics that seemed to exclude it. He even introduced the idea of gemmules, particles that he imagined to flow through the blood stream to communicate acquired characteristics to the reproductive organs. Incidentally, your modern ideas on micro-chimerism are not so far from his idea of gemmules. It isn't just epigenetics that is resurrecting the idea of the inheritance of acquired characteristics, nor would Mr Darwin be surprised. I have it on good authority that he was uncomfortable with the dogmatism of those who usurped his name by calling themselves neo-darwinists. [DN: see note 2]

No, the main issue on which Mr Darwin and I disagreed was whether there was a direction to evolution, what I called 'le Pouvoir de la Vie'. This was not a mystical concept. In fact, I thought of it as derivable from basic physical principles, and so a perfectly natural phenomenon. Some of your modern ideas on complexity are not far removed from what I was thinking. Wouldn't it be better therefore for me to be seen as having laid the firm foundations of evidence for the transformation of species on which your Mr Darwin was to build? I argued the case for evolution with all the powerful skeptics of my day. The highly influential Georges Cuvier [DN: see note 3] ridiculed me mercilessly, even to the extent of gloating over my body in its pauper's grave. The so-called eulogy that he delivered on my death was described by your distinguished evolutionary theorist, Mr Stephen Jay Gould, as 'one of the most deprecatory and chillingly partisan biographies I have ever read.'

The fact is that I was reviled and died desperately poor (for which my family had to pay a heavy price) precisely because I had established the truth of, and argued strongly for, the idea of evolution. In this year of 2009, when you are rightly celebrating the bicentenary of Mr Darwin's birth, it would be

nice if people might pause a little and recognize that it is also the bicentenary of my main work, *Philosophie Zoologique*. [DN: see note 4]

Veuillez accepter, cher Monsieur l'éditeur, l'expression de mes sentiments les plus distingués,

Jean-Baptiste Pierre Antoine de Monet, Chevalier de la Marck

Notes by Denis Noble

1. In his introduction to Harvard's republication in 1964 of *The Origin of Species*, Ernst Mayr wrote (pp. xxv–xxvi) "Curiously few evolutionists have noted that, in addition to natural selection, Darwin admits use and disuse as an important evolutionary mechanism. In this he is perfectly clear. For instance,... on page 137 he says that the reduced size of the eyes in moles and other burrowing mammals is 'probably due to gradual reduction from disuse, but aided perhaps by natural selection'. In the case of cave animals, when speaking of the loss of eyes he says, 'I attribute their loss wholly to disuse' (p. 137). On page 455 he begins unequivocally, 'At whatever period of life disuse or selection reduces an organ...' The importance he gives to use or disuse is indicated by the frequency with which he invokes this agent of evolution in the *Origin*. I find references on pages 11, 43, 134, 135, 136, 137, 447, 454, 455, 472, 479, and 480."

2. See Gabriel Dover's book *Dear Mr. Darwin: Letters on the Evolution of Life and Human Nature* (Phoenix books, 2001).

3. Cuvier argued that the fossil record showed sudden, not gradual, changes – an idea that Stephen Jay Gould later espoused in his theory of punctuated equilibrium. Despite the similarity of his ideas with those of Cuvier, he was shocked by the dismissive tone of Cuvier's 'eulogy' of Lamarck.

4. *Philosophie Zoologique* is a much better book than one might imagine, given the low esteem in which Lamarck is held today. He really did establish the transformation of species and, although he was not the first to develop the idea of evolution, he was an indefatigable proponent of the idea at a time when it was even more ridiculed than in Darwin's day – recall that Lamarck died (1829) long before publication of *The Origin of Species* (1859).