

## *Charles Darwin at the Cape 1836*

Charles Darwin was born on 12 February 1809. His major work *The Origin of Species* was published in November 1859. 2009 is the bicentenary of his birth and 150 years after the publication of the *Origin*. It is also, in 2009, 130 years after the publication of the *Descent of Man*, Darwin's major work on human evolution.

Charles Darwin is a giant in the history of the natural sciences. He was not the first person to think of life in evolutionary terms. He was the first to define the mechanism of evolution, which he called 'natural selection'.

Darwin visited the Cape between 31 May and 18 June 1836. He was 27 years old at the time. This fact of his visit is not well known. 'Of the thirteen ports where HMS Beagle called on its homeward voyage from South America to England, it stayed longer at Simon's Bay than anywhere else except for the Galapagos Islands' the University of Stellenbosch geographer Wilhelm Barnard wrote.

Yet, Darwin's time at the Cape does not feature very much in his subsequent work. He does not refer to the Cape at all in the *Origins of Species*. There is no reference in the *Descent of Man*. 4 out of 517 pages in my edition of the *Voyage of the Beagle* is devoted to Cape Town based observations. In his published work as a whole, the Cape occupies but a small place.

The question for us was, does it mean that the Cape presented no lines of fact that were useful to Darwin in his enterprise to formulate general laws of evolution in the years and decades following on the *Beagle's* visit to the Cape?

We searched Darwin's unpublished writings and searched for unusual connections to find three interesting tendencies of thought that the Cape may have offered to him. They are the effect of geological change on evolution, a pre-Mendelian genetics based on John Herschel's fynbos bulb garden and an engagement with race and human origins.

### *1. First Impressions:*

*The Beagle* came to anchor at Simon's Bay on 31 May 1836. They had spent some time at Mauritius, saw the southern part of Madagascar and sailed along the Natal coastline straight into a storm near *Cape Agulhas*. The late May, early June storm was typical of the season, with low temperatures and high winds.

The berthing of the *Beagle* in Simonstown was common during winter as it offered protection from the northwesterly winds and swells associated with the winter weather.

'The little town of Simon's Bay offers but a cheerless aspect to the stranger' Darwin recorded. He set off to Cape Town travelling along the base of the western part of Table

Mountain. The first fourteen miles were 'desert' like, punctuated by the 'pleasure' that the sight of *fynbos* brought, he said.

Darwin admired Wynberg because 'a grand wall of mountains that gives the scene a degree of uncommon beauty' overwhelmed it. Late evening he arrived in Cape Town and struggled to find quarters. He stayed at the only good hotel in Cape Town, which he referred to as 'this great inn on the great highway of nations.'

The next morning he 'walked to a neighbouring hill to look at the town. It is laid out with the rectangular precision of a Spanish town' Darwin observed. The Cape was becoming English and this was a good thing he thought, despite the fact the Dutch 'thoroughly dislike our whole nation.' Nevertheless some few of the Dutchmen have lately sent their sons to England to learn a proper system of agriculture.'

What was the purpose of *The Beagle's* visit? *The Beagle* was circumnavigating the world. They had been journeying for 4 years. They visited the Cape Verde Islands, Brazil, Argentina, the Falkland Islands, Tierra del Fuego, the Straights of Magellan, Chile, Peru, the Galapagos Archipelago, Tahiti, New Zealand and Australia. On their way from Mauritius to England, the Cape was a port of call in the chain of British colonies they thought wise to follow home.

HMS Beagle was a surveying vessel and its Captain was Robert Fitzroy, a remarkable man by all accounts. His orders were to complete the 'charting of the far southern coast of South America', and to 'measure meridian distances on a westward navigation of the southern hemisphere and, as part of the process, to calibrate a battery of 22 new chronometers which the Beagle took on board for eventual use in the Royal Navy.'

Darwin was enlisted to give the Captain good company. What he got was someone with monumentally refined powers of observations. For Fitzroy, the priority at the Cape was to visit the Royal Observatory, because it was on its way to become the most important observatory in the southern hemisphere and was well placed and equipped for calibrating chronometers.

For Darwin, it was a wonderful opportunity for some geologizing. *The Beagle's* crew of 76 was probably not pleased. The Atlantic Ocean was the last lap home and they were anxious to complete the voyage.'<sup>1</sup>

## 2. Early Connections

Darwin's great great grandson (and great nephew of John Maynard Keynes) Randal Keynes pointed out that an early chalk drawing of his famous ancestor and sister Catherine drawn by the artist Sharples has him holding a pot plant of what he thought was the flowering *fynbos* plant the Cape Cowslip (*Lachenalia*) growing in it.

We asked the *South African National Biodiversity Institute* to identify the flower and

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<sup>1</sup> Wilhelm S. Barnard, 'Darwin at the Cape' *South African Journal of Science* 100 (May-June 2004) p.243.

Graham Duncan, the bulb specialist horticulturist at Kirstenbosch, confirmed ‘that it is indeed a *Lachenalia*. He says it looks like a hybrid between different forms of *Lachenalia aloides*, so one could call it *Lachenalia aloides* hybrid.

Director of the *Brooklyn Botanical Gardens* in New York Nancy Seaton wrote that the *Lachenalia* ‘plants are commonly called Cape cowslips because of their superficial resemblance to certain members of the genus *Primula*. Bulb enthusiasts have prized *Lachenalia* for centuries. Descriptions date back to the earliest plant collecting exploits of the Dutch East India Company, since about 1650.

Initially called *Hyacinthus*, the bulbs were classified as a unique genus in 1784 when they were named after the Swiss botanist Werner de la Chenal.

*Lachenalia* is a species part of one of the world’s richest botanical regions of the world, the *Cape Floral Kingdom*. We live in it. Seaton writes: ‘The diversity of plant life in this relatively small zone rivals that of the Amazon for sheer numbers of endemic species per square mile – 5,800 of the 8,600 known species in this kingdom are found nowhere else in the world – and 2,256 species are found on Table Mountain alone.’

Darwin’s father Robert Waring Darwin was a physician, businessman and amateur horticulturalist. *The Cape Cowslip* was a favourite in his garden and this explains why it is part of the picture.

### 3. Collection Strategies & the Sea Point Contact

Duncan Porter wrote an extensive article on Darwin’s collection strategy titled ‘The *Beagle* collector and his collections.’<sup>2</sup> Darwin had a well-finessed collection strategy.

He voraciously read everything there was to read on a subject. As time was precious, he would not repeat what others had already done. Although he was immensely interested in a wide range of subjects, he would not revisit previously covered terrain.

He knew that the Cape’s botany was well documented.

He knew of Andrew Smith’s *Illustrations of the Zoology of South Africa* and was delighted to receive a personal copy from him. Darwin befriended and came to like the Army Officer and Naturalist who accompanied him on two excursions at the Cape, including the important one to what became known as the *Sea Point Contact*.

Darwin’s children remember leafing through Smith’s *Illustrations of the Zoology of South Africa*.

He collected a few entomological and zoological specimens. After the visit, Darwin corresponded with South African plant specialists.

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<sup>2</sup> Duncan Porter, ‘The *Beagle* collector and his collections’ in *The Darwinian Heritage* ed. David Kohn (1985) pp. 972-1019.

He collected rock specimens in Simon's Town, the road between Simon's Bay and Cape Town, the road to Paarl, the sand flats between peninsula and Cape Town, Paarl itself, what he recorded as French Hoek Pass, the Lion's Rump and near the junction of granite and clay slate on Lion's Back.

It is important to recall that, from the Galapagos onwards, all of the specimens collected by Darwin had to be kept on board the *The Beagle*. Limitations on space forced Darwin to be rigorously selective about what he collected. Though he was interested in everything, his passion at the time was geology.

The catastrophic geological event that produced the melting and fusion of rocks at the *Sea Point Contact* left a deep impression on Darwin. It posed a question that geological orthodoxy could not convincingly answer.

The manner in which the granite and clay-slate combined posed a 'great difficulty' on the 'ordinary theory, of granite having been injected whilst liquefied', Darwin observed. Instead, 'we must conclude, that it has been here formed by the metamorphic action, a circumstance doubted, under nearly similar circumstances, by some authors' he concluded.

Obvious today, it was one of those remarkable general laws of nature that Charles Lyell always encouraged Darwin to formulate.<sup>3</sup> Indeed, it confirmed Lyell's new theory of geological change.

More than that, it dawned on Darwin that catastrophic geological events would alter the ecological habitats in which species reproduced and evolved. It was key to the understanding of how habitat change would encourage the evolution of new variants from old ones and how speciation – the emergence of new species – itself occurred.

#### 4. John Herschel and the 'mystery of the mysteries'.

In his autobiography Charles Darwin writes that, 'during my last year at Cambridge I read with care and profound interest Humboldt's *Personal Narrative*. This work and Sir J. Herschel's *Introduction to the Study of Natural Philosophy* stirred up in me a burning zeal to add even the most humble contribution to the noble structure of Natural Science.'<sup>4</sup>

Aware of the fact that Herschel was resident in Cape Town at that time to document southern hemisphere stars, clusters and nebulae, Darwin and Fitzroy met with the Herschels a number of times. At Feldhausen Estate they dined late in their visit, on 15

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<sup>3</sup> Charles Darwin, *Geological observations on the volcanic islands visited during the voyage of H.M.S. Beagle, together with some brief notices of the geology of Australia and the Cape of Good Hope*. 1844. pp. 148-152.

<sup>4</sup> Charles Darwin, *The Autobiography of Charles Darwin*, Nora Barlow ed., (New York, WW.Norton, 1958) p.67-8.

June, which Darwin described as ‘the most notable event that, for a long period, I have had the good fortune to enjoy.’

Although there is no record of the dinner, it must have left an impression of a lifetime, as it had to do with what Herschel and Darwin both referred to as the ‘mystery of the mysteries’, which is the question of heredity and how a new species comes about.

Brian Warner writes that only four months before the arrival of the Beagle at the Cape, Herschel had been considering the evolution of species. In a long letter to Charles Lyell (who had himself speculated on the origin of species in his 1832 *Principles of Geology*) Herschel cautiously began to worry about ‘that mystery of mysteries – the replacement of extinct species by others. Many will doubtless think your speculations too bold but it is as well to face the difficulty at once.’

Herschel was led to the idea of evolution by his *fynbos* bulb collection: ‘this is a beautiful country for studying the graduation of Botanical species – the families are so rich in species. I am little or nothing of a Botanist – but with one feature it is impossible not to be struck – viz that when you find a species which fills up as you fancy a wanting link between two others – it does not *merely* fill it, but does so with the superaddition of some new characters.’

Herschel had arrived at what was a crude, pre-Mendelian and poorly formulated hypothesis on heredity. If this was the dinner conversation with Darwin, it added undoubtedly to his own earlier thoughts on what was the vehicle of evolution. As John Rourke has commented<sup>5</sup>: ‘The depth of his insight as revealed by these comments is surprising especially when one considers they were conceived several decades before the principles of inheritance were established and 23 years before Darwin’s theory of evolution had been published.’

##### 5. *Slavery and the Hodmadods*

Randal Keynes wrote that during the voyage of the Beagle ‘two experiences which had nothing to do with his work as a naturalist shook Charles deeply. Both were encounters with people – black slaves in Brazil and ‘savages’ in Tierra del Fuego.

Darwin had first learnt about the tropics from a freed black slave called John Edmonston in Edinburgh. Edmonston earned his living as a ‘bird-stuffer’. Darwin took lessons from him and enjoyed their conversations; he commented later how Edmonston’s mind was like those of Europeans.

It was at that time an exceptional view to hold among people in Darwin’s social position. So too was his objection to slavery. His grandfather Josiah Wedgwood I had been a leading member of the *Committee for the Abolition of the Slave Trade* in the 1780s, and produced at his pottery the well-known cameo of the chained slave with the question ‘Am I not a man and a brother?’

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<sup>5</sup> J. P. Rourke, *Transactions of the Royal Society of South Africa*, v. 49, no.71 (1994).

Keynes goes to talk about how Darwin argued furiously with the Beagle's captain Fitzroy about the morality of slavery. Fitzroy saw little wrong with it. Darwin rejected the argument that it was a 'tolerable evil' to separate children from their parents. For him it was cruel: 'Picture to yourself' he wrote 'the chance, ever hanging over you, of your wife and your little children being torn from you and sold like beasts to the first bidder.'

He talks about how Darwin recognised the reality of people deemed 'savages' acquiring the mental sophistication of the civilised – the man from whom he learnt his bird-stuffing John Edmonston demonstrated that much to him.

They had three individuals from *Tierra del Fuego* on board the Beagle (Fitzroy adopted them during his first expedition), 'quiet and well-mannered young people' who could follow the etiquette of an audience with the King and Queen of England.

But their fellow tribesmen, yelling and waving on the rocks of their South American habitat, looked scarcely like earthly inhabitants, Darwin observed. The gulf between savagery and civilisation was enormous, and yet the three Fuegians had stepped across it.<sup>6</sup>

The issues stayed with him throughout the voyage and challenged Darwin at the Cape. He remarked on how 'ill-treated' the aboriginals were, by which he meant the Khoi people. He was at the Cape two years after the initial and first phase of its gradual abolition. He noted that the white people of the Cape did not take well to abolition.

He went on his travels into the Cape hinterland accompanied by an English-speaking Khoi groom. Nowhere in his publications or notes does Darwin mention the groom's name.

The nameless groom' wore a long coat, beaver hat, and white gloves!' Darwin continued in the observational anthropology of the time to say that 'to my eye' the Khoi 'look like partially bleached Negroes; they are of small stature. They have most singularly formed heads and faces.'

In the century of an obsession with cranial measurement that Stephen Jay Gould once referred to as the century of the 'mismeasure of man', Darwin observed that the groom had a 'temple and cheek bones' that 'project so much, that the whole face is hidden from a person standing in the same side position'.

Darwin playfully referred to 'Hottentots' as 'Hodmadods', a colloquial expression used by someone called Dampier, he wrote. In a *Cape Times* column we wondered aloud about who this Dampier may be. Simon Fuller wrote to say that 'I am interested in William Dampier, the 17-18<sup>th</sup> century English buccaneer and navigator because he was at the same school in Somerset that I was. He is a colourful character and famous for inspiring

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<sup>66</sup> Randal Keynes, *Darwin, His Daughter & Human Evolution* (New York, Riverhead Books, 2001) pp.33-35.

the story of Robinson Crusoe by Defoe, and for giving us some hilarious descriptions through the copious notes he kept of his numerous voyages around the world.'

I wonder what Darwin and his Hodmadod spoke about. They spent a special time together, in each other's company for four days. They shared a language – English – so communication was possible. They shared an adventure. Darwin trusted his Hodmadod with his life. But what was this professional tour operator's name?

## 6. *The Grey and Miserable Cape*

Darwin set off on Saturday 4 June on his circular journey. In letter dated June 3 1836 he wrote to his sister Catherine of his hopes: 'I hope to set out on a short ride of 3 or 4 days, to get a few glimpses of African landscape, or rather I should say, African deserts.

Having seen so much of that sort of country in Patagonia, Chile and Peru, I feel myself to a certain degree a connoisseur in a desert and am very anxious to see these. Every country has its peculiar character; and every country is well worth seeing.'

He hoped to see some large animals. He made a number of observations in the *Origin of Species* about the curious relationships between the large animals he saw in Argentina and the barren stretches and poorly vegetated ecologies in which they lived.

University of Cape Town climatologist Peter Johnston tells us that the vegetation during this period would have been fairly bland in colour, wheat fields barren and vineyards bare.

Many of the variety *renosterbos* is a dark and almost grey bush dominating large areas. The absence of trees on the flats and in the mountains of Paarl and Franschoek is due to the *fynbos* dominance where the only trees would be the *Leucodendrons* that grow to about 3-5 m in height.

They were used extensively for building wagon wheels, one of the main industries of the Drakenstein valley in which lay Paarl and Wellington. We could not for the life of us understand how Darwin could possibly describe Paarl Valley as grey and brown but that was how it was at the time.

Darwin was able to take advantage of two newly engineered mountain passes. The Franchhoek Pass was completed in the 1920s and Sir Lowry Cole's pass in the early 1930s.

A rainy cold winter, strong winds, hazy days caused by temperature inversion over the Cape Flats and vast stretches of brown and grey *fynbos* covering sandy geographies made for a miserable Cape. Darwin's dolorous language used to describe the environment was apt.

We should mention that when he encountered environments that resembled the aesthetics of the English countryside Darwin's spirit clearly lifted.

### *7. Life & Times of Darwinism in South Africa*

In the early 20<sup>th</sup> century, the work of Charles Darwin found its way into only a few universities, among which the University of the Witwatersrand, Cape Town, Natal, Rhodes and to a lesser extent Stellenbosch and Pretoria were the most important.

Eddie Roux and Jeffrey Lever documented how limited the reach was, as a result of ambivalence and hostility from state and the official churches and their respective apparatchiks and clergy to the idea of evolution.

One or two exceptions aside, apartheid ideologues never took to Darwin's work, largely because he looked to material factors to explain the origin of life on the planet.

Instead they took to perversions of the notion of the 'survival of the fittest' to create the largest state-managed breeding programme called *apartheid*. Their key thinker in this respect Eben Dönges knew that whites were neither a race nor were pure. His goal was to isolate the gene pool of those who looked of European descent.

The group areas and homeland system physically isolated the 'breeding populations and the sex and marriage laws criminalised mating outside of the legally sanctioned groups. In this way adding more recent European immigrants to the pool and, of course, keeping non-Europeans out, could genetically enhance the white group.

As this was government policy, there never developed a strong eugenics movement in South Africa. Eugenics was certainly practised at some mental institutions. 'Race testing' became a perverse art during court decisions regarding race classification and finding suitable parents for orphaned children.

All of this had nothing to do with Charles Darwin and his work. Indeed, it was scientifically and morally at odds with what the man said, wrote and did. He suggested in the *Descent of Man* that human beings are variations on a theme and that we were likely of African origin.

### *8. Closing the Circle*

Darwin did not arrive at the Cape in the *Voyage of Beagle* with a theory of evolution in his head in search for facts to confirm it.

That is not how it went or worked.

Instead, he amassed mountains of observational facts and then formulated general laws to explain these. His great mentor and friend Charles Lyell encouraged him to conduct science in this manner.

By the time he formulated laws, three lines of evidence drawn from his time at the Cape become important:

1. The understanding, derived from his visit to *the Sea Point Contact*, that catastrophic geological events alter the ecologies which different forms of life inhabit and interact with one another, are often the cause of mass extinctions and can, under the right circumstances, result in speciation itself.
2. The understanding, based on Herschel's remarks about his *fynbos* bulb garden, that biological material was being passed on from one generation to the next, a pre-Mendelian idea of heredity. Herschel and Darwin had no name for it. Darwin knew that Natural Selection acted on some kind of hereditary material but he had no knowledge of what it could be at the time.
3. The hypothesis that human beings were of Africa because that is where our closest relatives (Darwin called them 'allies') the primates lived. A week ago it was revealed that Mossel Bay is a likely site of modern human origins. To think that Darwin was within 200 miles range, close to Caledon, of the site when he visited in 1836.

South Africa is the place where the circle Darwin started, closes. It is the place that is home to the story of stories, our origins as a species.

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We would like to thank Brian Warner for sharing a draft paper on Herschel and Darwin with us. Peter Johnston reconstructed the prevailing weather May-June 1836 and made some useful remarks about the vegetation. Randal Keynes put together all of the primary sources on which this talk is based and pointed us a few times in the right direction. In addition to Darwin's published work, we relied also on Wilhelm Barnard's and Jeffrey Lever's articles on Darwin's time at the Cape. Beryl Eichenberger and Philip Todres put together the fabulous slide show that goes along with the presentation.

#### Darwin200 2009 Programme

##### Events to Date

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|--------------------|---|
| 26-30 January 2009 | University of Cape Town Summer School Lectures by Dr Mario de Gregorio. <i>University of L'Aquila</i> .   |
| 12 February        | Three lectures on <i>Charles Darwin: Fact &amp; Fiction, Realities &amp; Myths</i> by Dr Peter Bowler <i>Queen's University of Belfast</i> , Dr Mario |

de Gregorio *University of L'Aquila* & Dr Brian Warner  
*University of Cape Town.*

23-25 March Three lectures *Humanising Darwin: Scientist, Father & Family Man* by Dr Janet Browne *Harvard University*, Dr Randal Keynes *Down House* & Dr Wilmot James *University of Cape Town.*

22 October Nelson Mandela Science Lecture *Debating with Darwin: Africa & Human Origins* by Dr Christopher Stringer, *Natural History Museum of London.*

**Dr Mario A. de Gregorio** is Professor of the History of Science at the University of L'Aquila, Italy and a regular visitor to the University of Cape Town. He has written on T.H. Huxley, Ernst Haeckel and is editing Charles Darwin's Marginalia with Nick Gill.

**Dr Peter J. Bowler** is Professor of the History of Science at the Queen's University of Belfast and is well known on both sides of the Atlantic for his books on the history of evolutionism. He is perhaps best known for his *Evolution: The History of an Idea* (University of California Press, 1983, Berkeley).

**Dr Wilmot James** is responsible for organising the Darwin200 events in South Africa. He is executive director of the Africa Genome Education Institute and Honorary Professor in the Division of Human Genetics at the University of Cape Town.

**Dr Randal Keynes** is a great great grandson of Charles Darwin and a great-nephew of economist Maynard Keynes. He lives and works in London. He is the author of *Darwin, His Daughter & Human Evolution* ((Riverhead Books, 2001, New York).

**Dr Janet Browne** is Professor of the History of Science at Harvard University. She is the author of the landmark two-volume biography of Charles Darwin, *Voyaging* (Random House, London, 1995) and *The Power of Place* (2002).

**Dr Brian Warner** is Emeritus Distinguished Professor of Natural Philosophy at the University of Cape Town where he was head of Astronomy there for a time. Known as an astrophysicist and as an historian of science, Warner has published several books on the history of the Cape Observatory and the work of Sir John Herschel.

#### Other events (in planning)

Darwin lecture on the evolution of infectious diseases in Africa.

Darwin lecture on the evolution of *fynbos*.

Teachers' workshops on evolutionary biology.

Learning Cape Festival & other events.

The City of Cape Town will install a new plaque marking the Sea Point contact.

Cape Nature will assist with installing plaques in Simons Town, Wynberg, Paarl, Franschoek, Houw Hoek and Sir Lowry's Pass.  
The plaques will form the basis of the Darwin Trails.  
The Africa Genome Education Institute (AGEI) will publish a map of the Darwin Trails and the book Darwin at the Cape 1836.

#### Current Partners

City of Cape Town  
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Down House, Kent  
Division of Human Genetics, University of Cape Town  
Africa Genome Education Institute

Dr Wilmot James  
Africa Genome Education Institute  
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