RANDOM HOUSE eBOOKS

Charles Darwin: The Power of Place

Janet Browne

Contents

About the Book

Winner of the 2003 National Book Critic's Circle Award for Biography and the Royal Society of Literature's W. M. Heinemann Prize 2003.

This concluding volume of Janet Browne's magisterial biography covers the transformation in Darwin's life after the first unexpected announcement of the theory of evolution by natural selection and the publication of *On the Origin of Species* in 1859. Always a private man, Darwin found himself a controversial figure, reviewed and discussed in circles that stretched far beyond the boundaries of Victorian science.

Janet Browne here examines the wider publishing world of Victorian England and the different audiences that responded to the ideas of one of the leading thinkers of the nineteenth century and considers the Darwinian revolution from Darwin's point of view.

About the Author

Janet Browne is a zoologist and historian of science. She is at present Professor in the History of Biology at the Wellcome Trust Centre for the History of Medicine at University College, London. The first volume of her biography *Charles Darwin: Voyaging* is also published in Pimlico.

Also by Janet Browne:

Charles Darwin, Volume 1: Voyaging

Praise for *Charles Darwin: The Power of Place*

‘The second, final volume of her magnificent life of [Darwin]. Much the best biography of Darwin to date, it makes irresistible reading.’ Miranda Seymour, Top Five Books of the Year, *Sunday Times*

‘Biographies of Charles Darwin are scarcely an endangered species . . . a few are moderately interesting and fulfilling, but none has offered the promise of this, the second volume of Janet Browne’s study of the world’s greatest biologist.’ Robin McKie, *Observer*

‘Magisterial, beautifully written and paced, wise, scholarly and a rivetting read.’ Jackie Wullschlager, *Financial Times*

‘A marvellous book . . . This second part of the life stands on its own. Soothing, unhurried and absorbing’ Jane Ridley, *Spectator*

‘From beginning to end, the book is richly informative and a delight to read.’ Michael T. Ghiselin, *Times Literary Supplement*

‘Browne’s first volume was warmly received when it appeared seven years ago, and the second triumphantly fulfils its promise . . . [a] remarkable book.’ James Secord, *Daily Telegraph*

‘One of the most distinguished of all modern biographies.’ *Guardian*

‘A richly detailed, vivid and definitive portrait with not a word wasted: the best life of Charles Darwin.’ *Kirkus Review*

‘Browne’s subject is monumental, but her writing style is never overburdened by the weight. Rather, her prose is

elegant in its clarity of thought, her craftsmanship impeccable in the way it weaves a coherent whole from the innumerable threads of thought, experience and persona that comprised this colossal life.' *Publishers Weekly*

'Monumental and absorbing' J. B. Pick, *Scotsman*

'If you want to take the measure of his greatness, this is the book you should read.' Anthony Daniels, *Sunday Telegraph*

'Browne's triumph in this second of her two volumes is that, while analysing a great scientist, she continues to evoke a flesh-and-blood mortal.' G. S. Rousseau, *Literary Review*

'Out of all the virtues of Janet Browne's outstanding biography, the clinching one is the unassuming manner that respects and conveys the spirit of its subject so well.' Marek Kohn, *Independent*

'A magnificent achievement. Browne combines a clear and sympathetic account of Darwin's later years with a brilliant analysis of the phenomenon that became known as Darwinism.' John Gardiner, *BBC History*

'Janet Browne's meticulously organised and beautifully written two-volume biography . . . is as racy and exciting as any Victorian novel, and a fitting tribute to a truly great man.' John Banville, *Irish Times*

'Sharing her subject's passion for detail, but presenting her mountain of facts in a buoyant narrative, Browne maps the intricate ecosystem Darwin inhabited.' Jane Gregory, *New Scientist*

For Kit and Evie (again)

Charles Darwin: The Power of Place

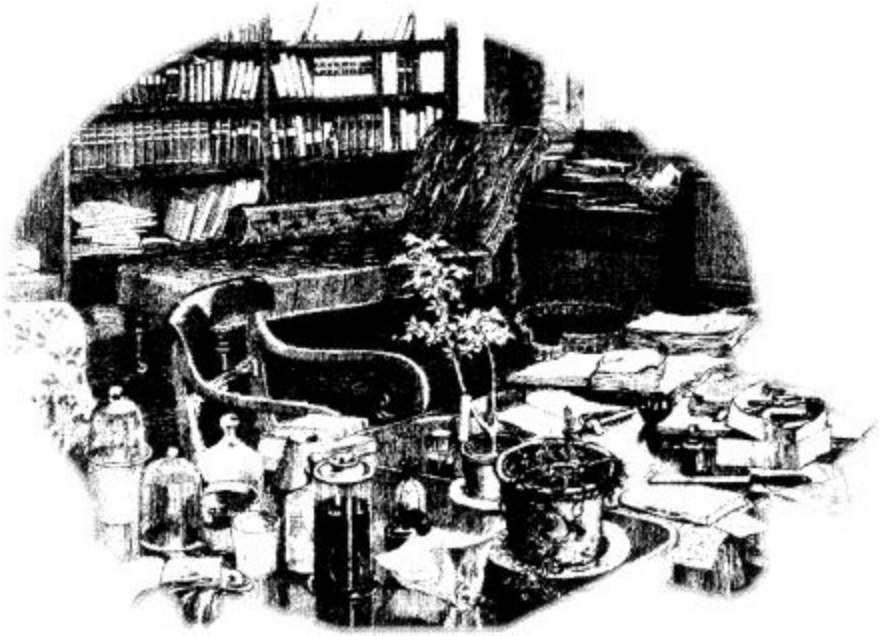
Volume II of a Biography

Janet Browne

PIMLICO

part one

AUTHOR



chapter 1

STORMY WATERS

IF CHARLES DARWIN had spent the first half of his life in the world of Jane Austen, he now stepped forward into the pages of Anthony Trollope.

Victorian Britain seemed to be at peace with itself as political agitation at home and memories of the Crimean War and Indian uprising gave way to relative stability in the late 1850s and early 1860s. Free trade and carboniferous capitalism pushed ahead as the great manufacturing industries of the nation boomed. In the grand houses of London, Viscount Palmerston picked up his silk hat to become prime minister in 1857, followed in short order by Lord Derby in 1858, and then Palmerston again in 1859, while Benjamin Disraeli, William Gladstone, and Richard Bright stalked the wings impatient to transform the face of party politics. Cathedral cities hummed with religious controversy; books and magazines poured from the presses; the newly affluent took tours and holidays; and a whole army of clerks, civil servants, bureaucrats, bankers, and accountants was called into being to administer the fresh commercial horizons that accompanied the emerging empire, as India, China, Canada, South America, and the Antipodes increasingly fell under British economic domination. Steam technology was the hero of society. At that time Britain possessed two-thirds of the world's capacity for cotton factory production and accounted for

half the world's output of coal and iron, an unmatched degree of industrial preeminence. The length of railway track snaking across the countryside doubled from 1850 to 1868. Lawnmowers, water-closets, gas lights, iron girders, encaustic tiles, and much, much more were available to those who could afford them. Although Queen Victoria and her ministers were soon to encounter complex foreign affairs in Garibaldi's Italy and painful consequences from the Civil War in the United States of America, the ethos of "improvement" prompted significant developments in domestic housing, health, education, communications, dress, and manners. "The genius of England is universally admitted to be of an eminently enterprising and speculative character," declared the magazine *Once a Week*.[1] Confidence soared. Social boundaries shifted.

Even so, the contradictions at the heart of Victorian life were more obvious than ever. Fraud, filth, overcrowding, poverty, death, and violence were a fact of life in the urban slums. Rural communities had lost in a decade more than 40 percent of the male workforce to industrial, colonial, and military demands and bleakly faced another round of agricultural depression and distress. The nation's religious faith, although never coherent, was fracturing into fervour or dissent. While many from the ruling ranks of society turned a blind eye to these issues, a remarkable array of novelists, statisticians, medical men, radical divines, and social activists were starting to reveal the squalor alongside prosperity and discovering the interesting in the ordinary. In time, parliamentary leaders would open their minds to a second round of political reform in the nineteenth century, egged on by the high sense of purpose, moral earnestness, doctrines of self-help, and appreciation of decorum that characterised the emerging middle classes. From real-life Westminster to imaginary Barchester and back again, Trollope easily captured in his novels this sense of the personal and parochial. But life was not simple even for

those whom Lord Salisbury called “persons of substance.” These mid-century years were not so much an age of equipoise as framed by social and political contrasts. It was an age of capital, labour, complacency, and faith; at the same time, an age of cities, misery, change, commerce, deference, and doubt.

In among the contrasts stood the unobtrusive figure of Charles Darwin. Supported by a family fortune derived from the Industrial Revolution, Darwin was content to become a thoroughly respectable Victorian gentleman. He put away his *Beagle* shotguns, cast a discerning eye over his investments, and began to participate in the growing sense of national prosperity. He had no need to seek employment. Like many others in his circle he was free to pursue his interests, in his case a magnificent obsession with natural history.

In 1858 he was forty-nine years old, a steady and likable individual, “one of the kindest and truest men that it was ever my good fortune to know,” said Thomas Henry Huxley. His scientific status was already secure, although he had not yet revealed his theories about species to anyone other than a few close friends. His *Origin of Species* was yet to come. His personal position was equally secure. He was married and comfortably settled with his wife, Emma, and their children in a country house in the village of Downe, in Kent, near enough to the attractions of the metropolis but a world away from its problems. For years now he had been troubled by continued ill health—“being ill was normal.” Yet his home at Down House was the safe harbour he sought for the end of his personal voyage. “Few persons can have lived a more retired life than we have done,” he wrote with undisguised pleasure. “My life goes on like clock-work and I am fixed on the spot where I shall end it.”[2]

In fact Darwin was far more sociable than his words allowed. In London, his friends were clever and influential, a cosmopolitan mix of university professors, authors,

manufacturers, government officials, landowners, and politicians; here and there a baronet or a literary lady or two, a few old comrades from his time on the *Beagle*, and a clutch of intelligent nieces ready to discuss the latest concerts or exhibitions. Whenever he went to town, he sought out the company of his older brother Erasmus, pleasantly fixed in his bachelor ways, and his cousins Fanny and Hensleigh Wedgwood, all living close to each other on the outskirts of Bloomsbury and forming the hub of an extended circle of intermarrying Wedgwoods and Darwins.[3] Darwin had married his cousin Emma Wedgwood in 1839. Other cousin marriages among the clan drew the generations together.

Erasmus hosted dinner parties for him, gossiped, and kept parcels until his arrival. If Darwin was alone he would stay overnight and meet his old friend the geologist Sir Charles Lyell or some other scientific colleague for breakfast—meetings which he valued for keeping in touch and maintaining his intellectual momentum. Otherwise, he would bring Emma and the youngest children up for the pantomime or trips to the dentist. They would stay with Fanny and Hensleigh and see their other relatives visiting from the shires.

His country friends were no less pillars of the community. Darwin welcomed the soothing rhythm of local affairs, always willing to discuss the state of the weather or his poor health with neighbours, organise parish charities, and sympathise with John Innes, the resident vicar, over difficult young curates or problems with the village school. Every so often, a little debate about church doctrine with Innes made his strolls around the country lanes agreeably lively. Innes was just the kind of relaxed clergyman that Darwin himself might once have become if the voyage of the *Beagle* had not intervened. “I do not attack Moses,” the naturalist remarked affably to him, “and I think Moses can take care of himself.”[4] At Downe Darwin took on duties as a local

magistrate, an occupation at the heart of provincial life in which law-abiding, landowning gentlemen like himself imposed fines on poachers or issued licenses for keeping pigs.

This society was reassuringly sedate. Darwin and Emma regularly met Sir John Lubbock, mathematician and fellow of the Royal Society, and his son John, a young naturalist, who lived a few miles away at High Elms. They enjoyed the company of the Bonham Carters, in a neighbouring village, and George Ward Norman, a director of the Bank of England and country gentleman of Downe. Every so often they invited weekend guests from London, sending a horse and carriage to the nearest railway station to pick up visiting groups. Joseph Hooker, the assistant director of Kew Gardens, and Thomas Henry Huxley, the biologist and writer, were particular friends. Somewhat surprisingly for a period in which the prevailing motifs were industrialisation, social movement, urban expansion, and religious dissent, Darwin's parish was utterly secluded, almost a relic of a former age in its social structure and restricted occupational patterns. The long trip to the railway station made it seem further away from modernity than it really was. Downe village was small, no more than five hundred people in the 1861 census, and relatively stable considering its proximity to growing suburban centres like Bromley and Maidstone. The national post office had altered the spelling from Down to Downe late in the 1850s, a change that Darwin resolutely ignored when addressing letters. Twenty years later the population had increased by only fifty. Falling readily into the provincial swing of things, he unashamedly called himself a "Farmer" in Bagshawe's *Directory.* A Wedgwood niece tartly observed after one of these weekend parties, "We have enough dullness in the family & plenty of virtue—a little vice would make a pleasant variety."[5]

Yet underneath the mild exterior, Darwin's mind teemed with ideas—daring and unusual proposals that he hesitated

to put before the world. He had balked at disclosing his theories before they were ready, fretting anxiously over his work, doggedly probing every crevice of the evidence, building up a tightly packed argument that he hoped would protect his scheme from at least some of the intense criticism he knew it would provoke. Ever since returning from the *Beagle* voyage in 1836, some twenty-two years before, he had believed that living beings were not created by divine fiat. From that time on, he had sought an alternative explanation that would depend on natural processes rather than on God's direct action.

He had found it in Thomas Malthus's *Essay on the principle of population*, an economic principle of checks and balances that Darwin applied to the survival rates of animals and plants and called "natural selection." Since then he had focused his energies on documenting the origin of species by these natural means, "slaving away" in private. Only recently, in 1856, Charles Lyell had pressed him to get on and publish, and in that year Darwin began writing a long manuscript intended for future publication. "I have found it quite impossible to publish any preliminary essay or sketch," he confided to another friend, "but I am doing my work as completely as my present materials allow without waiting to perfect them." This unfinished manuscript on natural selection already ran to 250,000 words, comprising eleven chapters of a probable fourteen, a great pile of paper on his study table that he ruefully called his "big book on species." He knew it was his life's work, before which everything else faded into irrelevance.[6]

As Darwin now conceived it, natural selection operated on living beings as if it were a statistical necessity, a law of nature stripped of any divine influences, invincible, predominant, and fierce, relentlessly honing animals, plants, and humans in the struggle for existence. His theories had no room for biblical teachings about Adam and Eve or the Garden of Eden. Organisms either adapted or died. His

vision of nature had moved far beyond the cosy notions that fortified most Victorians, views about the perfect adaptation between animals and plants and their environment that, for many, mirrored the social stability they thought they saw around them. “Every class of society accepts with cheerfulness that lot which Providence has assigned to it,” Palmerston optimistically declared. He might almost have gone on to include animals and plants. Darwin, on the other hand, saw the natural world as a constant competitive struggle for survival.

Much of the lasting fascination of Darwin’s life story surely lies in the relationship between this prolific inner world of the mind and the private and public lives that he created for himself. His power of analysis was outstanding; his creative imagination remarkable. As a biologist, his distinctive gift was to envisage all living beings not only in their relations to one another but also in their relations to the places in which they lived and to the unfolding sequence of time. He would become one of the most famous scientists of his day, a Victorian celebrity whose work even in his own lifetime was regarded as a foundation stone for the modern world, not least for the manner in which he changed the way human beings thought about themselves and their own place in nature. And yet he liked to be a countryman, pottering around his garden. He was an invalid plagued by disorders that probably fed on his intense intellectual activities. He was a husband, father, friend, and employer, as well as a naturalist, author, and thinker. To explore what sort of person he was adds significantly to the evaluation of his part in history—or, putting it round another way, to know something of Darwin and the way he operated explains a good deal that might otherwise be perplexing about the scale of his achievement and the revolution in thought that customarily bears his name. The manner in which his daily life interlocked with his theories and with his public role as

the author of *On the Origin of Species* brings to light a long and unexpectedly eventful life story.[7]

The *Origin of Species* was to dominate the second half of his life. Where Darwin had once voyaged on the *Beagle* through new oceans of thought, he now turned his mind towards writing and publishing, towards being an author. The events surrounding the book's publication were exacting enough. Afterwards Darwin would emerge as a remarkable tactician—a man who prefered to remain behind the scenes but a canny and dedicated publicist for all that. The strategic effort that he put into disseminating his views was intense. As has long been clear, the Darwinian revolution was neither completely Darwinian nor completely revolutionary,[8] and there was no steady march towards the publication and approval of his ideas. The recasting of contemporary scientific horizons was hardly carried out by him alone, and what would pass for "Darwinism" was never a monolithic structure. The chronicle of Darwin's mature years was in fact to be the story of how he negotiated the reception of his *Origin of Species,* and this in turn would comprise a web of will-power, strategy, conflict, the loss of friends, disappointment, pleasure, ruthless determination, and great personal exertion set within larger currents of scientific and social transformation—a story at root about the making and validating of new scientific knowledge. The project was immeasurably enhanced by his producing a book at a time when the publishing industry was expanding and review journals were enjoying rapidly diversifying audiences. He benefitted from the public support of his friends, many of whose careers progressively interwove with his own. His book closely meshed with major transformations in nineteenth-century thought and came to symbolise the fresh perspective. What could it have been like to be Darwin during what would come to be called the Darwinian revolution?

Even Darwin himself might have found the question difficult to answer. “I wish I could feel all was deserved by me,” he was to say. Indeed, many of the modern images of Darwin—as an invalid, as a methodical country squire, as a solitary genius—while perceptive and accurate enough, fall short of doing full justice to the many sides of his character that would emerge during the last twenty-five years of his life. In retrospect, it is plain that there was much more to Darwin than his theory, and more to the theory than Darwin. His scientific associates almost inevitably met a different figure from the man that his wife and children knew, a man different again from the controversial author that the public encountered when the *Origin of Species* was published or that his servants passed in the hall. Friends and enemies responded to him variously. Darwin responded variously in return. “If I had been a friend of myself, I should have hated me,”[9] he remarked pensively to Huxley at the height of the controversy over the *Origin*.

As might be expected, he not only lived his own life, he lived also in the lives of others. In personal terms the choices he made and the paths he pursued were necessarily of the moment. Every plus had its minus and some of his actions can now be seen to be deeply exploitative. He manipulated his household and daily routines in order to allow the production of his book and the other volumes that were to follow. The impressive tenacity and persistence that he brought to his natural history researches were at times utterly selfish. The dedicated collection of facts that made his writings so powerful rested on an implacable ability to take advantage of the knowledge of others. His illnesses, usually so disruptive and debilitating, as well as his well-known reticence and modesty, served as an effective way to avoid unwanted responsibilities. And despite his reputation for shyness, the people who knew him well recalled his “hearty laugh” and “jovial” manner, his “By Jove!” in letters and conversation. Even though he lost his religious faith and

shocked his readers, he was acclaimed as a good man, a benevolent sage, and he was buried in Westminster Abbey. All his best qualities—the qualities that inspired Leslie Stephen to dub him “a noble old hero of science”—were grounded in ordinary longings, faults, and frailties. Darwin was one of the most human of men, surrounded by concentric circles of friends and relatives. In many ways, his biography is in part the biography of Victorian family life—of what it was like to make and live with science.

In all this, there was a special resonance between the man and his domestic setting. By now the Darwins had lived at Down House for sixteen years, a fruitful, relatively placid time during which he and Emma produced eight of their ten children. Two of these children had died in childhood. One was buried in the churchyard of the small flint-walled Anglican church in Downe, the other in Malvern after a disastrous trip to the water-cure. He and Emma had mourned heavily over these losses. But despite the emotional toll, Darwin felt wholly content in Downe. The remaining children were William, the oldest, born in 1839, Henrietta (b. 1843), George (b. 1845), Elizabeth (b. 1847), Francis (b. 1848), Leonard (b. 1850), Horace (b. 1851), and little Charles, the baby, born in 1856. He and his family were an integral part of the fabric of town and country life that characterised the landed classes in Britain during the middle years of the nineteenth century. Without this sense of place, Darwin could hardly have hoped to bring his work on natural selection and the origin of species to completion. His home, and the lifestyle of a country gentleman that he created within it, gave him the peace he needed and time to consider every part of his argument.

Without this sense of place, too, his work would not have taken the singular character that it did. His life and his science were of a piece. The tumble of ideas that had characterised the first half of his existence was giving way to the methodical intensity of documenting and reinforcing

his notions. His home and garden were his experimental laboratories, his book-lined study was his manufactory; these were the places where he most liked to be. He discovered that he valued routine—and went to great lengths to create a well-regulated household in which he was left free for the steady construction of facts. More than this, his home and his homelife became an actual part of his intellectual enterprise. Over the years, Darwin bred pigeons, grew pots of seeds in his outhouses, observed bees moving across his flowerbeds, tracked worms in the fields that he saw from his drawing-room window, counted blades of grass in his lawn, watched his infant children in the nursery, and pondered the twists and turns of climbing weeds in his hedges, all the while seeking the detailed evidence of adaptation in living beings that he believed to be the keystone of his project. Although his *Beagle* experiences were still important to him and always carried due weight in his writings, and his particular insight into nature remained undimmed, these home-based researches were the hidden triumph of his theory of evolution. His family setting, his house and garden, the surrounding Kent countryside, and his own sense of himself at the heart of the life he had created and the property he owned provided the finely crafted examples of adaptation in action that lifted his work far out of the ordinary. His thinking path, the path he called the Sandwalk that skirted the edge of a copse at the bottom of the Down House garden, became the private source of his conviction that his theory was true—true, if only he could show it.

Solitude served him well here. But Darwin was not a complete rural recluse. Systematically, he turned his house into the hub of an ever-expanding web of scientific correspondence. Tucked away in his study, day after day, month after month, Darwin wrote letters to a remarkable number and variety of individuals. He relied on these letters for every aspect of his evolutionary endeavour, using them

not only to pursue his investigations across the globe but also to give his arguments the international spread and universal application that he and his colleagues regarded as essential footings for any new scientific concept. They were his primary research tool. Furthermore, after the *Origin of Species* was published, he deliberately used his correspondence to propel his ideas into the public domain—the primary means by which he ensured his book was being read and reviewed. His study inside Down House became an intellectual factory, a centre of administration and calculation, in which he churned out requests for information and processed answers, kept himself at the leading edge of contemporary science, and ultimately orchestrated a transformation in Victorian thought.

This took place on the grand scale. Darwin wrote or received some fourteen thousand letters that are still in existence in libraries the world over, and there must have been as many again now lost to posterity.[10] By far the largest number of letters were exchanged with his closest scientific friends—Charles Lyell, Joseph Hooker, Asa Gray, and Thomas Henry Huxley, men who supported and helped him through thick and thin. These friends were prominent naturalists in their own right, each in his way representing major branches of the Victorian natural history sciences and important scientific institutions. Through them Darwin gained access to the machinery of international intellectual endeavour, and while Huxley may have earned most of the subsequent historical plaudits as Darwin's chief defender and publicist, the roles played in Darwin's life by Joseph Hooker at the Royal Botanic Gardens at Kew, by Asa Gray at Harvard University, and by Charles Lyell, an independent gentleman-geologist in London, should not be underestimated. This intimate network proved crucial to Darwin both personally and in the eventual acceptance of evolutionary ideas. Otherwise, the largest group of his correspondents were German-speaking naturalists, more

than one hundred different individuals. Darwin wrote to his overseas contacts in old-fashioned, stilted English, apologising quaintly for his lack of languages.

He also hunted down anyone who could help him on specific issues, from civil servants, army officers, diplomats, fur-trappers, horse-breeders, society ladies, Welsh hill-farmers, zookeepers, pigeon-fanciers, gardeners, asylum owners, and kennel hands, through to his own elderly aunts or energetic nieces and nephews. Many of his letters went to residents of far-flung regions—India, Jamaica, New Zealand, Canada, Australia, China, Borneo, the Hawaiian Islands—reflecting the increasing European domination of the globe and rapidly improving channels of communication.[11] There was only one postbag in Downe village, and it looks as if Darwin's daily activities could have filled it alone. In 1851 he spent £20 on "stationery, stamps & newspapers" (nearly £1,000 in modern terms), paying a monthly invoice to James Verrel, the newsagent in Bromley High Street, and a smaller sum to Albert Sales of the George Inn at the crossroads in Downe, the village publican, grocer, and postmaster. By 1877 Darwin's expenditure on postage and stationery had doubled to £53 14s. 7d, a sum roughly equal to his butler's annual salary. Every part of his life was run by letters—and the lives of his family members too. "Everyone obeyed the advice given by a family poet," remarked a granddaughter cordially some fifty years later.

Write a letter, write a letter;
Good advice will make us better;
Father, mother, sister, brother,
Let us all advise each other.[12]

If there was any single factor that characterised the heart of Darwin's scientific undertaking it was this systematic use of correspondence. Darwin made the most of his position as a gentleman and scientific author to obtain what he needed.

He was a skilful strategist. The flow of information that he initiated was almost always one-way. Like countless other well-established figures of the period, Darwin regarded his correspondence primarily as a supply system, designed to answer his own wants. “If it would not cause you too much trouble,” he would write. “Pray add to your kindness,” “I feel that you will think you have fallen on a most troublesome petitioner,” “I trust to your kindness to excuse my troubling you.” “If any man wants to gain a good opinion of his fellow men, he ought to do what I am doing, pester them with letters,” he once said to John Jenner Weir, the ornithologist. “Best & most beloved of men, I supplicate & entreat you to observe one point for me,” he cried to Hooker. There was no need for Darwin to doubt the legitimacy of this one-way arrangement. After all, he occupied an assured place in the intellectual elite, at the heart of an expanding scientific and social meritocracy that in turn lay at the hub of one of the most powerful and systematically organised empires known to history. He made vigorous use of these advantages.

People usually did what he asked. From time to time, he would reward his correspondents by forwarding their articles or introducing them to London experts, and perhaps they felt this was return enough. It is clear that he functioned near the top of a hierarchical social structure that facilitated such interactions. Among his closer friends, however, Darwin was unwilling to appear quite so exploitative. There he built rather more of a network of give and take, responding to his colleagues with friendly encouragement and support.

One way or another, these men and women, near and far, contributed materially to his developing project and its subsequent trajectory in the world at large. Darwin’s completed theory of evolution ought perhaps to be seen as the interplay between the creative vision residing in a single mind and a mass of information gathered from many different hands, including his own. Whether the man himself

might, with hindsight, be characterised either as a hero of science, an observer *par excellence,* a political animal, or a nervous, reclusive revolutionary, his achievements were manifestly the product of a highly efficient Victorian communication system, firmly embedded in what can be called knowledge-producing relationships. With pen and ink and postage stamps he set about constructing what he hoped would be “a considerable revolution in natural history.” Alone at his desk, captain of his ship, safely anchored in his country estate on the edge of a tiny village in Kent, he was in turn manager, chief executive, broker, and strategist for a world-wide enterprise. Once, in a passing compulsion, he attached a mirror to the inside of his study window, angled so that he could catch the first glimpse of the postman turning up the drive. It stayed there for the rest of his life.

Such a life obviously depended on the postal system, the preeminent collective enterprise of the Victorian period, and Darwin sensed the splendour of this organisation as readily as Anthony Trollope, who, after novelising the nation before breakfast, would go to his employment in the General Post Office in London. No one would believe the number of letters surging across nineteenth-century Britain, said Rowland Hill, the inventor of the penny postage system. By mid-century, 600 million letters were dispatched every year. Twenty-five thousand delivery men travelled 149,000 miles to distribute these letters, carrying in their sacks a weight of nearly 4,300 tons. Carrier services transported 72 million newspapers, 12 million book parcels, and 7 million money-orders a year, and 68 million letters moved around the capital alone, requiring eleven deliveries a day. Prime ministers, civil servants, and Queen Victoria ran the country with a daily outpouring of well-turned phrases, and countless novelists relied on the prompt arrival and dispatch of letters to carry their plots along, confident that readers were involved in similar processes. The tide of

correspondence, wrote Hill, “knew no ebb.”[13] Letters became more informal, more up-to-date, more personal, and more frequent, pulling the edges of family and empire together and convincing Britons that their country was one of the most advanced nations in the world.

Now that nearly 150 years have passed since the *Origin of Species* was published, and its place in modern thought is assured, Darwin’s life can be explored from the inside looking out, from the domestic, respectable, pastoral setting in which he chose to locate himself to the extensive letter-based connections he created with the world beyond; and from the outside looking in, through the eyes of others, close or far away. His book came to represent the spirit of the age. Although Trollope and Darwin never met, each would have felt completely at home in the other’s sphere. Yet if anyone had told Darwin how famous he would become, he would have been very surprised.

II

Picking up a thin, well-wrapped package one morning in June 1858, Darwin wondered who could be writing to him from Ternate, an island in the Dutch East Indies halfway between Celebes and New Guinea. His web of correspondents already circled the globe. India, Africa, Tasmania, South America—over the years he had gathered contacts in every quarter feeding his insatiable appetite for facts.

He was interested to recognise Alfred Russel Wallace’s handwriting on the package. He knew Wallace to be a talented man, full of the intrepid scientific spirit that Darwin most admired, and at that time travelling rough in Indonesia and Malaysia collecting rare natural history specimens. A year or so beforehand Darwin had asked Wallace if he could possibly get the skins of some Malayan poultry for him. He hoped there were unusual details about tropical birds or animals described inside.

But the package contained nothing of the sort. Although Wallace's words were unassuming and polite enough, they had cataclysmic effect. Darwin's life was never the same again.

What the packet enclosed was a short handwritten essay which, line by line, spelled out virtually the same theory of evolution by natural selection that Darwin believed was his alone. Isolated in the jungle for four years, Wallace had independently hit on the same argument as Darwin. All of Darwin's main ideas were repeated. To Darwin's agitated mind these ideas seemed to hang together in Wallace's essay far better than they did in his own unpublished writings. Wallace wrote clearly—so clearly that no one could mistake his meaning. The struggle for survival among animals and plants; competition and extinction; the improvement of domestic races by selection; the divergence of species into different forms: all these were included. Malthus was there. So was Lyell. Wallace demonstrably removed the divine Creator and proposed an entirely natural origin for species. His words indicated that he fully understood the significance of what he was saying. "It is the object of the present paper to show . . . that there is a general principle in nature which will cause many varieties to survive the parent species, and to give rise to successive variations departing further and further from the original type."

> It is evident that, of all the individuals composing the species, those forming the least numerous and most feebly organized variety would suffer first, and, were the pressure severe, must soon become extinct. . . . The superior variety would then alone remain, and on a return to favourable circumstances would rapidly increase in numbers and occupy the place of the extinct species and variety. The variety would now have replaced the species, of which it would be a more perfectly adapted and more highly organized form.[14]

Darwin was stunned. "I never saw a more striking coincidence," he moaned helplessly. "If Wallace had my MS

sketch written out in 1842 he could not have made a better short abstract!”[15]

He was well and truly forestalled. It was impossible to pretend otherwise. All his originality was smashed, all his years of hard work suddenly useless. For a moment the news hit him like the death of a child. Then, his mind churned with painful emotions—not anxiety or panic, he confessed afterwards, but much baser feelings of mortification, possessiveness, irritation, and rancour, each flaring up one by one after the first unaccountable, humiliating surprise. Hour after hour they returned, making him cross and edgy. “It is miserable in me to care at all about priority,” he complained to Hooker and Lyell that day. “Full of trumpery feelings.” These were probably the most lonely hours of his life, facing the knowledge that what mattered to him now was not so much the long-gone moment of discovery but the possession, the ownership, of his theory. Wallace’s easy brilliance forced him to confront the focus of his entire working life. Had it all been a waste of time? Those years he had spent labouring over barnacles, the deterioration of his physical health, the endless attention to notes and letters, and the huge manuscript so close to completion? He caught himself wondering truculently if his own letters to Wallace, brief as they had been, might somehow have given the game away. The resemblance of their ideas was startling.

Nevertheless Wallace was obviously acting in good faith. It was evident he had no idea that Darwin was so well advanced on a project so similar to his own, even though they had discussed species and varieties in letters beforehand. In his accompanying note he asked Darwin to pass the essay on to Sir Charles Lyell if it seemed sufficiently interesting. Since Lyell was often instrumental in bringing the work of unknown naturalists into the public eye, this was a reasonable request to make, and Wallace, who had no personal access to prominent scientific figures,

manifestly hoped for the kind of friendly introduction that Darwin could provide. Moreover, his essay explicitly drew on Lyell's *Principles of Geology*, especially on Lyell's critical account of Lamarck's theory of transformation and his commentary on the creation, adaptation, and extinction of species. The essay, in short, had been composed for Lyell, not for Darwin. Yet it would have been near-impossible at that period for Wallace to write directly to Lyell. A favourable word from Darwin would help him along. And Wallace knew that Darwin and Lyell were friends—Darwin had told Wallace so in a previous letter. Beyond that, Wallace knew that Darwin's *Journal of Researches* had been warmly dedicated to Lyell.

One letter—and Darwin was shipwrecked. His dilemma was profound, as intense as any in his life, although the course of his action was plain to him. All his moral instincts—his strong sense of duty, his unquestioning acceptance of gentlemanly responsibilities, his pleasant nature, his honourable feelings—told him he must comply with Wallace's request, and, moreover, acknowledge to Lyell that Wallace had got there first. There is no reason to suppose that he hesitated, or at least not for long.[16] A less scrupulous person might perhaps have destroyed the essay and pretended it never arrived. A long journey from the Far East supplied a ready excuse should one be needed. A less candid man might have delayed and delayed, unwilling to concede the point until his own work was published.[17]

Darwin's honour as a gentleman—as he understood it—was at stake.[18] In the competitive scientific world in which he chose to live, publication, originality, and priority made a delicate trio. It was easy to succumb to the temptation to be secretive or be overly quick to publish; and yet the creator of any fresh insight, then as now, must eventually relinquish possession and place his or her ideas in the public domain in order to be given credit for advancing knowledge. The primary spur for Victorians like Darwin was not so much to