



Darwin's Ghosts: The Secret History of Evolution

By Rebecca Stott

 Download

 Read Online

Darwin's Ghosts: The Secret History of Evolution By Rebecca Stott

A *NEW YORK TIMES* NOTABLE BOOK

“[An] extraordinarily wide-ranging and engaging book [about] the men who shaped the work of Charles Darwin . . . a book that enriches our understanding of how the struggle to think new thoughts is shared across time and space and people.”—*The Sunday Telegraph* (London)

Christmas, 1859. Just one month after the publication of *On the Origin of Species*, Charles Darwin received an unsettling letter. He had expected criticism; in fact, letters were arriving daily, most expressing outrage and accusations of heresy. But this letter was different. It accused him of failing to acknowledge his predecessors, of taking credit for a theory that had already been discovered by others. Darwin realized that he had made an error in omitting from *Origin of Species* any mention of his intellectual forebears. Yet when he tried to trace all of the natural philosophers who had laid the groundwork for his theory, he found that history had already forgotten many of them.

Darwin's Ghosts tells the story of the collective discovery of evolution, from Aristotle, walking the shores of Lesbos with his pupils, to Al-Jahiz, an Arab writer in the first century, from Leonardo da Vinci, searching for fossils in the mine shafts of the Tuscan hills, to Denis Diderot in Paris, exploring the origins of species while under the surveillance of the secret police, and the brilliant naturalists of the Jardin de Plantes, finding evidence for evolutionary change in the natural history collections stolen during the Napoleonic wars. Evolution was not discovered single-handedly, Rebecca Stott argues, contrary to what has become standard lore, but is an idea that emerged over many centuries, advanced by daring individuals across the globe who had the imagination to speculate on nature's extraordinary ways, and who had the courage to articulate such speculations at a time when to do so was often considered heresy.

With each chapter focusing on an early evolutionary thinker, *Darwin's Ghosts* is a fascinating account of a diverse group of individuals who, despite the very real dangers of challenging a system in which everything was presumed to have been created perfectly by God, felt compelled to understand where we came from. Ultimately, Stott demonstrates, ideas—including evolution itself—evolve just as animals and plants do, by intermingling, toppling weaker notions, and developing

over stretches of time. *Darwin's Ghosts* presents a groundbreaking new theory of an idea that has changed our very understanding of who we are.

Praise for *Darwin's Ghosts*

“Absorbing . . . Stott captures the breathless excitement of an investigation on the cusp of the unknown. . . . A lively, original book.”—*The New York Times Book Review*

“Stott’s research is broad and unerring; her book is wonderful. . . . An exhilarating romp through 2,000 years of fascinating scientific history.”—*Nature*

“Stott brings Darwin himself to life. . . . [She] writes with a novelist’s flair. . . . Darwin and the ‘ghosts’ so richly described in Ms. Stott’s enjoyable book are the descendants of Aristotle and Bacon and the ancestors of today’s scientists.”—*The Wall Street Journal*

“Riveting . . . Stott has done a wonderful job in showing just how many extraordinary people had speculated on where we came from before the great theorist dispelled all doubts.”—*The Guardian (U.K.)*

From the Hardcover edition.

 [Download Darwin's Ghosts: The Secret History of Evolut ...pdf](#)

 [Read Online Darwin's Ghosts: The Secret History of Evol ...pdf](#)

Darwin's Ghosts: The Secret History of Evolution

By Rebecca Stott

Darwin's Ghosts: The Secret History of Evolution By Rebecca Stott

A NEW YORK TIMES NOTABLE BOOK

“[An] extraordinarily wide-ranging and engaging book [about] the men who shaped the work of Charles Darwin . . . a book that enriches our understanding of how the struggle to think new thoughts is shared across time and space and people.”—*The Sunday Telegraph* (London)

Christmas, 1859. Just one month after the publication of *On the Origin of Species*, Charles Darwin received an unsettling letter. He had expected criticism; in fact, letters were arriving daily, most expressing outrage and accusations of heresy. But this letter was different. It accused him of failing to acknowledge his predecessors, of taking credit for a theory that had already been discovered by others. Darwin realized that he had made an error in omitting from *Origin of Species* any mention of his intellectual forebears. Yet when he tried to trace all of the natural philosophers who had laid the groundwork for his theory, he found that history had already forgotten many of them.

Darwin's Ghosts tells the story of the collective discovery of evolution, from Aristotle, walking the shores of Lesbos with his pupils, to Al-Jahiz, an Arab writer in the first century, from Leonardo da Vinci, searching for fossils in the mine shafts of the Tuscan hills, to Denis Diderot in Paris, exploring the origins of species while under the surveillance of the secret police, and the brilliant naturalists of the Jardin de Plantes, finding evidence for evolutionary change in the natural history collections stolen during the Napoleonic wars. Evolution was not discovered single-handedly, Rebecca Stott argues, contrary to what has become standard lore, but is an idea that emerged over many centuries, advanced by daring individuals across the globe who had the imagination to speculate on nature's extraordinary ways, and who had the courage to articulate such speculations at a time when to do so was often considered heresy.

With each chapter focusing on an early evolutionary thinker, *Darwin's Ghosts* is a fascinating account of a diverse group of individuals who, despite the very real dangers of challenging a system in which everything was presumed to have been created perfectly by God, felt compelled to understand where we came from. Ultimately, Stott demonstrates, ideas—including evolution itself—evolve just as animals and plants do, by intermingling, toppling weaker notions, and developing over stretches of time. *Darwin's Ghosts* presents a groundbreaking new theory of an idea that has changed our very understanding of who we are.

Praise for *Darwin's Ghosts*

“Absorbing . . . Stott captures the breathless excitement of an investigation on the cusp of the unknown. . . . A lively, original book.”—*The New York Times Book Review*

“Stott's research is broad and unerring; her book is wonderful. . . . An exhilarating romp through 2,000 years of fascinating scientific history.”—*Nature*

“Stott brings Darwin himself to life. . . . [She] writes with a novelist's flair. . . . Darwin and the 'ghosts' so richly described in Ms. Stott's enjoyable book are the descendants of Aristotle and Bacon and the ancestors of today's scientists.”—*The Wall Street Journal*

“Riveting . . . Stott has done a wonderful job in showing just how many extraordinary people had speculated on where we came from before the great theorist dispelled all doubts.”—*The Guardian* (U.K.)

From the Hardcover edition.

Darwin's Ghosts: The Secret History of Evolution By Rebecca Stott Bibliography

- Sales Rank: #288905 in Books
- Published on: 2013-03-19
- Released on: 2013-03-19
- Original language: English
- Number of items: 1
- Dimensions: 8.30" h x .90" w x 5.50" l, .75 pounds
- Binding: Paperback
- 432 pages

 [Download Darwin's Ghosts: The Secret History of Evolut ...pdf](#)

 [Read Online Darwin's Ghosts: The Secret History of Evol ...pdf](#)

Download and Read Free Online Darwin's Ghosts: The Secret History of Evolution By Rebecca Stott

Editorial Review

Review

“Absorbing...Stott’s narrative flows easily across continents and centuries...her portraits evoke vividly realized and memorable characters...Stott captures the breathless excitement of an investigation on the cusp of the unknown...[a] lively, original book. *Darwin’s Ghosts* unfolds like an enjoyable and informative TV series, each episode devoted to a fascinating character who provides a window into the world of ideas of his time...it [helps] us see the necessity of bold and ambitious thinking. And right here, right now, it has additional value. Stott reminds us that even if evolution is currently fought over more brutally in the United States than elsewhere, this fight has a long and stubborn ancestry, one that is by no means peculiarly American or entirely modern.”—*The New York Times Book Review*

"Stott gives personality to her historical characters, introducing their families, their monetary concerns, their qualms about publishing so-called heretical theories, and the obsessions that kept them up at night. She also brings her settings and secondary characters to life, from the deformed sponge divers Aristotle consulted in ancient Lesbos to the exotic animals in the caliphate’s garden that inspired Jahiz in medieval Basra to lost seashells found by Maillet in the deserts outside 18th-century Cairo. Stott’s focus on her settings makes her narrative compellingly readable, and it also reminds us that even as animal species are shaped by their environment, so intellectuals are shaped by their societies...Stott’s book is a reminder that scientific discoveries do not happen in a vacuum, that they often stem from incorrect or pseudo-scientific inquiries, and that they are constantly changing, mutable concepts as they meander towards something that might eventually be called the truth.”—*Christian Science Monitor*

“Mesmerizing, colorful, and often moving...richly drawn...This many-threaded story of intellectual development – of different discoveries and enquiries into fossils and polyps, of tropical birds and the curious properties of sponge, of men scouring seashores and caves, and trying to work new ideas around the fixed, immovable pillars of religion – is hypnotic...The subject is science, but Stott has a novelist’s confidence, and there are vivid tableaux...This is a sympathetic examination of the innate human qualities of curiosity and inquiry, the helpless compulsion every generation has to probe further and further into the structures of creation.”—*The Telegraph (UK)*

“This extraordinarily wide-ranging and engaging book rediscovers evolutionary insights across a great span of time, from the famous, such as Aristotle and the Islamic scholar Al-Jahiz, to the 16th-century potter Palissy, the 18th-century merman-believer Maillet and the transformist poet and botanist, Rafinesque – as well as from Diderot, Lamarck, Darwin’s grandfather Erasmus and his contemporary Wallace. And these are just a few of the figures who emerge from the dark into the glow of Stott’s attention. Each of them is evoked with an intimacy that is also clearheaded about the way ideas get stuck, or prove wrong-headed, but can’t be parted with. Stott can make the nuances of ideas emerge in descriptions that suddenly bring the person close... Gripping as well as fair-minded... *Darwin’s Ghosts* is a book that enriches our understanding of how the struggle to think new thoughts is shared across time and space and people.”—*The Sunday Telegraph (UK)*

“Stott’s research is broad and unerring; her book is wonderful... An exhilarating romp through 2,000 years of fascinating scientific history.”—*Nature*

“Impressively researched... A gripping and ambitious history of science which gives a vivid sense of just how many forebears Darwin had.”—*The Times (UK)*

“[Stott] has revealed an extraordinary batch of free thinkers who dared to consider mutability during times when such ideas might still cost the thinker his head....Every character that Stott introduces has a riveting story to tell, and all their histories are told with style and historical nous....Stott has done a wonderful job in showing just how many extraordinary people had speculated on where we came from before the great theorist dispelled all doubts.”—*The Guardian* (UK)

“A fascinating history of an idea that is crucial to our understanding of life on earth.” —*The Independent* (UK)

“Beautifully written and compelling...These mavericks and heretics put their lives on the line. Finally, they are getting the credit they deserve.”—*The Independent on Sunday* (UK)

"Stott provides the lucid intellectual genealogy of evolution that the great man could not."—*New Scientist* (UK)

“Stott does a superb job of setting the scene for her protagonists, whether on the island of Lesbos, 18th-century Cairo, or revolutionary Paris. But her real strength lies in intellectual history. She demonstrates conclusively that evolutionary ideas were circulating among intellectuals for many centuries and that, for most of that time, those who promoted these ideas found themselves under attack by religious and political leaders. Darwin’s scientific breakthrough, therefore, did not occur in a vacuum, but rather provided the most fully conceptualized theory. Stott has produced a colorful, skillfully written, and thoughtful examination of the evolution of one of our most important scientific theories.”—*Publishers Weekly* (starred review)

“A lively account of the ‘pathfinders, iconoclasts, and innovators’ who were Darwin's spiritual kin.... Stott masterfully shows how Darwin, by discovering the mechanism of natural selection, made a unique contribution, but he did not stand alone—nor did he claim to.”—*Kirkus Reviews* (starred review)

“The history of science comes alive as a drama of vibrant personalities wrestling with a dangerous idea.”—*Booklist*

“Charles Darwin provided the mechanism for the evolution of the exquisite adaptations found in plants and animals, but the awareness that species can change had been growing long before him. With wonderful clarity Rebecca Stott traces how ideas about biological evolution themselves evolved in the minds of great biologists from Aristotle onward. Darwin would have loved this brilliant book—and so do I.”—Sir Patrick Bateson, president of the Zoological Society of London

“Clever, compassionate, and compellingly written, *Darwin’s Ghosts* interweaves history and science to enchanting effect. The evolution of the theory of evolution is a brilliant idea for a book, and Rebecca Stott has realized it wonderfully.”—Tom Holland, author of *Rubicon: The Triumph and Tragedy of the Roman Republic*

“From Aristotle onward, evolutionists have—thank God—always been a quarrelsome lot, and not much has changed. Rebecca Stott shows how dispute, prejudice, and rage have accompanied their science from the very beginning. *Darwin’s Ghosts* is a gripping history of the history of life and of those who have studied it, with plenty of lessons for today—perhaps for today’s biologists most of all.”—Steve Jones, author of *Darwin’s Ghost: The Origin of Species Updated*

“The concept of evolution was not created fully formed and placed in the garden one day for our delight and

terror but, as Rebecca Stott demonstrates in her inspiring book, evolved as much as we did. *Darwin's Ghosts* is a beautiful tribute to the buried tradition of curious, courageous observers who, before Darwin explained *how* evolution worked, witnessed the mutability of species for themselves and recorded what they saw.”—Jonathan Rosen, author of *The Life of the Skies: Birding at the End of Nature*

From the Hardcover edition.

About the Author

Rebecca Stott is a professor of English literature and creative writing at the University of East Anglia and an affiliated scholar at the department of the history and philosophy of science at Cambridge University. She is the author of several books, including *Darwin and the Barnacle* and the novels *Ghostwalk* and *The Coral Thief*. She lives in Cambridge, England.

Excerpt. © Reprinted by permission. All rights reserved.

Just before Christmas in 1859, only a month after he had finally published *On the Origin of Species* by Natural Selection, Charles Darwin found himself disturbed, even haunted, by the thought of his intellectual predecessors. He entered a state of extreme anxiety that had the strange effect of making him more than usually forgetful.

It had been a cold winter. Though Darwin might have liked to linger on the Sand Walk with his children to admire the intricately patterned hoarfrost on the trees, he knew he had work to do, letters about his book to answer, criticisms to face.

He had weathered the first blasts of the storm of censure in a sanatorium in Ilkley, where he had been taking the water cure, wrapped in wet sheets in hot rooms, the skin on his face dry and cracked with eczema. Since his return to his family home, Down House, now garlanded with Christmas holly, ivy, and mistletoe by his children, he had braced himself every morning against the sound of the postman's footsteps on the gravel outside his study window. The letters, he lamented to his wife, Emma, came like swarms.

Each new mailbag delivered to Down House brought letters voicing opprobrium, some veiled, some outspoken; a few contained praise. But though some reviewers might be expressing outrage, Darwin reassured himself, hundreds of ordinary people were reading his book. On the first day of sale in November, the entire print run of 1,250 books had sold out. Even Mudie's Select Lending Library had taken five hundred copies. Now his publisher, John Murray, was about to publish a second edition; this time Murray intended to print three thousand copies, and he had agreed to let Darwin correct a few minor mistakes. Darwin was relieved. The mistakes embarrassed him.

As readers and reviewers took up their positions for or against his book, Darwin began to keep a note of where everyone stood on the battleground. “We shall soon be a good body of working men,” he wrote to his closest friend and confidant, the botanist Joseph Hooker, “& shall have, I am convinced, all young & rising naturalists on our side.”

The letter that launched Darwin into a prolonged attack of anxiety came from the Reverend Baden Powell, the Savilian Professor of Geometry at Oxford, a theologian and physicist who had been forthright in his support for the development theory for some time.* The elderly professor was on the brink of being prosecuted for ecclesiastical heresy. Of all the letters in that day's pile, the one from Powell would be innocuous enough, Darwin assumed. He scanned it quickly, relieved to glimpse phrases like “masterly volume” and a few other words of praise. But Baden Powell was not happy. Having finished with his compliments, the professor launched into a direct attack, criticizing Darwin not for being wrong, not for

being an infidel, but for failing to acknowledge his predecessors. He even implied that Darwin had taken the credit for a theory that had already been argued by others, notably himself.

This was not the first time Darwin had been accused of intellectual theft, but until now, the accusations had been tucked away in reviews and had been only implicit. How original is this book? people were clearly asking. How new is this idea of Mr. Darwin's?

* The Reverend Baden Powell was the father of Robert Baden-Powell, the founder of the Scouting movement.

He might have protected himself better from charges of plagiarism, Darwin reflected fretfully, if he had only written a preface, as most scientists did when they published any controversial set of claims: a survey of all the ideas that had gone before. It gave the ideas a history and a context. It was a way of showing where the edges of other people's ideas finished and your own began. But he had not done so, though he had planned to. And now he was being accused of passing off the ideas of others as his own.

As he sat reading and rereading Powell's letter, Darwin's excuses came thick and fast. He should have included a short preface, he wanted to tell Powell, but his book had been rushed. He had not been at all well. His closest friends, the botanist Joseph Hooker and the geologist Charles Lyell, had been badgering him to publish for years. Then, when Alfred Russel Wallace had sent him that alarming essay from the Malay Archipelago showing that Wallace had worked out natural selection, too, Hooker and Lyell had practically forced him to go straight into print. For months, he had hardly slept for writing. He had never written so fast or for so long. And in all that rush, he had neglected to acknowledge those who had gone before. Besides, aware that he was a poor scholar of history, he had not been confident that he knew exactly who had gone before or that he had the skills to describe their ideas accurately and fairly. They wrote in every language under the sun. Some of them were obscure, others mad. It would have taken years.

Darwin had known from Wallace's enthusiastic letters that he was getting close to working out natural selection, but until seeing Wallace's essay he had underestimated the speed at which the brilliant young collector was working. The thought that after all this procrastinating, someone like Alfred Russel Wallace could step in and publish his essay and make a claim to the discovery of natural selection before him was more than he could bear. At that point Hooker and Lyell had intervened, explaining to Wallace that Darwin had first formulated the idea some twenty years earlier. Wallace had been generous. He had given up any claim to being the discoverer of natural selection. He had even written to Hooker to say that he did not mind in the least that Darwin was going to take the credit and that it was right that he do so. He considered himself lucky, he confessed, to have been given some credit.

So Wallace had renounced his claim on natural selection. But now, only a year after Darwin had escaped the Wallace tangle, here was another claimant rising like Marley's ghost from the mailbag—the Reverend Baden Powell. Darwin had forgotten about Powell.

My theory. My doctrine. Darwin had been writing those words for years in his notebooks. But was it his alone? He had told Hooker and Lyell that he was not ready. It was all very well for them to urge him into print. After all, they were not going to be deluged with disgust and outrage. They were not going to have to explain to their troubled wives; they were not going to have to apologize to and mollify bishops and clerics and bigots or answer plagiarism charges. And now John Murray was about to send another three thousand copies of *Origin* out into the world.

There was no stopping any of it. His theory had not leaked quietly into the public domain as he had planned; it had entered the world as a deluge, like the water pipes in the Ikley water cure establishment, cold and

gushing and unstoppable. He, Lyell, and Hooker had simply pulled the rope and released the valve. And here were the consequences.

Hooker would know what to do. Darwin wrote to invite him to Down House. Bring your wife, he wrote, bring the children. On December 21, 1859, Joseph Hooker's wife wrote to Darwin to say that her husband would be happy to visit the Darwins in the second week of January and that he would bring their eldest son, William, with him. Darwin was delighted. Such a visit would do him tremendous good, he wrote to Hooker, for though the water cure had improved his health, now that he was in the midst of the critical storm, he was, he wrote, "utterly knocked up & cannot rally—I am not worth an old button." The eczema had broken out again. He was sick to his stomach.

The following day, three days before Christmas, while Darwin was still trying to compose a reply to the Reverend Baden Powell, a third claimant emerged, this time from France. Darwin's butler told him that a parcel had arrived in the evening post. Though the children protested, Darwin left the warm parlor where Emma had been reading aloud to them in the shadow of the Christmas tree and slipped away across the hall to the darkened study to retrieve it.

With pleasure and relief, he recognized the handwriting on the label as Hooker's. The parcel contained an essay by Hooker that Darwin had promised to read and a heavy volume of a French scientific journal, the *Revue Horticole*. Hooker explained in an accompanying letter that a scientist named Decaisne* had written to tell him that a botanist named Charles Naudin had discovered natural selection back in 1852. Darwin, Decaisne wrote, had no right to claim natural selection as his idea.

* The botanist Joseph Decaisne.

Hooker enclosed the volume of the journal in which Naudin's paper on species had been published so that Darwin could judge the claim for himself. Darwin had read and admired Naudin's work years before, but he had entirely forgotten the paper.

Darwin ordered the study fire to be relit. He read and reread Naudin's paper late into the night, struggling with some of the French scientific terms, reaching for his French dictionary, making notes as high winds rattled the windowpanes. Naudin's claim was not a serious threat, he finally told Emma a few hours later. The French botanist had not discovered natural selection. He was quite sure of that.

The following morning, returning to his desk cluttered with the debris of the previous evening's struggle with French verbs and the notepaper with all his scribbles across it, he wrote to allay Hooker's fears, explaining with relief: "I cannot find one word like the Struggle for existence & Natural Selection." Naudin had gotten no closer to natural selection than had the French evolutionist Jean-Baptiste Lamarck, he wrote emphatically. Darwin asked Hooker to pass on his refutation of the claim to their mutual friend Lyell, adding with a touch of embarrassment, "though it is foolish work sticking up for independence or priority." He had nothing against Naudin, after all. He was a good botanist.

Darwin could not decide how best to answer these phantom claimants. Should he let others intervene, as Hooker and Lyell had done with Wallace? Should he write directly to each new claimant or simply ignore them? What was the gentlemanly thing to do? Even through Christmas dinner the question troubled him. While the children were playing, he slipped away to write to Hooker in the afternoon, scribbling, as if struggling with his own conscience, "I shall not write to Decaisne: I have always had a strong feeling that no one had better defend his own priority: I cannot say I am as indifferent to subject as I ought to be; but one can avoid doing anything in consequence." The Reverend Baden Powell was different. He needed answering. The man had a point: Darwin was the first to admit that he should have acknowledged all those natural philosophers who had had the courage to publish evolutionary ideas before him—men such as his own

grandfather Erasmus Darwin and the misguided but brilliant Lamarck and others. It was bad form not to have done so. In the rush to publish, he had forgotten them.

Everyone had forgotten them.

All through the holidays, all through the singing and the feasts and the toasts, Darwin struggled to formulate a letter to Powell. He imagined the outspoken professor spluttering his outrage to the fellows of Oriel or at Geological Society meetings. Conversations with Powell opened up in Darwin's head again and again, sometimes angry, sometimes defensive or apologetic. Christmas was no time to be defending one's reputation, he told himself, trying to attend to the family celebrations, to be a good father and husband and to be attentive to his eldest son, William, home from Cambridge for Christmas and for William's birthday on December 27.

Despite his resolutions, Darwin still woke in the night, slipping out of bed so as not to disturb Emma and pacing the floor in his study. How many other predecessors had he forgotten? How many did he simply not know about? He had never been a good historian of science. How would he ever write a definitive list?

Hooker's visit was not to be. Down House seemed besieged from both outside and inside; terrible storms lashed the country. Shipwrecks were reported around the coast; a tornado in Wiltshire uprooted trees, destroyed haystacks, and swept the thatch from the roofs of cottages. Heavy lumps of ice fell in a freak hailstorm, killing birds, hares, and rabbits. As the year turned, nine-year-old Lenny Darwin began to run a fever. When the first flush of spots appeared, Emma urged Darwin to write to Hooker to put him off his visit. Darwin wrote sadly to his friend, repeating his wife's words of warning: "Lenny has got the Measles & it is sure to run like wild-fire through the house, as it has been extraordinarily prevalent in village. If your boy Willy has not had measles, I fear it will not be safe for you to bring him here."

In the first week of January 1860, as the measles spread first to twelve-year-old Elizabeth and then to eleven-year-old Francis, and having been unable to talk to Hooker, Darwin resolved to write to Powell and to draft a historical sketch just as he had planned to do years before. The timing was good: the American botanist Asa Gray was organizing an authorized American edition of *Origin* and he wanted a preface from Darwin. Darwin talked aloud to himself, resolving to put it all straight in the American preface by adding a full historical sketch, reminding himself that the idea of species mutability was not his. Not even the idea of the descent with modification was his. It belonged to Lamarck and Maillet, and further back it was probably in Buffon and even in his grandfather's book *Zoonomia*. He had never claimed that descent with modification was his idea, though of course Powell thought that he had. But natural selection—the idea that nature had evolved by selecting the fittest to survive—was his. No one, not even Wallace, had discovered natural selection before he had, or at least put all the ideas together in such a way as to make it explain so many large groups of facts. He owed it both to himself and to his predecessors to explain what was his and what was theirs.

It was only when he began to write his letter to Powell on January 8 that Darwin suddenly remembered that he had started writing a list of his predecessors several years earlier. He went to find it. The embryonic historical sketch was in the drawer where he had left it, in the file with the big still-to-be-published full manuscript version of the species book. The list was not finished, of course; it was just a scribbled catalog of predecessors with notes. But it was there. He had started it back in 1856, knowing that his species book would have to have one. And—it made him blush again to see the scale and extent of his own forgetting—there was the Reverend Baden Powell in the catalog, properly acknowledged and praised.

So he wrote to Powell. "My dear Sir," he began, my health was so poor, whilst I wrote the Book, that I was unwilling to add in the least to my labour; therefore I attempted no history of the subject; nor do I think that I

was bound to do so. I just alluded indeed to the Vestiges & I am now heartily sorry I did so. No educated person, not even the most ignorant, could suppose that I meant to arrogate to myself the origination of the doctrine that species had not been independently created. . . . Had I alluded to those authors who have maintained, with more or less ability, that species have not been separately created, I should have felt myself bound to have given some account of all; namely, passing over the ancients,—and here Darwin had to glance again at his earlier catalog so as to remember the names, and some of the spellings—Buffon (?) Lamarck (by the way his erroneous views were curiously anticipated by my Grandfather), Geoffry St Hilaire [sic] & especially his son Isidore; Naudin; Keyserling; an American (name this minute forgotten); the Vestiges of Creation; I believe some Germans. Herbert Spencer; & yourself. . . . I had intended in my larger book to have attempted some such history; but my own catalogue frightens me. I will, however, consult some scientific friends & be guided by their advice.

Darwin read back over the letter to check the tone. His glance snagged on the clause: “my own catalogue frightens me.” That was overly candid, perhaps, and a touch histrionic. But candor might well disarm Powell. And after all, it was true: the catalog did frighten him. Those scribbled names on the sheet of paper frightened him.

Predecessors? Who were they? Most of them were dead. Their names slipped from his memory. Why could he not remember the name of the American evolutionist? Exhausted by the very idea of writing a historical sketch, he folded up the letter to Powell and handed it to Parslow, his butler, for the post.

It seemed as if his work would never be done. He felt the burden of censure heavy on his shoulders now that he was back in the study, stoking the fire, feeling the heat agitating the itching on the dry and flaking skin of his face. He had placed himself at the mercy of all his readers as soon as he had gone into print—the priests, the theologians, the reviewers, the letter writers. Four days before his book had been published, an anonymous reviewer in the Athenaeum had denounced Origin and declared it too dangerous to read. Darwin wrote to Hooker the following day: “The manner in which [the reviewer] drags in immortality, & sets the Priests at me & leaves me to their mercies, is base. . . . He would on no account burn me; but he will get the wood ready & tell the black beasts how to catch me.”

And there in the light from the fire, Darwin remembered the heretics who had been burned in the marketplaces of England. Burned because they kept mass or because they did not keep mass. Burned because, even under torture and starvation, they would not recant. Even his close friends would turn against him now that he had gone into print. Their priests and bishops would expect it of them. This was the final reckoning, the taking of sides. He had warned the naturalist Hugh Falconer on November 11 that when he read Origin, “Lord how savage you will be . . . how you will long to crucify me alive.” “It is like confessing a murder,” he had admitted to Hooker back in 1844 when he had finally summoned the courage to tell his friends about his species theory for the first time.

* It was Samuel Steman Haldeman (1812–1880), an American taxonomist and polymath.

Over the next three weeks, as winter deepened, a cold spell iced over the lakes and rivers of Britain and high winds returned, whistling around Down House and rattling the windowpanes, Darwin’s list grew. There had been only ten names on the list he had sent to Powell, he told Emma, “and some Germans” whose names he had also forgotten. Now, as the predecessors came one by one out of the shadows and into the clear light of his own prose, his fears began to subside. Not only did he come to feel their presence as a kind of protection, a shield from charges of intellectual theft, but he began to think of them as allies, as fellow outlaws and infidels. He read and reread their words, increasingly reassured by his new knowledge. Now, if pressed, he could define exactly where his ideas had been preempted and where they were entirely new.

He admired them. He stopped forgetting their names.

On February 8, Darwin sent the first version of his "Historical Sketch" to America for the authorized American edition, a corrected and revised version of the first (pirated) version. Darwin's list had almost doubled in length since he had assembled the first tentative ten names for Powell in mid-January. There were eighteen names on this new list published in the summer of 1860. Darwin's catalog of predecessors was now, he was sure, as definitive as he could make it. He sent the same version of the "Historical Sketch" to Heinrich Georg Bronn in Heidelberg, who was translating *Origin* for the first German edition of 1860.

Eighteen predecessors. A good number. But still a relatively small one.

Meanwhile the hostile reviews of *Origin* were becoming more overtly aggressive. The gloves were off. "The stones are beginning to fly," Darwin wrote to Hooker, and he reassured Wallace that "all these attacks will make me only more determinately fight." To Asa Gray he wrote: "I will buckle on my armour & fight my best. . . . But it will be a long fight. By myself I shd. be powerless. I feel my weak health acutely, as I cannot work hard."

There were still other important evolutionists yet to step out of the shadows to claim some of Darwin's glory.

On April 7, 1860, his favorite journal, the *Gardeners' Chronicle*, carried an article by a man he had never heard of named Patrick Matthew, a Scottish landowner and fruit farmer. Matthew claimed that he had discovered natural selection back in 1831, twenty-eight years before Darwin. There was no beating about the bush. This was a direct accusation: Darwin had no right to claim natural selection as his own, Matthew wrote. By way of proof, he republished numerous short extracts from his original book, unpromisingly entitled *Naval Timber and Arboriculture*.

Darwin was horrified that such an attack should be rehearsed in the pages of his beloved *Gardeners' Chronicle*. Moreover, Matthew's claim to be the discoverer of natural selection was a strong one. Seriously alarmed, Darwin sent for the book and was reassured to find that the passages in question were tucked away in the appendix of what was a very obscure and specialist book. Nonetheless he determined to be a gentleman.

A week or so later Darwin sent a letter to the *Gardeners' Chronicle*. "I freely acknowledge that Mr. Matthew has anticipated by many years the explanation which I have offered of the origin of species, under the name of natural selection," he wrote. "I think that no one will feel surprised that neither I, nor apparently any other naturalist, has heard of Mr. Matthew's views, considering how briefly they are given, and that they appeared in the Appendix to a work on *Naval Timber and Arboriculture*. I can do no more than offer my apologies to Mr. Matthew for my entire ignorance of his publication."

Darwin's response took the wind out of Matthew's sails. Flattered and mollified, the fruit farmer published his final word on the matter in the *Gardeners' Chronicle* on May 12: "To me the conception of this law of Nature came intuitively as a self-evident fact, almost without an effort of concentrated thought. Mr. Darwin here seems to have more merit in the discovery than I have had; to me it did not appear a discovery."

Matthew had conceded the throne, but he retained his claim to an important place in Darwin's list. Eighteen names became nineteen.

That same May, Charles Lyell sent Darwin a paper on natural selection by a Dr. Hermann Schaaffhausen published in 1853; nineteen names became twenty.

In October 1860, an Irish doctor named Henry Freke sent Darwin a pamphlet he had published in 1851 describing animals and plants evolving from a single filament. The pamphlet was, Darwin told Hooker with

some relief, “ill-written unintelligible rubbish.” But if Darwin was to play by the rules of the game, even eccentric Henry Freke had a claim to a place in the list.

Twenty names became twenty-one.

By the time Darwin revised the “Historical Sketch” again for the third English edition of *Origin of Species* in late 1860, his list of predecessors had grown to include thirty men, including his own grandfather. New claimants included Patrick Matthew, Henry Freke, Constantine Rafinesque, Robert Grant, Dr. Schaaffhausen, and Richard Owen.

Putting the poison-tongued Oxford naturalist Richard Owen on the list gave Darwin particular pleasure. Owen had written a spiteful and envious review of *Origin* in April 1860. “Odious,” Darwin had called it. Owen had not even had the courage to sign his name to it, he complained; instead he had taken cover in anonymity, although Darwin’s friends had later rooted out his identity. Owen had also sneered at Darwin’s failure to include a list of his predecessors. So putting Owen on the list was for Darwin a way of getting even, a way of ridiculing Owen’s philosophical inconsistencies and contradictions. In the new version of the “Historical Sketch,” he quoted Owen’s extraordinary claim of 1852 that he had discovered natural selection, allowing himself a touch of scorn: “This belief in Professor Owen that he then gave to the world the theory of natural selection will surprise all those who are acquainted with the several passages in his works, reviews, and lectures, published since the ‘Origin,’ in which he strenuously opposes the theory; and it will please all those who are interested on this side of the question, as it may be presumed that his opposition will now cease.”

Robert Grant, who was also new to the list, was Darwin’s old mentor at Edinburgh. Now impoverished and mocked for his views, he was teaching at the University of London. Reading Darwin’s *Origin* had prompted Grant to finally publish his evolution lectures and to remind Darwin that he had published articles on evolution in Scottish journals all through the 1820s. Darwin disliked Grant’s radical political views and wanted to distance himself from them, but he knew he would have to include him in the list if he was to stick to the rules of gentlemanly behavior.

There were demotions, too. In 1860, Darwin took one name off the list: Benoît de Maillet, the eccentric Frenchman who had worked up a theory of animal-human kinship in Cairo in the early eighteenth century. In his savage review of *Origin*, Richard Owen had implied that Darwin was as foolish as the deluded Maillet, who had believed in mermaids. That was more ridicule than Darwin could bear. He took a pen and put a line through Maillet’s name.

By the fourth edition of *Origin*, completed in ten weeks in 1866, Darwin’s list had swelled to no fewer than thirty-seven names. Since the publication of the third edition, he had found another eight European evolutionists in an article published back in 1858 by his German translator, Heinrich Georg Bronn, which he had not been able to read until Camilla Ludvig, the Darwin family’s German governess, translated it for him. Darwin no longer had the time or the patience to test each of the claims individually, so he placed all eight new names inside a single footnote.

And then in 1865, just as Darwin was completing the final amendments to the fourth edition of *Origin*, the ancient Greek philosopher Aristotle stepped out of the shadows as a claimant. James Clair Grece, a town clerk and Greek scholar from Redhill, wrote to Darwin claiming that he had found natural selection in Aristotle’s work, ideas recorded in lecture notes scribbled in Athens two thousand years earlier. He had translated the passage into English for Darwin as proof. Darwin had read Aristotle at school. He admired him above all other naturalists, he told Hooker— even more than Linnaeus or Cuvier. But he knew so little of his work, and he was not going to learn Greek at this stage in his life. So in every version of the “Historical

Sketch” he had written so far, he had simply “passed over” the “ancients,” apologizing for the limitations of his knowledge.

The passage Grece sent was from a book that Darwin did not know, and, given that Grece’s translation was pretty incomprehensible and that he was reading the words out of context, it was difficult for him to tell whether it really was an ancient Greek version of natural selection, as Grece claimed. But Darwin was prepared to give the clerk the benefit of the doubt because he admired Aristotle; he was the first man to have looked closely at animals and the structures and connections of their bodies—all animals, right down to the sea urchins and the oysters and the sponges. And he had done all of that close observation and dissection without microscopes or dissecting tools or preserving spirits.

With no time to ask abroad or test the claim, Darwin placed both Aristotle and Grece together into the same footnote destined to appear in the fourth edition of *Origin*.

Aristotle was now the first man on Darwin’s list and the last man to enter it. Darwin was delighted to add Aristotle to his list but wished he could have said more, explained more about how the Greek philosopher might have come to understand species and time more than two thousand years earlier. Instead he had to make do with a footnote.

The next time Grece wrote to Darwin it was not about Aristotle but about a pig.

It was November 12, 1866. Darwin’s morning mailbag had doubled if not tripled in size since the publication of *Origin*. People continued to write to him from all over the world. They offered him facts like gifts, as if he were now the sole chronicler of all nature’s strange and peculiar ways, as if he were the owner of a great factory of facts, grinding them out in the millstones of his brain to make something that might be labeled “nature’s laws.” People sent him facts about the tendrils of climbing plants, the valve structures of barnacles, the mating habits of hummingbirds. He collected them all and filed them away.

This morning was no different. Darwin reached for the first letter from the top of the pile that his butler had arranged on his desk. The envelope was postmarked Redhill in Surrey. He tried to recall who he knew there, who might have sent the letter. Inside the envelope, he found a letter from Grece and a cutting from the *Morning Star* dated November 10, 1866. Grece explained that he was sending an oddity of nature for Darwin’s files in case it might be of use in the future. The newspaper headline read “freak of nature,” and the article described a pig that had apparently sloughed off its entire black and bristly skin from snout to tail in one mass in a single night, revealing underneath an entirely new mottled pink body. The pig was, the journalist recorded, apparently unperturbed by its night adventure and was eating as hungrily as before, oblivious to the scores of visitors who had flocked to see it. The owner had pinned the discarded skin to the door of the pig’s sty with a notice that read “Do not touch.” No natural philosopher, the letter writer complained, had yet been to see the pig. He encouraged Darwin to do so. He might be able to make sense of the unusual occurrence. “You may recollect me as having some year or two since pointed out to you a passage from Aristotle,” Grece wrote, “shewing that ‘Natural Selection’ was known to the ancients.” Grece was claiming his due, Darwin realized, as if having been placed in a footnote with Aristotle in the fourth edition of *Origin* were not reward enough. By 1866, Darwin was weighed down with a sense of the debts he owed to the hundreds of naturalists who sent him things. “Should you like to see the animal,” wrote Clair James Grece, town clerk of Redhill council, railway enthusiast, chronicler of the local sloughing practices of pigs, “it is on the premises of one Mr. Jennings, a baker, in Horley Row about one mile north of the Horley Station of the London and Brighton railway. A fly might not be procurable at that station, so that you might prefer to alight at the Redhill Station, where vehicles are readily obtainable, and whence it is about four miles to the southward.”

By the time Darwin’s “Historical Sketch” appeared in the fourth edition of *Origin*, it had been ten years in the making. Of the distribution of nationalities of these evolutionists, fourteen were British, nine French, six

German, two American, one Italian, one Russian, one Austrian, one Estonian, one Belgian, and, if he were to count Aristotle, one an ancient Greek. A reviewer might easily have thought that Darwin was making a point about British superiority in the biological sciences. Yet only Darwin knew how little design there had been in the composition of the "Historical Sketch." Only he knew the way in which certain names had been shoehorned in at the last minute and how doubtful he was about the status of some of those claimants, particularly the most recent additions.

Yet Darwin found the final distribution of nationalities pleasing. There were only nine Frenchmen as against fourteen British. Now he had finally proved once and for all that evolution was not an exclusively French idea, that it was not the spawn of French revolutionaries, part of a conspiracy to bring down the church and government and all social hierarchies. It was just as much the discovery of British clergymen, doctors, fruit farmers, and gentleman naturalists working away with microscopes in houses in the British provinces.

Darwin looked at the gaps in the list, too. That enormous gap between the first person on his list and the second—the Greek philosopher Aristotle and the eighteenth-century French naturalist Buffon—puzzled him. What had happened in that chasm of more than two thousand years? If Greece was right and Aristotle had begun to formulate vaguely evolutionary questions about the history of animals in 347 bc, even if they were only flickers of a vision he could not yet see clearly from his vantage point, what had happened to those embryonic ideas? Where had they disappeared to? Religious repression was too easy an answer; there were always freethinkers in a population of people, however repressed, however much they lived under the eye of censoring priests. There must have been transmutationists in that gap of two thousand years, he reflected. Perhaps they had disappeared beyond all historical record. Something else about the Aristotle footnote troubled Darwin long after the fourth edition of *Origin* had found its way into the bookshops.

He could not see how anyone in ancient Greece, even the great philosopher, could have foreseen natural selection. There were no microscopes and so no way of studying single-celled organisms. There were no taxonomic theories to work with or against, so there was no way of understanding the various families of animals or the relationship between the plant and animal kingdoms. There were no systematic anatomical or dissection methods and no way of preserving body parts during examination. There were no studies of the effects of plague or population statistics. No libraries. Surely there were only superstition and sacrifice and vengeful gods and the relentless Greek sun turning everything black and fly-infested. How was it possible?

Users Review

From reader reviews:

Sara Burns:

The book *Darwin's Ghosts: The Secret History of Evolution* can give more knowledge and also the precise product information about everything you want. So why must we leave the great thing like a book *Darwin's Ghosts: The Secret History of Evolution*? A few of you have a different opinion about publication. But one aim that will book can give many details for us. It is absolutely right. Right now, try to closer with the book. Knowledge or facts that you take for that, it is possible to give for each other; you are able to share all of these. Book *Darwin's Ghosts: The Secret History of Evolution* has simple shape but the truth is know: it has great and big function for you. You can seem the enormous world by start and read a publication. So it is very wonderful.

Joseph Haner:

Information is provisions for folks to get better life, information today can get by anyone in everywhere. The information can be a know-how or any news even a huge concern. What people must be consider any time those information which is from the former life are challenging to be find than now could be taking seriously which one is suitable to believe or which one typically the resource are convinced. If you have the unstable resource then you obtain it as your main information there will be huge disadvantage for you. All those possibilities will not happen with you if you take Darwin's Ghosts: The Secret History of Evolution as the daily resource information.

Mary Cox:

The actual book Darwin's Ghosts: The Secret History of Evolution will bring someone to the new experience of reading a book. The author style to explain the idea is very unique. In the event you try to find new book to study, this book very suitable to you. The book Darwin's Ghosts: The Secret History of Evolution is much recommended to you to read. You can also get the e-book through the official web site, so you can quickly to read the book.

Ann David:

Within this era which is the greater individual or who has ability in doing something more are more treasured than other. Do you want to become certainly one of it? It is just simple method to have that. What you have to do is just spending your time not very much but quite enough to experience a look at some books. One of the books in the top record in your reading list is Darwin's Ghosts: The Secret History of Evolution. This book and that is qualified as The Hungry Hillside can get you closer in turning out to be precious person. By looking way up and review this reserve you can get many advantages.

Download and Read Online Darwin's Ghosts: The Secret History of Evolution By Rebecca Stott #WUGS2DYVX5J

Read Darwin's Ghosts: The Secret History of Evolution By Rebecca Stott for online ebook

Darwin's Ghosts: The Secret History of Evolution By Rebecca Stott Free PDF download, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Darwin's Ghosts: The Secret History of Evolution By Rebecca Stott books to read online.

Online Darwin's Ghosts: The Secret History of Evolution By Rebecca Stott ebook PDF download

Darwin's Ghosts: The Secret History of Evolution By Rebecca Stott Doc

Darwin's Ghosts: The Secret History of Evolution By Rebecca Stott Mobipocket

Darwin's Ghosts: The Secret History of Evolution By Rebecca Stott EPub