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978-0-521-51757-7 - Charles Darwin's Notebooks from the Voyage of the Beagle

Edited by Gordon Chancellor and John van Wyhe

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Charles Darwin's Notebooks from the Voyage of the *Beagle*

Transcribed, edited and introduced by

GORDON CHANCELLOR AND JOHN VAN WYHE

Darwin's *Beagle* notebooks are the most direct sources we have for his experiences on his epic voyage, and they now survive as some of the most precious documents in the history of science and exploration, written by the man who later used these notes to develop one of the greatest scientific theories of all time.

The book contains complete transcriptions of the 15 notebooks that Darwin used over the 5 years of the voyage to record his 'on the spot' geological and general observations. Unlike the many other documents that he also created, the field notebooks are not confined to any one subject or genre. Instead, they record the full range of his interests and activities during the voyage, with notes and observations on the rocks, fossils, plants and animals that he saw and collected. They also record his encounters with peoples of the various countries he travelled to, alongside maps, drawings, shopping lists, memoranda, theoretical essays and personal diary entries.

Some of Darwin's critical discoveries and experiences, made famous through his own publications, are recorded in their most immediate form in the notebooks, and published in their entirety here for the very first time. The notebook texts are fully edited and accompanied by introductions that explain in detail Darwin's adventures at each stage of the voyage, and focus on discoveries which were pivotal to convincing him that life on Earth had evolved.

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JOHN VAN WYHE is a historian of science currently based at the University of Cambridge. He has edited *Charles Darwin's Shorter Publications, 1829–1883*, also with Cambridge University Press. In 2002 he launched *Darwin Online*, the aim of which is to make available online all of Darwin's publications, unpublished manuscripts and associated materials. *Darwin Online* is the largest publication on Darwin ever created, and is used by millions of readers around the world. Van Wyhe lectures internationally, and appears frequently on TV, radio and in the press, to discuss the life and work of Darwin.

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The *Beagle* notebooks arranged in order of first use.

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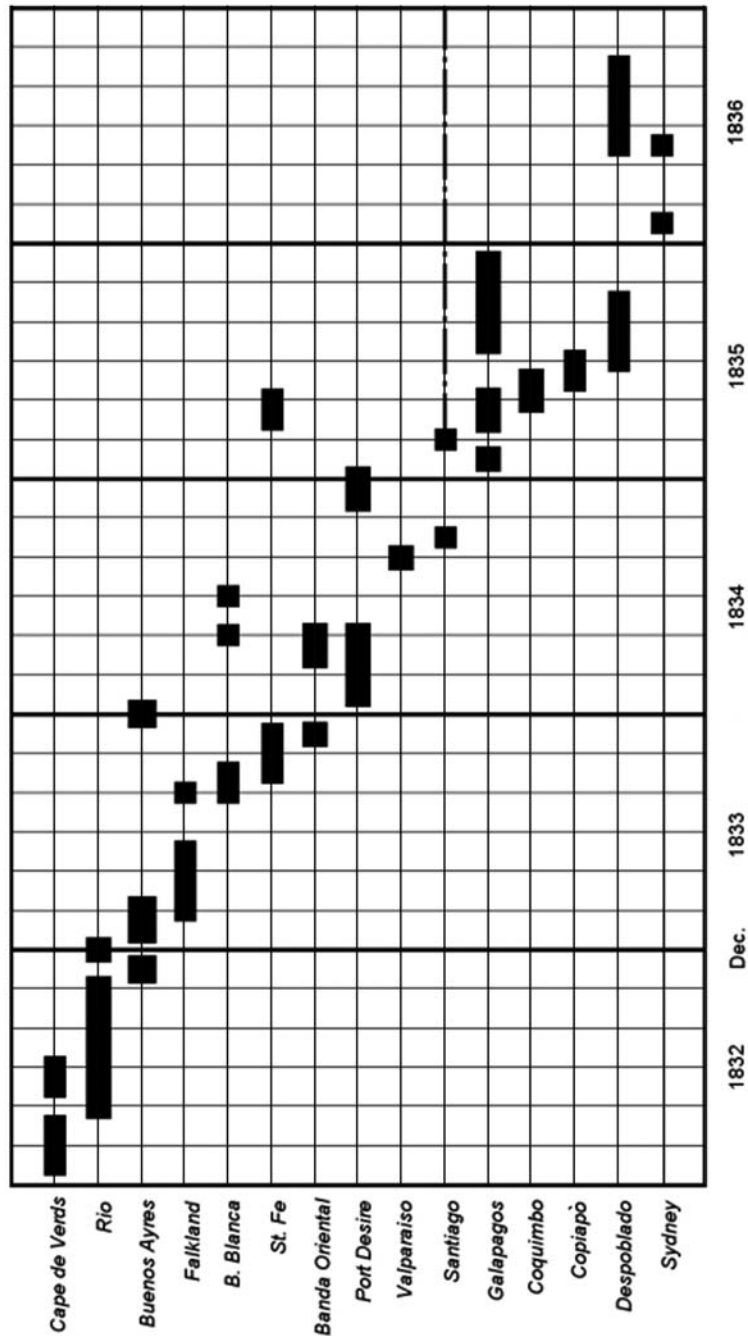
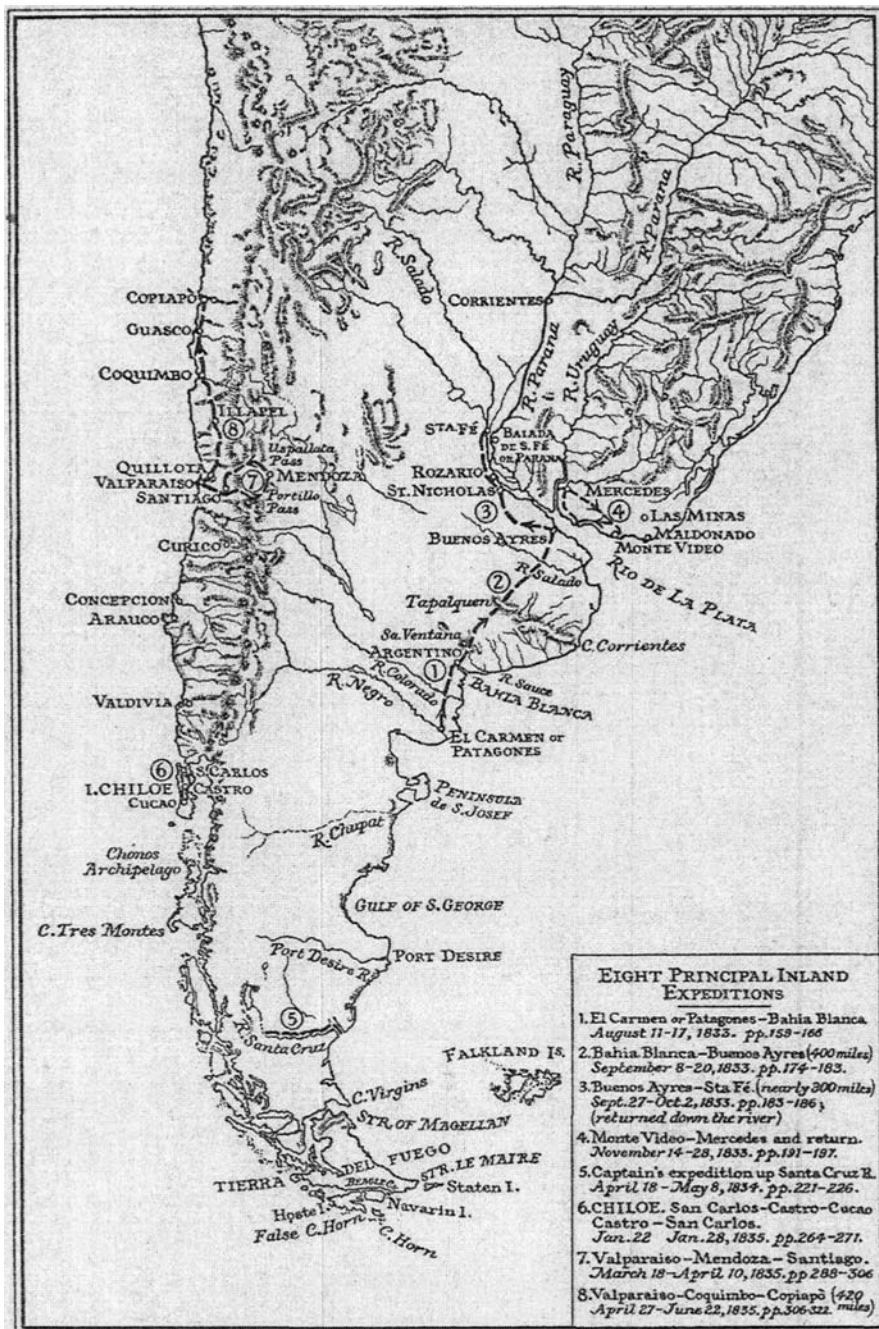


Diagram showing when the *Beagle* notebooks were in use.



Map of southern portion of South America, showing Darwin's principal inland expeditions, from Barlow 1933.



Map of Rio de Janeiro area, extract from the chart 'Southern portion of South America' from *Journal of researches*.

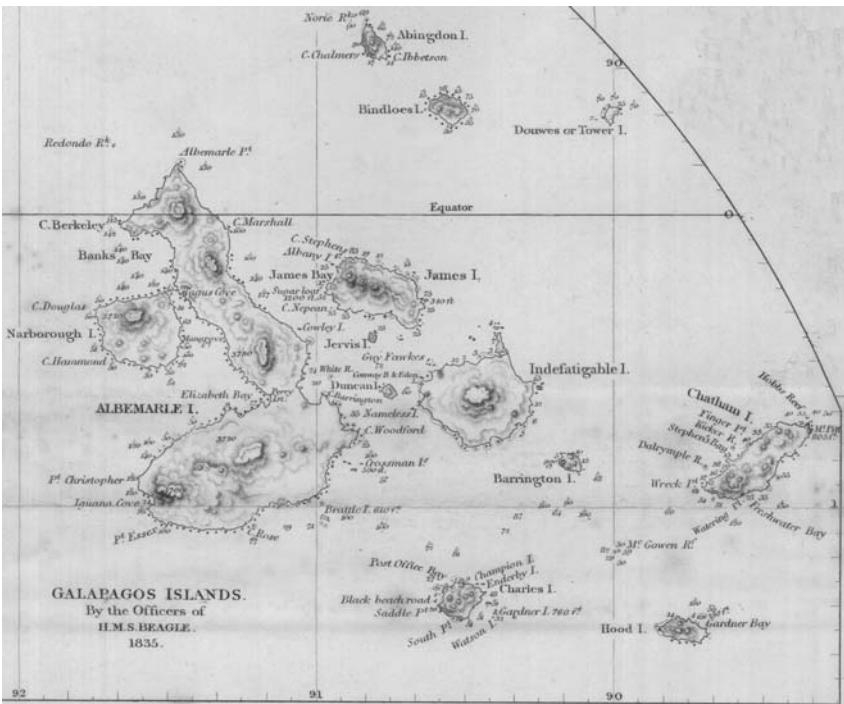


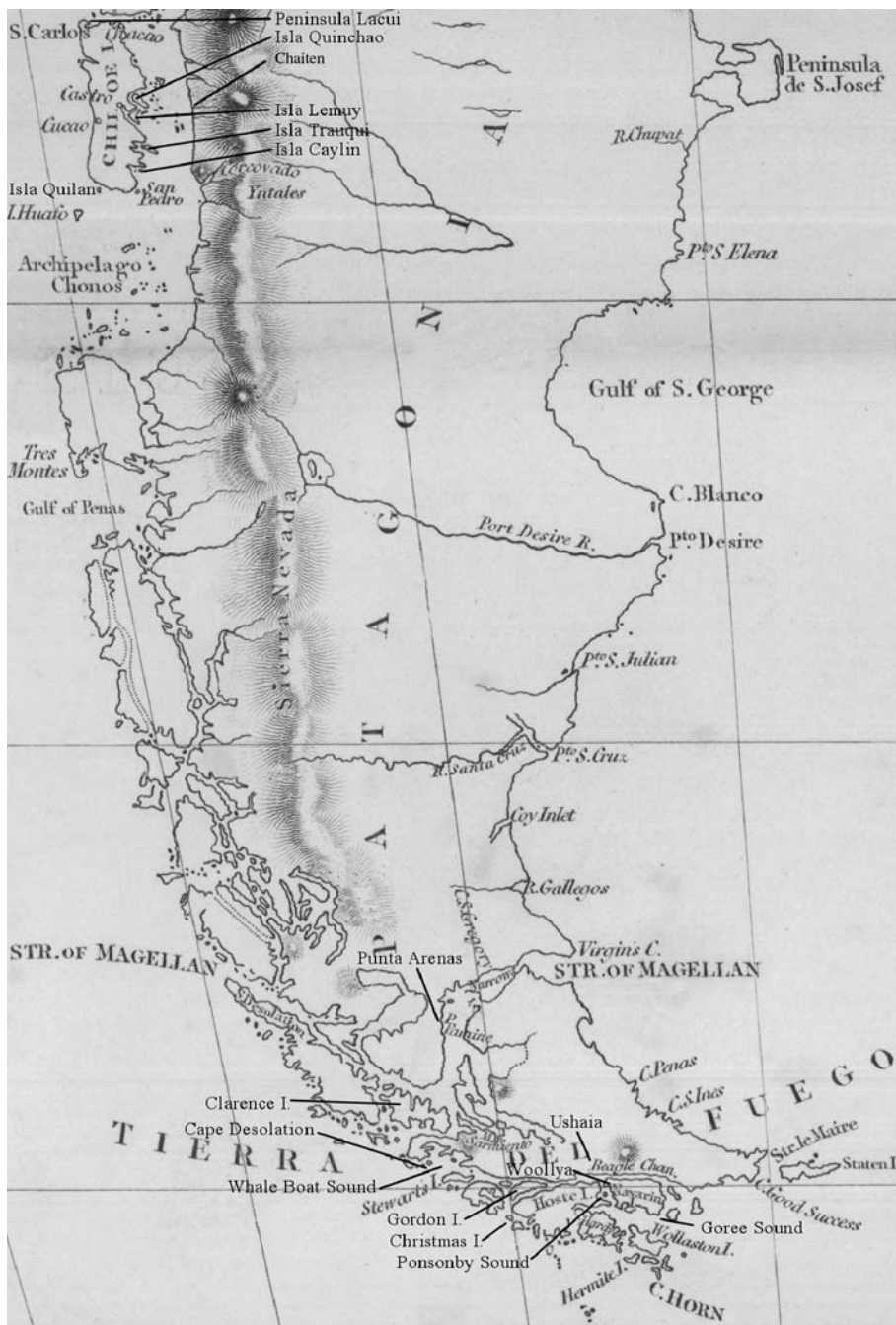
Chart of the 'Galapagos Islands by the Officers of H. M. S. *Beagle* 1835' from the 'Map of South America' in *Narrative* 1.

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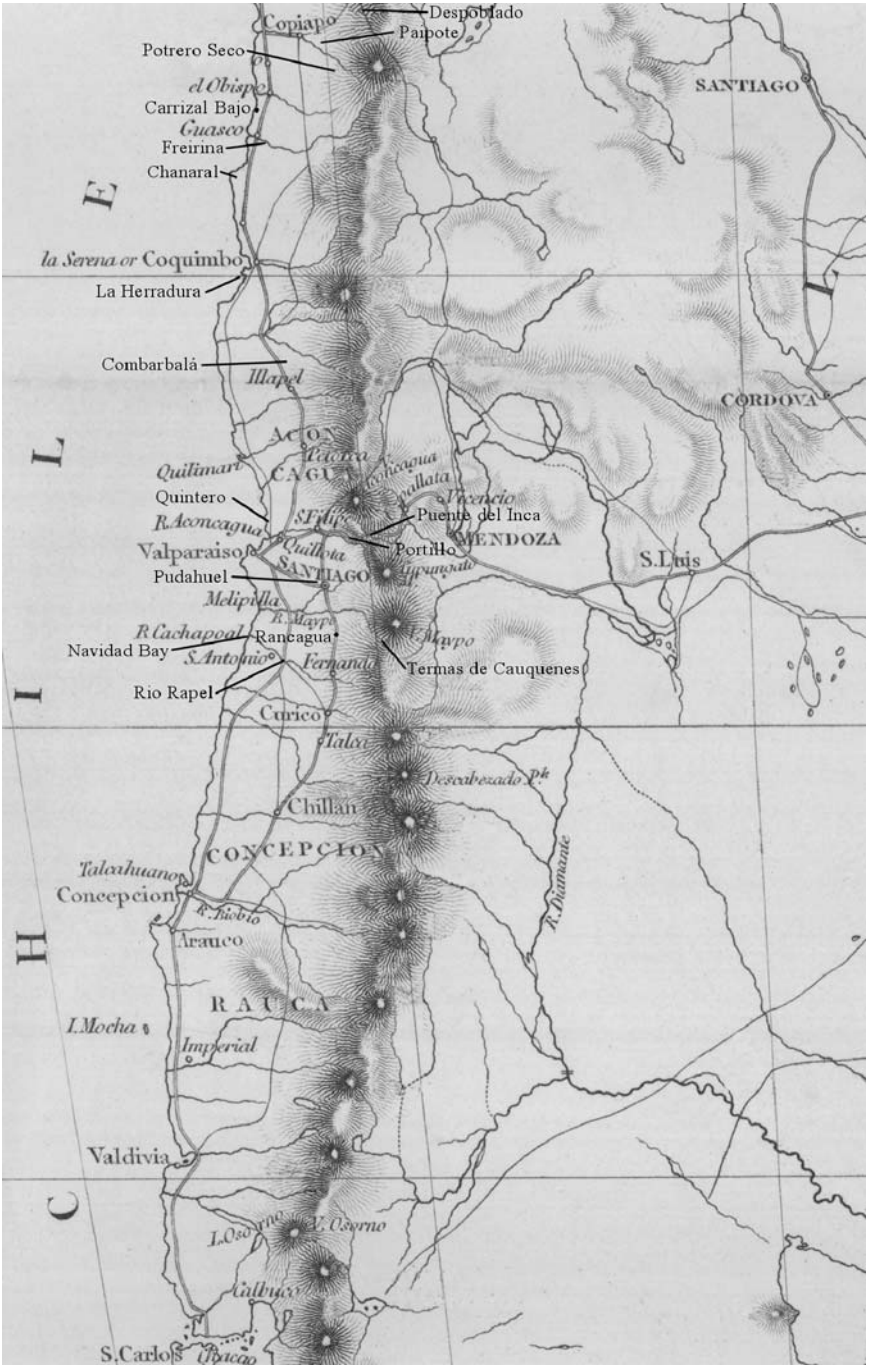


Map of Rio de la Plata, Buenos Ayres area, extract from the chart 'Southern portion of South America' from *Journal of researches*.

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Map of Patagonia, extract from the chart ‘Southern portion of South America’
from *Journal of researches*.



Map of Chile, extract from the chart 'Southern portion of South America' from *Journal of researchers*.

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Charles Darwin's Notebooks from the Voyage of the *Beagle*



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GORDON CHANCELLOR and JOHN VAN WYHE

With the assistance of Kees Rookmaaker

Foreword by Richard Darwin Keynes



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FOREWORD



Much has been written about the 1831–6 voyage around the world of H. M. S. *Beagle*, earning it a reputation as one of the most momentous of all voyages of scientific discovery. It was during its five years that the enthusiastic young Charles Darwin (1809–82) emerged as one of Britain's most promising scientists. He amassed large collections of rocks and fossils, plants, corals, fish, birds and mammals, and his far seeing observations on the geology and biology of many parts of South America visited by the little ship would by themselves have secured him an honoured place in the history of exploration.

It is not, however, for this reason that Darwin is often regarded today as one of the greatest of all naturalists, who has undoubtedly changed much of our understanding of our place in the universe.

The voyage of the *Beagle* was in Darwin's own estimation the most important thing that ever happened to him, and we now know that within a few years of his return to England in 1836 he had become convinced that all life had evolved by some natural process. His prime contribution was that he discovered how such a process might actually work, and then set about collecting the evidence to convince his fellow scientists – many of whom initially held deeply sceptical views – that he was right. In 1859, he at last published his great theory in *On the Origin of Species*, and although it must be admitted that there are still unbelievers, I am fully convinced that any true scientist will agree that Darwin's description of life on Earth as a great tree is correct in all its essentials.

I myself have fortunately been able in my several trips to South America and the Galapagos to visit quite a few of the places seen by Darwin. I was also very happy to find in the Cambridge University Library the surprisingly well preserved manuscript, on the blue note paper that he always used on board ship, of his *Zoology notes and specimen lists* from the *Beagle*, still unpublished in 1994 and now available in my transcription (*Zoology notes*). Not until now, however, has it been possible to read in book form the immediate notes that Darwin himself had written in the little field notebooks that he carried with him, today kept at his old home at Down House. Darwin's grand-daughter Nora Barlow – my mother's first cousin and my own god-mother, the finest of Darwin scholars – was the first to transcribe and publish

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Darwin's original journal of the voyage (1933). She followed this with some of his letters home, and extracts from the notebooks (omitting the purely geological material) in her *Charles Darwin and the Voyage of the Beagle* (1945), and then by her invaluable edition of his *Beagle* ornithology notes in 1963.

So Gordon Chancellor's dream, to which I was first introduced about twenty-five years ago, of producing a complete edition of the field notebooks, has, with John van Wyhe's collaboration, come to fruition. We thus have another link which takes us all the way to what a young man born two hundred years ago once saw when he was for some years very far from home.

Richard Darwin Keynes
Cambridge
June 2008

INTRODUCTION



In their pages his impressions pour forth with an almost devotional enthusiasm; that they are hastily scribbled and intended for no eye but his own is obvious. But the lapse of more than a hundred years, with all that was to ensue from these fragmentary records, has given them a value like that of the first and imperfect impression of a precious etching.

Nora Barlow, *Charles Darwin and the voyage of the Beagle*. 1945, p. 2.

Charles Darwin created a vast amount of notes and records during the 1831–6 voyage of the *Beagle*. Probably the best known of these is the *Beagle diary*, which formed the basis of his classic work *Journal of researches* (1839). It is still in print. Yet Darwin spent only thirty-three per cent of the voyage at sea in the *Beagle*. Most of his time was spent on inland expeditions. While on shore Darwin usually carried one of fifteen small pocket field notebooks in which he entered his immediate impressions. The notebooks are thus the most direct source for Darwin's *Beagle* experiences. The revolutionary importance and fame of Darwin's work on the voyage of the *Beagle* makes these notebooks some of the most precious documents in the history of science. They are printed in their entirety here for the first time. They offer a rich new vein of material for further study.

As the editors of the *Correspondence* noted, Darwin's *Beagle* records formed five broad kinds: field notebooks, personal diary, geological and zoological diaries and specimen catalogues. The latter category comprised three specimen notebooks for dried plants and animals, three notebooks for specimens in spirits of wine and four geological specimen notebooks for rocks and fossils. Unlike the many other documents Darwin created during the voyage, the field notebooks are not confined to any one subject or genre. Instead they record the full range of his interests and activities during the voyage. They contain notes and observations on geology, zoology, botany, ecology, weather notes, barometer and thermometer readings, depth soundings, ethnography, anthropology, archaeology and linguistics as well as maps, drawings, financial records, shopping lists, reading notes, memoranda, theoretical essays and personal diary entries. They contain a wealth of new and untapped material. For example, dentists are mentioned eight times in the notebooks throughout the voyage and there is a note of a 'denture mended' suggesting previously unknown insights

into the state of Darwin's teeth. The notebooks also contain Darwin's first known mention of the Galapagos islands and of their now famous finches. The notebooks also provide evidence of literature consulted or cited by Darwin that is not known to have been in the *Beagle* library. (See the reconstructed list of the *Beagle* library in CCD1 Appendix IV.)¹

It is often remarked that Darwin had a poor grasp of foreign languages. Yet the notebooks attest the fact that Darwin experienced much of the voyage in Spanish. On St Jago in the Cape de Verds in 1832, at the start of the voyage, Darwin recorded using a 'Spanish interpreter' (*Beagle diary*, p. 30); in Bahia, Brazil, in March 1832 Darwin 'procured an Irish boy as an interpreter' (*Beagle diary*, p. 45) but there are no other references to interpreters until his visit to Tahiti in November 1835. Unlike the *Beagle diary* and correspondence, which were written retrospectively and for others to read, the notebooks were usually written concurrently with or on the same day as the events they record, and for himself alone. They thus preserve traces of Darwin's social experience amongst local peoples. In addition to using local names and expressions, Darwin sometimes began to write in Spanish such as the entry: 'Dom[ingo] [Sunday 21] [June 1835]' (*Copiapò*, p. 81). Darwin began to write the day's name in Spanish, corrected himself, and proceeded in English. Another entry: 'Domingo 15th [September 1833]' (*B. Blanca*, p. 55a) was even written over a second time by Darwin in ink, and not altered.

In a very few cases Darwin quoted directly from the notebooks in his publications as in *Journal of researches*, p. 24, 'I see by my note-book, "wonderful and beautiful, flowering parasites," invariably struck me as the most novel object in these grand scenes' (*Rio notebook*, p. 9b). During the Darwin centenary celebrations in 1909 three of the *Beagle* notebooks were displayed at Christ's College, Cambridge, and two at the Natural History Museum (as it is now known).² The notebooks were first described by Nora Barlow (1885–1989) in the preface to her edition of the *Beagle diary* in 1933. She later published fairly detailed descriptions of the notebooks, together with extensive extracts from the non-geological parts in her *Charles Darwin and the voyage of the Beagle* (1945), the only book length study of the field notebooks. However, Barlow omitted 'as much as nine tenths' of the complex geological content. Historians now appreciate that Darwin saw himself during, and long after, the voyage as a geologist (see Herbert 2005). Today the notebooks are preserved

1 The works clearly consulted by Darwin in the notebooks, but not known to be in the *Beagle* library, are: Anon. 1833, Boué 1830, Cleaveland 1816, Dillon 1829, Febres 1765, Mariner 1817, Péron 1807, Seale 1834, Thunberg 1795–6 and Waterton 1833. There was also a map, apparently by d'Albe from 1819, which has not been identified. Other works referred to, though not necessarily consulted, include Azara 1802–5, Azara 1809, Davy 1830, Fitzinger 1826, Funes 1816–7, Hacq 1826, Helms 1807, Luccock 1820, MacCulloch 1820, Pennant 1771, Scoresby 1820, Stevenson 1825, Vargas y Ponce 1788, Wafer 1699 and probably a report of Murray 1826.

2 [Shiple and Simpson] 1909, p. 37; Harmer and Ridewood 1910, p. 11.

by English Heritage at Down House.³ The history of the notebooks, and how they came to be preserved at Down House in 1942, is told in Barrett *et al.* 1987, p. 2.

The present edition began in the 1980s when Chancellor prepared working transcriptions of the notebooks in longhand with the intention of publishing them as a book. Owing to unforeseen circumstances the work was never completed. In 2004 van Wyhe invited Chancellor to contribute his transcriptions to *The Complete Work of Charles Darwin Online* (<http://darwin-online.org.uk/> [hereafter *Darwin Online*]). Chancellor’s transcriptions were keyed into a computer and checked against digitized microfilm images of the notebooks by Kees Rookmaaker in 2006–7. These were then checked by Chancellor, Rookmaaker and van Wyhe against the microfilm and later against the notebooks themselves at Down House. Working transcriptions of the field notebooks were published for the first time on *Darwin Online*. For the present edition Chancellor provided definitions of the geological and palaeontological terms and van Wyhe revised the transcriptions and added editorial and textual notes.

The *Beagle* field notebooks are usually referred to by their former Down House catalogue numbers. Sometimes some of the text on their labels is used. However as the numbers are arbitrary, were not given by Darwin and convey no useful meaning and Darwin’s labels are often rather long, we have assigned unique short names to each notebook. These are taken verbatim from the notebook labels written by Darwin. The following table collates these short names with the former Down House catalogue numbers and their English Heritage numbers.

Short name	Down House	English Heritage
<i>Cape de Verds</i>	1.4	88202324
<i>Rio</i>	1.10	88202330
<i>Buenos Ayres</i>	1.12	88202332
<i>Falkland</i>	1.14	88202334
<i>B. Blanca</i>	1.11	88202331
<i>St. Fe</i>	1.13	88202333
<i>Banda Oriental</i>	1.9	88202329
<i>Port Desire</i>	1.8	88202328
<i>Valparaiso</i>	1.15	88202335
<i>Santiago</i>	1.18	88202338

3 The notebook labelled ‘Galapagos. Otaheite Lima’ (*Galapagos notebook*), although fortunately micro-filmed with the others in 1969, had disappeared from Down House by the early 1980s. Its current whereabouts are unknown. There are three other notebooks at Down House which were not used in the field during the *Beagle* voyage and therefore are not included in this edition. These are *R. N.* or the *Red notebook* (published by Sandra Herbert 1980 and in Barrett *et al.* 1987), the *St. Helena Model notebook* (Chancellor 1990), which is entirely post-voyage, and a very fragmentary notebook labelled 1.1, which, to judge from the London address of CD’s brother on the cover and inside back cover, and apparent 1870s dates on some of the many excised page stubs, is also entirely post-voyage.

<i>Galapagos</i>	1.17	88202337
<i>Coquimbo</i>	1.16	88202336
<i>Copiapò</i>	1.7	88202327
<i>Despoblado</i>	1.6	88202326
<i>Sydney</i>	1.3	88202323

The notebooks are here arranged in the chronological order of their first entries. This is approximately the order in which they were originally presented by Barlow and corresponds to the small circled numbers written on the inside covers by Barlow.⁴ The present order differs slightly from Barlow’s in the position of the *Galapagos notebook* which she placed between the *Despoblado* and *Sydney notebooks*. Our order agrees with the list adopted by the editors of the *Correspondence* who consulted Chancellor when preparing the list in CCD1.⁵

Some periods in the voyage are not covered in any of the field notebooks. Barlow believed that there were probably other, now lost, notebooks. We agree with Armstrong 1985 that this is unlikely, given the care with which Darwin preserved his *Beagle* notes and the existence of loose notes which cover some of the gaps in the notebooks. Loose sheets were used as field notes for Chiloe (January 1835), Hobart Town (February 1836), King George’s Sound (March 1836), Keeling (April 1836), Ascension (July 1836) and Bahia (August 1836).

The field notebooks’ role in the recording of Darwin’s experiences during the voyage has been described by a number of authors from Barlow onwards (e.g. Armstrong 1985). Darwin used them to record in pencil his observations, often, but not exclusively, while he was on long inland expeditions hundreds of kilometres from the *Beagle*, perhaps with no other paper available. A notable exception to this generalization is the latter part of the *Santiago notebook*, which is effectively the first of Darwin’s theoretical notebooks. In a letter to his Cambridge mentor John Stevens Henslow (1796–1861), Darwin remarked that he was keeping his diary and scientific notes separate. The field notebooks are documents prior to this distinction because they fed into both types of later manuscripts as well as correspondence.

Darwin later wrote about making notes in the field in *Journal of researches*, p. 598: ‘Let the collector’s motto be, “Trust nothing to the memory;” for the memory becomes a fickle guardian when one interesting object is succeeded by another still more interesting.’ In 1849 he wrote in his chapter on geology for the *Admiralty manual*, p. 163:

4 Chancellor 1990, p. 206.
5 The list of notebook names given in CCD1: 545–6 is not always verbatim from CD’s labels, e.g. ‘Santiago’ and ‘Tahiti’ are not on the *Galapagos notebook* and ‘Bathurst’ is not on the *Sydney notebook*.

[A naturalist] ought to acquire the habit of writing very copious notes, not all for publication, but as a guide for himself. He ought to remember Bacon's aphorism, that 'Reading maketh a full man, conference a ready man, and *writing an exact man*; and no follower of science has greater need of taking precautions to attain accuracy; for the imagination is apt to run riot when dealing with masses of vast dimensions and with time during almost infinity.

The notebooks were also part of Darwin's expedition equipment. In one of his tips for travellers, Darwin noted that 'by placing a note-book on [a flat piece of rock], the measurement can be made very accurately' (Darwin 1849, p. 161). A re-constructed list of the equipment Darwin carried on his expeditions is provided on p. 583.

The diagram of the *Beagle* notebooks at the front of the volume attempts to show when the notebooks were in use. Most of the notebooks were used on separate occasions, and sometimes more than one notebook was in use at any one time. Therefore the relationships between them are often complex. It should be stressed that this diagram indicates only that a notebook was used in any particular month. The text of the notebooks or the Chronological Register at the end of the volume should be consulted to see whether this was many pages of continuous use, or a few jottings. The Chronological Register, in addition to being the most complete itinerary of the voyage of the *Beagle* yet published, allows the dates and places Darwin recorded in the notebooks to be easily found, despite the fact that he often changed notebooks and therefore they themselves are often not chronological.

Four of the maps at the front of the volume are extracts from the map of the southern portion of South America included with the first edition of Darwin's *Journal of researches* (and in *South America*). For clarity, extraneous place names have been removed and others have been added.

Probably the main reason Darwin did not use one notebook until it was full before taking up another was to protect information not yet transferred to other notes. Once he was back on board the *Beagle* after an excursion he would use the information from the notebook just used as the basis for his lengthy geological, zoological and personal diaries written in ink. Since this process might take weeks, and therefore was often not completed before his next excursion, Darwin took a notebook with him ashore which could be spared, rather than risk losing field notes which had not yet been processed. In this way he had a conveyor belt of field notebooks in various states of use. One can only guess why he sometimes ended up with very incompletely used notebooks such as *Banda Oriental*. Perhaps he preferred using some notebook types rather than others.

There are six manufactured types of notebook which were used almost chronologically, perhaps reflecting successive purchases. This can be seen by the frontispiece which depicts the field notebooks arranged in order of first use.

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978-0-521-51757-7 - Charles Darwin's Notebooks from the Voyage of the Beagle

Edited by Gordon Chancellor and John van Wyhe

Frontmatter

[More information](#)**Type 1: *Cape de Verds, Rio, Buenos Ayres and B. Blanca***

All four notebooks have red leather covers with blind embossed edges and are of a long rectangular shape (c. 130 × 80 mm) with integral leather pencil holding sleeve and brass clasps. All of the original pencils, if they were included with the notebooks when purchased, are missing. This is true for all of the *Beagle* notebooks; no pencils used are known to survive. The notebooks are between 104 and 112 pages long. Some pages bear the watermark 'J. Whatman 1830'.

Type 2: *Falkland and Red notebook*

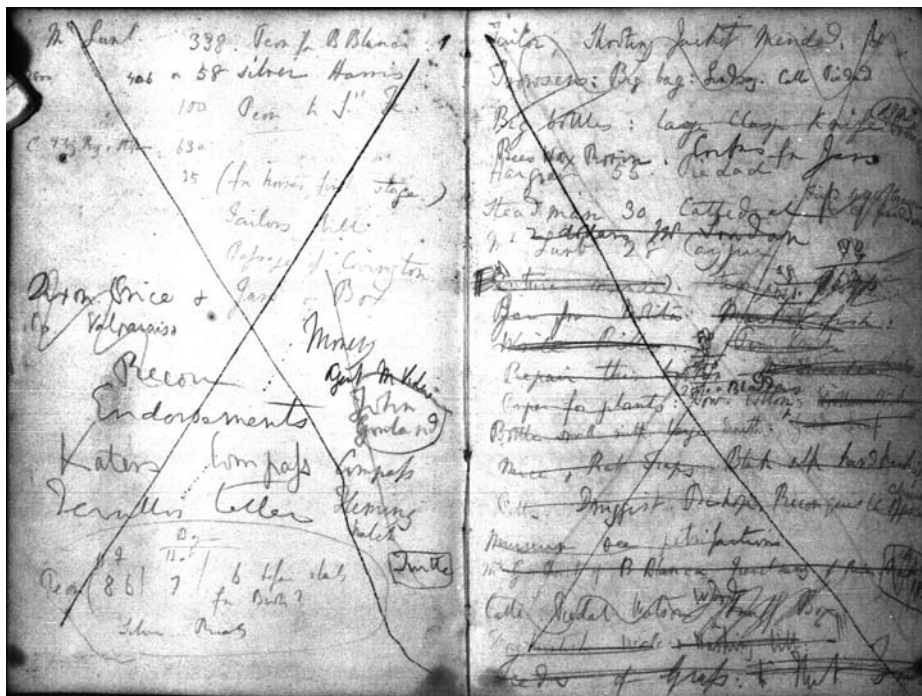
These two notebooks are long and rectangular (164 × 100 mm) and have brown leather covers with embossed floral borders and brass clasps. The notebooks contained 184 pages, some bearing the watermark 'T. Warren 1830'. Although used at the most widely varying times for any of Darwin's notebooks, they are twins. Similarly, transmutation and expression *Notebooks D* and *M* and *Notebooks N* and *E* are manufactured pairs. The *Red notebook*, which is labelled on both sides 'R. N.', was first published by Sandra Herbert in 1980. Herbert referred to the notebook in 1980 'as the name suggests, red in colour, although the original brilliance has faded'.⁶ Both notebooks are now brown though there are very slight traces of red on the front cover of *Falkland* which appear to be part of now faded colouring. Darwin at least twice referred to the former as the 'Red Note Book'.⁷ On other occasions he referred to it as 'R N' (e.g. DAR 36: 466a, DAR 118: 103v). It is a curious name given that, so far as is known, Darwin did not name any other notebooks by their colour or appearance. Given that eight of the *Beagle* notebooks are still bright red, it seems unthinkable that the *Red notebook* would be named after its colour in their presence. It was probably named after the voyage when the *Beagle* notebooks were no longer in use. Perhaps *Santiago*, which is black, was the only other notebook in use at the time the *Red notebook* was labelled.

Type 3: *St. Fe and Banda Oriental*

These two notebooks (155 × 100 mm) are bound in brown leather with brass clasps. Unlike the preceding types they open along the long side like a book, rather than lengthways like a pocket book. Only *Santiago* opens in the same manner. The notebooks were 244 pages long. The end papers and page edges are marbled. Some pages bear the watermark 'W. Brookman 1828'.

⁶ *Red notebook*, p. 5. In Barrett *et al.* 1987, p. 17, the notebook is described as 'bound in red leather'.

⁷ See for example DAR 29.3.9, DAR 36.436–7 and the *Red notebook*.



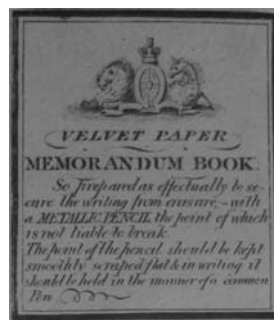
Pages 4a–5a of the *St. Fe notebook*.

Type 4: *Port Desire*

This long and rectangular (170 × 130 mm) notebook is bound in brown leather with floral embossed borders and brass clasp. Its original back cover was missing (probably the one referred to by Barlow 1945, p. 154) but has since been carefully restored with a new one. The last page of the notebook, p. 137, is heavily soiled where it was thus exposed. There were originally 146 pages, some of which bear incomplete watermarks which seem to read 'John Morbey 1830'.

Type 5: *Valparaiso, Galapagos, Coquimbo, Copiapò, Despoblado and Sydney*

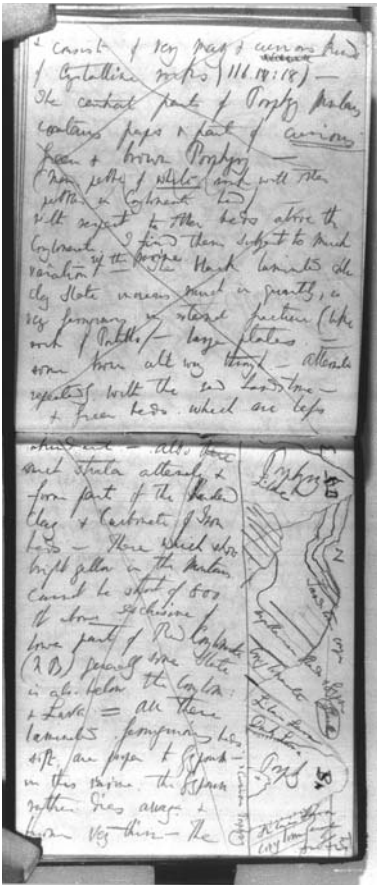
These six 'Velvet paper memorandum' notebooks are bound in red or black leather (the first and last are black) with the borders blind embossed and with brass clasps. Integral pencil holding sleeves, extensions of the cover leather as in Type 1, are placed on the left inside of the front cover. The paper is yellow edged except for *Sydney* (*Galapagos* is unknown). The notebooks are of an almost square shape varying from 90 × 75 to 120 × 100 mm and were between 100 and 140 pages



Label from a 'Velvet paper memorandum book'.

long. This makes Type 5 the most variable of the *Beagle* notebooks. The inside front covers bear printed labels surmounted by an engraved lion and unicorn.⁸

The pages of these notebooks were treated or coated to react with the metallic pencils, now lost. The paper remains bright white and has a silky or velvety feel. Although the writing in these books looks at first like graphite pencil it is in fact a reaction between the metal of the pencil tip and the chemicals with which the paper was treated. This rendered the writing indelible.⁹ Occasionally some notebooks of other types (with untreated paper) have very faint writing which are almost uncoloured scratches which may be from the metallic pencils.



Pages 36–7 of the *Copiapò* notebook.

8 The printed labels are all identical. The label depicted throughout this volume is from the *Coquimbo* notebook.
9 We are grateful to Louise Foster (personal communication) for useful insights on metallic pencils and for supplying us with various types of treated paper and metallic pencils.

Type 6: *Santiago*

This 100 × 165 mm notebook is bound in black paper with black leather spine and was originally 138 pages long. Four pencil holder loops, dovetailed along the opposite cover edges, held the notebook closed when a pencil was inserted. This is not seen on any other *Beagle* notebook. The inside covers are green paper. Inside the front cover there is a collapsing pocket. The manufacturer's label shows that the notebook was made in France, unlike all of the other *Beagle* field notebooks. As will be argued below, *Santiago* was used after the voyage and is labelled identically on both sides as is the *Red notebook* and the transmutation and expression notebooks, a post-voyage notebook labelling practice.

We are not aware of any other Darwin notebooks which match any of these field notebook types. Notebooks 1.1, *St. Helena Model*, the specimen notebooks and all other post voyage notebooks are different types. Some of the *Beagle* notebooks, such as *St. Fe* and *Valparaiso*, have long fine, almost parallel, knife cuts on their covers. These may be where Darwin sharpened his pen or otherwise cut something on the notebooks. Possibly he used them in excising pages from other notebooks. The cuts were made before the notebooks were labelled. It is unknown when Darwin labelled the *Beagle* notebooks, but it was clearly after they were completed, and not all at once as he used different versions of place names, such as 'Isle of France' on the label of the *Despoblado notebook* but 'Mauritius' on the label of the *Sydney notebook*.

The appearance of the notebooks today is less battered and frayed than they were when Nora Barlow first described them in 1933. The 1969 microfilm images reveal flaps of torn leather on their covers and in one case (*Port Desire*) a back cover torn off. The edges of some of the leather covers were worn away. The notebooks have since been carefully conserved so that they appear in rather better condition than when they returned from the *Beagle* voyage. The *Falkland*, *St. Fe*, *Banda Oriental* and *Port Desire* notebooks, for example, have had missing pieces of their leather bindings restored.

Editorial policy

The *Beagle* field notebooks are arguably the most complex and difficult of all of Darwin's manuscripts. They are for the most part written in pencil which is often faint or smeared. They were generally not written while sitting at a desk but held in one hand, on mule or horseback or on the deck of the *Beagle*. Furthermore the lines are very short and much is not written in complete sentences. Added to this they are full of Darwin's chaotic spelling of foreign names and cover an enormous range of subjects. Therefore the handwriting is sometimes particularly difficult to decipher. Alternative readings are often possible. Some illegible words are transcribed as well as possible, even when they are obviously not the correct word, when this seems more informative than just listing the word as illegible.

In the transcriptions we have strictly followed Darwin's spelling and punctuation in so far as these could be determined. The transcribed text follows as closely as possible the layout of the notebooks, although no attempt is made to produce a type-facsimile of the manuscript; word-spacing and line-division in the running text are not reproduced. Editorial interpolations in the text are enclosed in square brackets. The page numbers assigned to the notebooks are in square brackets in the margin at the start of the page to which they refer. Italic square brackets enclose conjectured readings and descriptions of illegible passages. Darwin's use of the f or long s (appearing as the first 's' of a double 's'), has been silently modernized. Darwin used an unusual backwards question mark (‡) which might be based on the Spanish convention of preceding a question with an inverted question mark (¿).¹⁰

Textual notes are given at the end of each notebook. The notebooks are almost entirely written in pencil. Where ink was used instead this is indicated in the textual notes. Brown ink was used except where otherwise indicated. Pencil text that was later overwritten with ink is represented in bold font.

The length, complexity and need to refer to the textual notes has been minimized by representing some of the features of the original manuscripts typographically.¹¹ Words underlined by Darwin are printed underlined rather than given in italics. Text that is underlined more than three times is double underlined and bold. (There are no instances of such entries also overwritten in ink.) Text that was circled or boxed by Darwin is printed as boxed. Also text that appears to have been struck through at the time of writing is printed as struck through text. Darwin's insertions and interlineations have been silently inserted where he indicated or where we have judged appropriate.

Paragraphs are problematic; often Darwin ran all of his entries together across the page to save space. We have made a new paragraph when there was sufficient space at the end of the preceding line to have continued there. We have silently added a paragraph break wherever Darwin made a line across the page, apparently at the time of writing, or short double scores between lines separating blocks of text. When long strings of notes are separated with stops or colons and dashes we have left these as written by Darwin.

We have ignored all later scoring through of lines, paragraphs and pages in the interest of readability. Virtually every page and paragraph is scored through, often several times, indicating that Darwin had made use of the material.¹² It has been our aim to make Darwin's notebooks widely accessible and readable, as well as a scholarly edition.

10 These marks seem to be present in his c. 1827 notes (DAR 91.115v) on reading John Bird Sumner's, *The evidence of Christianity*, see van Wyhe 2008b.

11 Sandra Herbert adopted a similar approach in the *Red notebook*.

12 As photographs of the manuscripts are due to be made available online by English Heritage, this should provide all the information on scoring that any scholar might need.

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Introduction

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Finally, and perhaps most importantly, the field notebooks are quite different from all of Darwin's other notebooks, except the Glen Roy field notebook of 1838 (DAR 118), in that they all contain diagrams or sketches. With the exception of a small number of apparently meaningless cross-hatches and doodles, we include photographs of all of these drawings in the transcriptions.¹³ To assist the reader the writing contained in these drawings is also transcribed and the sketches turned to the horizontal when necessary. We have provided captions to those that have been identified and which are not already captioned by Darwin or which do not appear to be self explanatory.

Some of the notebooks, notably *St. Fe*, are abundantly illustrated with geological sections which Darwin was able later to 'stitch together', via various intermediate copies, now preserved in the Darwin Archive at Cambridge University Library, into the versions he published in the three works which comprised his *Geology of the Beagle*.¹⁴ Of at least equal interest are the far fewer but equally informative sketches of animals, apparently in some cases having been dissected, and the occasional crude diagram of human interest, such as the floor plan of a house, a tiny drawing of the *Beagle*, and a self-portrait of Darwin as a 'stick man' on the cliffs of St Helena.

With one partial exception, Darwin did not number the pages of the notebooks, and often wrote in them at different times from opposite ends. This edition therefore uses an 'a, b' page numbering system. When a notebook was used starting from opposite ends the pages written from the front cover are labelled 'a', and pages written from the back cover are labelled 'b'. In order to make the transcriptions readable the second sequence, starting with the back cover, is placed immediately after the end of the first sequence. With the original manuscript it is necessary to turn the notebook around and begin reading from the other end. Most of the notebooks have brass clasps and we use the convention of referring to the cover with the hinge attached as the back cover.

Many persons, places and publications are recorded in the notebooks which appear in no other Darwin manuscripts. To make the notebooks more accessible explanatory footnotes are provided. The notes identify persons referred to in the text and references to publications as well as technical terms or particular specimens when these could be readily identified in Darwin's other *Beagle* records. Technical terms are usually defined at their first occurrence or where necessary to clarify Darwin's meaning. The definitions are mostly intended for the general reader. Darwin used some rather outdated geological terms (for example as used by Alexander von Humboldt (1769–1859)) but for definitions he probably started to use those in Lyell's *Principles of geology*, vol. 3 (1833), which Darwin had with him on the voyage

13 Only some of the photographs could be supplied by English Heritage in time, therefore other images are taken, with permission, from reference photographs and microfilm.

14 This aspect of CD's 'visual language of geology' has been analysed by Stoddart 1995 and Herbert 2005.

after mid 1834. For more detailed discussion of Darwin's petrological (i.e. rock) terms see Pearson 1996. For zoological names and terms see *Zoology notes*, for ornithology Steinheimer 2004, for insects *Darwin's insects* and for botany *Beagle plants*. As these works have shown, Darwin used the European Latin names for animals and plants he encountered which reminded him of European species. He also used local names. Publications are given as 'author date', but given in full in the bibliography. Short titles are used for references to Darwin's books and articles and some of the standard works on Darwin, as cited in the *Correspondence*. Persons are identified fully at first occurrence and only subsequently if clarity is required. More detailed information about most of these individuals can be found in the Biographical Register in the *Correspondence*, now helpfully made available as an online database.

Content

Summarizing the content of the notebooks in a few paragraphs is not only impossible, but also rather pointless since Barlow 1945 provided an unsurpassably engaging précis. Even Barlow at times had to admit defeat in trying to convey an impression of the hundreds of pages of geological descriptions, diagrams and speculations which fill great swathes of the notebooks, especially those used during 1834 and 1835. A series of quotations, in more or less chronological order, suggests the potential of the notebooks:

- 'Solitude on board enervating heat comfort: hard to look forward pleasures in prospect: do not wish for cold night delicious sea calm sky not blue' *Cape de Verds notebook*, p. 46b.
- 'Lofty trees white holes the pleasure of eating my lunch on one of the rotten trees — — so gloomy that only shean of higher enters the profound.' *Cape de Verds notebook*, p. 85b.
- 'twiners entwining twiners. tresses like hair beautiful lepidoptera. silence hosannah' *Rio notebook*, p. 27b.
- 'View at first leaving Rio sublime, picturesque intense colours blue prevailing tint — large plantations of sugar & rustling coffee: Mimosa natural veil' *Rio notebook*, p. 2a
- 'always think of home' *Buenos Ayres notebook*, p. 4b.
- 'The gauchos ... look as if they would cut your throat & make a bow at same time' *Falkland notebook*, p. 34a.
- 'nobody knows pleasure of reading till a few days of such indolence' *B. Blanca notebook*, p. 12a.
- 'Most magnificently splendid the view of the mountains' *Valparaiso notebook*, p. 78a.
- 'Rode down to Port — miserable rocky desert' *Copiapò notebook*, p. 14a.
- 'But every thing exceeded by ladies, like mermaids, could not keep eyes away from them' *Galapagos notebook*, p. 18a.

The notebooks are of variable length. There are a small number of entries (mainly notes and drawings) which, although contemporary, are not in Darwin's

handwriting.¹⁵ The fine sketch of the Baobab tree in *Cape de Verds*, p. 5a, is almost certainly by Robert FitzRoy (1805–65), the *Beagle*'s Commander. A small number of faint coastline sketches may also be by others. The last line of the inside back cover and p. 1b of the *B. Blanca notebook* are in FitzRoy's handwriting. A few faint numbers and letters on the labels could be later additions, but it seems impossible to determine when they were written.

	Pages	Words	/per page	Sketches	Blank	Excised
<i>Cape de Verds</i>	112	3,660	33	20	0	2
<i>Rio</i>	106	4,340	41	13	0	16
<i>Buenos Ayres</i>	106	5,600	53	12	3	2
<i>Falkland</i>	180	11,150	62	10	25	2
<i>B. Blanca</i>	104	6,250	60	12	10	1
<i>St. Fe</i>	234	22,130	95	47	2	11
<i>Banda Oriental</i>	242	9,250	38	8	130	2
<i>Port Desire</i>	180	7,670	43	44	49	2
<i>Valparaiso</i>	104	5,250	51	5	0	2
<i>Santiago</i>	140	8,370	60	6	2	12
<i>Galapagos</i>	100	3,610	36	4	0	2
<i>Coquimbo</i>	136	11,330	83	20	0	0
<i>Copiapò</i>	102	8,040	79	12	39	4
<i>Despoblado</i>	136	6,300	46	20	19	14
<i>Sydney</i>	88	3,130	36	10	10	2
			Mean			
Totals:	2,070	116,080	53	241	289	74

Darwin's use of the notebooks gradually changed throughout the voyage. There is a symmetry to the density of entries as they gradually became lengthier during the first year of the voyage, reached a plateau in the middle years, then tailed off in the last year. The first three notebooks gradually get longer, then there is a large increase in the *Falkland notebook* which is not only almost twice as long as its predecessors but for the first time is routinely used for lengthy descriptions. Darwin maintained this *Falkland* style of use through the three South American years of the voyage, but it 'spiked' quite extraordinarily in the *St. Fe notebook* of which the majority dates from early 1835. *St. Fe* is seven times longer than the two shortest notebooks, which are those used at the beginning and end of the voyage. The daily rate of notebook entries dropped after Darwin left South America.

The *Santiago notebook* was used at the same time as *St. Fe* and seems to mark a new development in Darwin's note-taking. In *Santiago* for the first time Darwin started to separate his theoretical notes from his more observational notes and kept *Santiago* for theory, also using the exclusively theoretical *Red notebook* from May 1836.

15 Modern additions such as institutional accession numbers are given in the textual notes.

Previous scholars have assumed not only that the use of *Santiago* ceased when the *Red notebook* began, but that the transition from field notes to theory notes is to be seen in the *Red notebook* whereas we believe it is in *Santiago*.

Each notebook is provided with an individual introduction which is intended to assist the general reader to understand what Darwin was doing during the parts of the voyage when the notebook was in use. To facilitate comparing the notebooks with other Darwin manuscripts, such as the *Beagle diary* or *Correspondence*, place names used by Darwin are followed. When this differs from the present-day name, the latter is provided in square brackets on first mention.

The *Beagle diary*, *Correspondence* and other *Beagle* manuscripts, such as the *Zoology notes*, overlap with the notebooks. Citing them on every date in the notebooks would be cumbersome. It is essential to consult these works frequently when reading the *Beagle* notebooks.

Although there can be no substitute for reading the notebooks themselves, the introductions provide an overview of Darwin's scientific development during the voyage. The earlier introductions set the scene and introduce key scientific issues in Darwin's scientific context. As the voyage progresses the introductions become more detailed as Darwin climbed metaphorically and physically into higher and higher realms of geology.

A very important contribution to the literature on Darwin's work in Argentina, a special edition of *Revista de la Asociacion Geologica Argentina* 64, No. 1 (February 2009), appeared after this volume was going to press. Therefore it was unfortunately not possible to utilise this new research (helpfully published in English) in this book.

While the notebooks are overwhelmingly geological they also record Darwin's field work in botany and zoology. Particular attention is given in the introductions to Darwin's gradual accumulation of evidence that something was wrong with current views concerning the 'death' and 'birth' of species, even when this evidence is only faintly recorded in the notebooks. Our discussion culminates with Darwin's realization, recorded in the *Galapagos notebook*, that the land birds in the Galapagos were American types, implying an historical origin on the mainland rather than a special local creation to suit volcanic island conditions.

Darwin published his *Journal of researches* from the voyage in 1839, and until 1846, ten years after his return home, continued to publish his results from the *Beagle* voyage. Much of his later scientific career was an extension of the work he carried out during the voyage. Nora Barlow published *Charles Darwin's diary of the voyage of H. M. S. Beagle* in 1933 and many of his voyage letters with extracts from his field notebooks in 1945. It is our hope that, by now presenting his field notebooks in their entirety, it will be possible for the reader to see, for the first time, the full range of Darwin's activities during the voyage of the *Beagle*. The notebooks, read alongside Darwin's other published records from the voyage, provide an unparalleled opportunity to study the intellectual development of arguably the most influential naturalist who ever lived.