

CHARLES DARWIN
*and the voyage of
the Beagle*



Charles and Catherine Darwin, 1816

CHARLES DARWIN
AND
THE VOYAGE OF THE BEAGLE

Edited with an Introduction

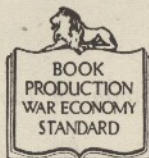
by

NORA BARLOW

LONDON
PILOT PRESS LTD.

1945

FIRST PUBLISHED DECEMBER, 1945,
BY PILOT PRESS LTD., 45 GREAT
RUSSELL STREET, LONDON, W.C.1.



This book is printed in complete
conformity with the authorized economy
standard.

Printed at THE CHISWICK PRESS, London, N.11,
by EYRE & SPOTTISWOODE, LTD.

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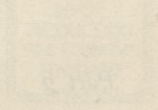
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P R E F A C E

“*THE VOYAGE* of the *Beagle* has been by far the most important event in my life, and has determined my whole career.”

So wrote Charles Darwin towards the end of his life, looking back over almost half a century of quiet stay-at-home existence to the glorious adventure of his youth, when as a young man of twenty-two years he set sail on the voyage of circumnavigation which his name has rendered famous.

The Admiralty instructions to the commander, Captain Robert FitzRoy, were comprehensive, and gave as the main purpose of the expedition the accurate survey of the southern coast-lines of the South American continent, together with running a chain of chronometric readings round the world. Much subsidiary work was recommended, such as taking angle readings of all remarkable headlands and making exact geological maps of the countries visited. FitzRoy was already well acquainted with those southern regions of South America where he had spent some years on an earlier surveying voyage, and had already felt the need of someone more versed in scientific knowledge to assess the future mineralogical values of those lands. His zeal to promote the success of the second expedition led him to approach the Hydrographer for permission to place on the *Beagle's* books as his guest someone equipped with this additional knowledge, who would share his own accommodation and profit by the opportunity of visiting remote and unknown countries difficult of access. He little knew that his disinterested action would make his small sailing vessel forever famous in the history of science; the *Beagle* was to become the training-ship for Charles Darwin in the serious scientific purpose of his life.

His name will always be principally associated with the theory of evolution; the present volume, built round the little note-books of the voyage and his letters home, deals with an earlier period when hypotheses were still in the making and the orthodox doctrines of creation and immutability of species still

held their outward sway. During those five years he pursued the evasive geological puzzles that met his inexperienced eyes and made vast collections of animals and plants, but to begin with he had no guiding hypothesis on the species question to direct him. His power of building theories and testing them by the closest scrutiny of observed facts only came to him as a revelation on his travels. In the unpublished MSS. of these formative years can be traced the influences at work on his mind and character; he left England a diffident young man with no particular attainments, destined for the Church—if his despairing father could persuade him to apply himself seriously to a professional life; who only after some months began to believe, “if he could so soon judge, that he would do some original work in Natural History”. He learnt to realise that “a man who dares to waste one hour of time, has not discovered the value of time”, and returned with the certain knowledge that he could add both fact and theory to the great treasure-house of science.

Twenty-four little pocket-books have survived the distant travels and the passage of time. The notes are mainly geological, but they also tell of inland expeditions made whilst FitzRoy was charting the coast or the *Beagle* was refitting, with memoranda and odd comments of the traveller. 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.

Parallel with the note-books the story is told in the thirty-nine letters written to his father and sisters from the remote corners of the earth in the form of an intimate personal narrative. These letters tell their own story and I have only added an occasional foot-note and here and there a connecting thread. I have taken some liberties with the punctuation in both the MSS., but hope I have always interpreted the indistinct handwriting correctly. I have retained his own spelling and grammar without the pedantry of recording occasional slips of the pen. Any added word is placed in square brackets; round brackets are

Darwin's own. Eight of the letters were published in Francis Darwin's *Life and Letters of Charles Darwin*, though not in their entirety, with portions of a few others; the remainder have not previously been published.

The presentation of the little pocket-books was a more difficult matter. There are consecutive pages of geological notes that I have omitted altogether. The entries are cramped and awkward in style, often showing the press of time and space. They were his shorthand notes to help his memory when he came to write up his journal in the more leisurely moments at sea or on shore. Therefore the day by day narrative is much fuller in his published *Diary*, and the more scientific discussions, which are hardly even suggested in these rough-drafts, are found in their amplified and completed forms in the later editions of the *Voyage of the Beagle*.¹ Nevertheless much can be gleaned from these spontaneous first impressions that is worth while. His method of working and difficulty of expression are revealed, with a new assurance asserting itself towards the end of the five years. The growing grasp of his subject and his growing self-confidence brought about a remarkable change in his whole personality. Perhaps the long absence from his father's redoubtable presence with his frequent sense of blame, together with the prolonged concentration on the work he loved, helped his energies to converge in one great and fixed purpose. A change in his whole outlook was at work, and the little note-books and the letters help to bring that conversion—for it was no less—into proper perspective in the whole history of his developing thought.

The interest of the detailed observations and of the embryonic theories of the *Beagle* note-books lies in their relation to the mature philosophy of the older man. Here we can trace the inception of his evolutionary views to an earlier date than has sometimes been supposed. The study of the two parallel manuscripts has yielded further light on Charles Darwin as he then was, emotionally sensitive and intellectually malleable. Some readers may think of him as always full of years and learning, grave and with flowing beard as he is represented in the best known pictures. Others may have followed him from

¹ For the different forms of the *Diary* and the *Journal* see Bibliography, pp. 4 and 5.

the ardent but diffident young collector, to an old age of continuing work and established fame. Even those who know him well already, will I hope be further enriched in their love and understanding by the sincerity and deep worship of nature found in the pages of the note-books, and by the open gaiety and affection of his letters.

I am indebted to the generosity of the British Association for the loan of both series of manuscripts. As is well known, this Association now holds Down House, Darwin's old home, as a national memorial under the gift of the late Sir Buckston Browne; to the Darwin relics already under their care, were added many more important manuscripts in 1942. The *Beagle* letters and note-books formed part of this addition. A grant from the Pilgrim Trust enabled the owners to ensure their permanent preservation in the hands of the British Association, whose kindness in allowing me to keep them for some considerable time I should like here to place on record.

In the text I shall have occasion to refer to the versions and editions of the *Beagle Diary*. I will here give a short summary in order of their publication, so that the reader may know to which I am referring. This brief bibliography will also include the publications on the Geology and Zoology of the voyage. To Francis Darwin's *Life and Letters of Charles Darwin* (three volumes), and to Mrs. Litchfield's *Emma Darwin* (two volumes), and the facts and memories in these works I am more deeply indebted than I can say.

JOURNAL AND DIARY OF THE VOYAGE

1839. First edition, first issue. Darwin's *Journal* forms the third volume of the official publication edited by Captain FitzRoy and published by Henry Colburn, under the general title *Voyages of the Adventure and Beagle*. Volumes I and II were by Captain King and Captain FitzRoy.

1839. First edition, second issue. The demand for Darwin's volume immediately called for a second issue, with only minor alterations in the title. Here the well-known title *Journal of*

Researches was first used, with Geology taking precedence over Natural History, an order subsequently and significantly reversed.

1840. First edition, third issue.

1845. Second edition, published by John Murray as Vol. XII of his Home and Colonial Library. This is the text of the well-known work, the title of which runs: *Journal of Researches into the Natural History and Geology of the countries visited during the voyage of H.M.S. Beagle round the world, under the Command of Captain FitzRoy, R.N.* Much was added in this edition, and as the whole had to be shorter, much had to be cut or condensed. This alteration he found particularly difficult, working at it for four months, and then "rested idle for a fortnight". Further editions with the same text were issued by Murray in 1860 and in 1870.

All to be referred to as *The Journal*.

1933. *Charles Darwin's Diary of the Voyage of H.M.S. Beagle*, edited from the MS. by Nora Barlow. Published by the Cambridge University Press, who have kindly given permission for the extracts quoted later. The *Diary* is the exact transcript of the record he kept on the voyage, amplified from the notebooks of the present volume, and not prepared for publication.

This will be referred to as the *Diary*, 1933, to distinguish it from the *Journal*, 1839 (first edition), and the *Journal*, 1845 (second edition and final version).

THE ZOOLOGY OF THE VOYAGE

1839-1843. Five quarto volumes were published with the help of a Government grant of £1,000. Darwin superintended the whole and wrote Introductions and notes, whilst specialists in Fossil Mammalia, Recent Mammalia, Birds, Fish and Reptiles wrote the letterpress.

THE GEOLOGY OF THE VOYAGE

1843. Part I. *The Structure and Distribution of Coral Reefs*.

1844. Part II. *Geological Observations on the Volcanic Islands visited during the voyage of H.M.S. Beagle.*

1846. Part III. *Geological Observations on South America.* Second editions of all three volumes followed, Parts II and III being incorporated in one volume in 1876. John Murray.

BIOGRAPHICAL

Life and Letters of Charles Darwin, edited by his son, Francis Darwin. In three volumes. Published by John Murray, 1887.

More Letters of Charles Darwin, edited by Francis Darwin and A. C. Seward. In two volumes. Published by John Murray, 1903.

Emma Darwin, A Century of Family Letters, edited by her daughter, Henrietta Litchfield. In two volumes. John Murray, 1915.

PART ONE

Chapter I

THE ENGLISH SCENE

BEFORE we embark with Darwin on his journey round the world in the year 1831, it will be as well to see him in his English setting; to know how he was equipped for his great adventure; and to picture the family circle which he was leaving behind with such bitter pangs of regret that he nearly gave up the cherished prospect of the voyage.

The letters cannot be read aright without some understanding of Charles's home at The Mount, Shrewsbury, where his father lived and practised as a prosperous family doctor, with the three sisters to whom the letters are mainly addressed. Dr. Robert Darwin, a busy, well-known, corpulent figure in Shrewsbury, loved by his rich and poor patients alike, was one of a well-read circle of friends with strong Whig leanings, and Charles was accustomed to the varied discussions at home, where Dr. Robert was apt to hold the field on every kind of subject. At Maer, the home of his Wedgwood cousins only twenty miles' ride away, the talk was more lively and the atmosphere altogether freer. In the back of his mind, never effaced by the sights and sounds of the far-off tropical scene, these two pictures were engraved on his memory; of The Mount with its beloved occupants and their familiar daily doings; and of Maer in its lovely setting of wood and mere, with the parties and the gay cousins, the youngest of whom was destined to become his wife. He could hear the robin sing and see the leaves fall as October overtook him in some remote land; the acacia and the copper beech at home grew to superb trees in his mind—for he remembered every tree, even the least, and he will never forgive his sisters if they cut many down in his absence. English scenery gained in grace the longer he was absent, until all his allegiance contracted to insular dimensions. "What reasonable person can wish for great ill-proportioned

mountains, two or three miles high? No, no; give me the Brythen or some such compact little hill.—And then as to your plains and impenetrable forests, who would compare them with the green fields and oak woods of England?—People are pleased to talk of the ever smiling sky of the tropics: must not this be precious nonsense? Who admires a lady's face who is always smiling? England is not one of your insipid beauties; she can cry, and frown, and smile, all by turns. In short I am convinced it is a most ridiculous thing to go round the world, when by staying quietly, the world will go round with you.”

The Brythen for height, and the Severn as a gauge for river width, went with him round the world as his standards of measurement. He always compared a newly seen river in South America with the Severn at Shrewsbury; as so many times the Severn. For The Mount was well-placed above the town, with wide views over the curving river, and the encroaching buildings hardly visible; Robert had chosen the site and had built the solid comfortable red brick residence soon after he had married Susannah Wedgwood in 1796. There Dr. Robert lived for the rest of his life, and there Charles was born in 1809 and grew to manhood, familiar with the lawns and big trees and the terrace overlooking the meadows below, the orchard and newly planned greenhouse, and the flower garden where his sisters worked. During the winter months, when Charles was enduring the summer in the Antipodes, he would imagine the fire-side group at home, with Susan playing the piano; or Nancy the old nurse making vain efforts to rouse them all on a cold frosty morning.

I always see Charles as the eager warm centre of life at The Mount, bringing a more easy informality into that formidable atmosphere. For formidable it undoubtedly was. Dr. Robert Darwin, although possessed of a genuine sympathy and insight which won him the confidence of numerous patients, was also a very considerable tyrant. His was a compelling presence, and all sense of liberty vanished when he entered a room, for no one could feel at ease to “go on about their own talk”. A busy and successful doctor, he yet had time for a two-hour monologue each day before dinner. Visitors to The Mount were full of praise of the order, correctness and comfort, but a week was

long enough; the doctor's talk was fatiguing; a summer visit was better when there was more sitting out in the garden with the girls. Jessie Sismondi, aunt of the young Wedgwood cousins, wrote after a visit to The Mount that she was "in soggezione" to all the Darwins—even dear Susan whom she loved, imposed on her. Subjection to the benevolent tyrant was implicit in the family atmosphere, combined with a real reverence for his opinions and deep mutual affection; for I believe the old doctor had the insight and wisdom not to interfere with the private sense of independence of his children. A certain submissiveness in Charles' relation to his father may today seem unnatural, when adolescent revolt is the order of the day, but this aversion to running counter to authority is a persistent trait in his character throughout his life. He preferred law and the existing order as long as his intellectual integrity was not outraged, and I see no signs of repression in his compliance to his father's dictates, nor of rebellion against his outbursts of disapproval.

In Charles' eyes his chief characteristics were his great powers of observation and of sympathy; not only a sympathy with suffering and with his patients' personal difficulties, which made him a sort of Father Confessor to many of them, but also a generous understanding and desire to promote the happiness of those around him. He evidently had an uncanny perception of people's true motives, and many stories were current showing his powers of reading thoughts, which perhaps really meant that he had a remarkable power of reading character. Curiously cautious in money affairs, he was also freely generous. In Charles' letters home there is the often repeated refrain that he hopes his expenditure is not causing his father much anxiety. Certainly in these references to money, there are memories of the blame and sense of disapproval, but also a faith in his father's understanding and ultimate indulgence.¹

Charles' mother died when the boy was only eight years old, leaving his upbringing in the hands of his elder sisters.

¹ G. West, in his *Charles Darwin*, makes more of a case for Charles's fear of Robert; whilst Dr. Douglas Hubble (*The Lancet*, Jan. 30th, 1943) considers it an important factor in the neurosis to which he attributes Charles' 40 years of ill-health.

His mother had been devoted to the garden and the flowers, and Robert and she had lived a united happy life at The Mount, until ill-health intervened. To Charles her memory was dim—her curiously constructed work-table, her black velvet gown and her death-bed. He says in an unpublished sentence of his Autobiography: "I believe that my forgetfulness is partly due to my sisters, owing to their great grief, never being able to speak about her or mention her name and partly to her previous invalid state."

There were four daughters of the marriage; Marianne, the eldest, married Henry Parker in 1824 before this scene opens, and the slight mention of her suggests a much lesser affection for her than for the others. When Marianne and Caroline, the second daughter, were five years and three years old, they went with their mother on a visit to Maer, where they made a bad impression on their uncle and aunt. Mrs. Wedgwood's sister wrote: "I like her (Mrs. Darwin) exceedingly, but not her children who are more rude and disagreeable than any I ever knew, and yet they are better here than they were at Shrewsbury." But Mrs. Wedgwood learnt to love Caroline above all the others as she grew up, and the great wish of her heart came true when she married her own son Josiah in later life.

Caroline, to whom twelve of the present letters are written, had managed the house at Shrewsbury with Marianne since the age of seventeen when her mother died. She was tall, vivacious yet gentle, very popular, and was described as looking like a duchess. She must have carried some of the Shrewsbury stiffness with her, for when she was visiting Maer, Emma, the youngest cousin, wrote how nice Caroline was, and settled herself more at home than usual, as though she was accustomed to bring some formality with her, even to that most informal of houses. At this time she worked with gentle perseverance at an infant Sunday school for children under four in Frankland, the poor part of Shrewsbury above which The Mount stood high and prosperous; later her idealism languished and she wearied of children in general. She undertook the education of Charles before he went to school, but he doubted later on whether this plan had answered. He said: "Caroline was extremely kind, clever and zealous; but she was too zealous in

trying to improve me; for I clearly remember after this long interval of years, saying to myself when about to enter a room where she was: 'what will she blame me for now?' and I made myself dogged so as not to mind what she might say." Nevertheless they remained great friends, with any early bitterness quite forgotten, and we know that she could write a "very entertaining letter" to her brother.

Susan, the third daughter, was her father's favourite. She, too, was tall, and more beautiful than Caroline, with a beauty that endured, an immense flow of high spirits, and a power of enjoying the little details of life. She and a cousin were nicknamed Kitty and Lydia Bennett from their flirtations; she could infect her father with her own rollicking enjoyment, and loud peals of laughter would follow accounts of her balls—a story of a broken carriage pole, a tipsy coachful, and Susan travelling home on the floor. But the stiffness and love of order was there too. Later when she visited Charles and Emma and their growing family at Down, she was uneasy at the children's litter, and tidied away the untidiness as it arose. Emma allowed it to accumulate until it got unbearable, and then called in help. As with the doctor, so with Susan: boys began to be uncongenial animals to her in middle age. She seemed, too, to possess a flair for discovering "disagreeables". When Charles later visited The Mount with his nineteen-month baby, accompanied only by the nurse-maid, Susan found fault with the arrangements; Doddy had no glass of water by his bedside; he risked his health by starting for a drive with soaked feet, though Dr. Robert approved of wetting the feet on the grass if shoes were changed. But the worst storm was over Mary the nurse-maid who wore no cap. It looked so dirty and like a grocer's maid-servant; they felt very strongly about it at The Mount. Poor Charles bore the brunt of their wrath and must have felt again "what will they blame me for now?" It is true he had already been on to Emma about it, but he did not give her away. Certainly the sisters created no easy atmosphere for visiting babies; no lessons had then been learnt from evacuation. But in the days when these letters were being written Susan was light-hearted and gay, and could write about an adventure: "I never enjoyed anything like it

—so gay—we never talked a word of common sense all day.”

Eight of the letters are to Catherine, the third sister, one year younger than Charles. She was quick and intelligent as a child, and learnt to read more easily than he did. I think she had a disappointed life, with good intellectual powers and little vitality. She could not enjoy the uproarious friendly parties at the Owens as her sisters did, and after one such occasion, herself rather sadly assessed her enjoyment as “about half as much as Susan’s” who was in violent spirits all the time. She evidently had real capacity which never found an outlet. Her father used to talk about her “great soul”; yet with all her strong affections and capabilities and high character, “she achieved neither happiness for herself, nor for those with whom she lived (perhaps)”.

Though not one of the present letters is to Erasmus, Charles’ only brother, he is mentioned always with great affection, and his position in the family group was a most important one. He was five years Charles’ senior, dearly loved by all, and Charles seldom mentions him without a “poor dear old Ras”. His ample income rendered a profession unnecessary, but whether he would have had a fuller life of achievement without his father’s endowment we can never know. Certainly Erasmus was able to indulge in the “patient idleness” described by Carlyle, with whom he was on intimate terms. With no fixed occupation, his life was passed with leisurely interests, much reading and many friends; a daily round of intellectual dignity, ease and aloofness hardly congruous with the more active demands of today. A sensitive sympathy and lightness of touch must have stood out against the robust formality of the family circle to which Charles’s thoughts so often turned, and endeared him to the many friends who welcomed him on frequent visits to their houses. Behind a certain languor and sadness his astringent wit lurked ready to break through, and the kindly sympathy in his eyes awakened the best in his friends; there was no spitefulness in the somewhat laconic pungency of his humour. “Where he was, the response came more readily, the flow of thought was quicker.” But for Charles there was one great lack, he cared not at all for natural history, though in the sciences of chemistry and electricity he had led the way since

their days of boyhood. In the letters home all the arrangements about purchases and despatching books to Charles, and the plans for the reception of his specimens in England, were placed in Erasmus' hands. He is only once mentioned in the note-books. When returning by the Cape of Good Hope, Charles met Sir J. Herschel and discussed with him some chemico-physical problem. He still referred to Erasmus in his mind on such topics, and wrote: "Ask Erasmus whether electricity would affect this"; and he must have given an affectionate thought to the lonely figure living in rooms in London, and remembered the days when they worked together at chemistry in their spare time, using the tool-shed at Shrewsbury as their laboratory.

There is an autobiographical fragment, not included in the well-known autobiography, but published in *More Letters of Charles Darwin*, that gives an added picture of his early years with vivid light on his own and his sisters' characters. Some passages I will give here; he evidently enjoyed introspection, and he treats the retrospect of his childish untruthfulness and what must now be called exhibitionism, with the same aloofness as he would any other collection of scientific facts.

"My earliest recollection . . . which must have been before I was four years old, was when sitting on Caroline's knee in the drawing room, whilst she was cutting an orange for me, a cow ran by the window which made me jump, so that I received a bad cut, of which I bear the scar to this day. . . . Of this scene I recollect the place where I sat and the cause of the fright, but not the cut itself, and I think my memory is real . . . because I clearly remember which way the cow ran, which would not probably have been told me."

"1813. When I was four years and a half old, I went to the sea, and stayed there some weeks. I remember many things, but with the exception of the maidservants (and these are not individualised) I recollect none of my family who were there. I remember either myself or Catherine being naughty, and being shut up in a room and trying to break the windows. . . . Some other recollections are those of vanity—namely thinking

that people were admiring me, in one instance for perseverance and another for boldness in climbing a low tree; and what is odder, a consciousness, as if instinctive, that I was vain, and contempt for myself. . . . All my recollections seem to be connected most closely with myself; now Catherine seems to recollect scenes where others were the chief actors. When my mother died I was eight and a half years old, and [Catherine] one year less, yet she remembers all particulars and events of each day, whilst I scarcely recollect anything (and so with very many other cases), except being sent for, the memory of going into her room, my father meeting me, crying afterwards. I recollect my mother's gown and scarcely anything of her appearance . . . I have no distinct remembrance of any conversation . . . Catherine remembers my mother crying when she heard of my grandmother's death . . . Susan like me only remembers affairs personal. It is sufficiently odd this [difference] in subjects remembered. Catherine says she does not remember the impression made upon her by external things, as scenery, but for things which she reads she has an excellent memory, *i.e.*, for ideas. Now her sympathy being ideal, it is part of her character, and shows how easily her kind of memory was stamped; a vivid thought is repeated, a vivid impression forgotten."

"1817. At eight and a half years I went to Mr. Case's school. I remember how very much I was afraid of meeting the dogs in Barker Street, and how at school I could not get up my courage to fight. I was very timid by nature. I remember I took great delight at school in fishing for newts in the quarry pool. I had thus young formed a strong taste for collecting, chiefly seals, franks, etc., but also pebbles and minerals. . . . I believe shortly after this or before, I had smattered in botany, and certainly when at Mr. Case's school I was very fond of gardening, and invented some great falsehoods about being able to colour crocuses as I liked. . . . It was soon after I began collecting stones, *i.e.*, when nine or ten, that I distinctly recollect the desire I had of being able to know something about every pebble in front of the hall door: it was my earliest and only geological aspiration at that time.

“I was in those days a very great story-teller—for the pleasure of exciting attention and surprise. I stole fruit and hid it for these same motives, and injured trees by barking them for similar ends. I scarcely ever went out walking without saying I had seen a pheasant or some strange bird (natural history taste); these lies, when not detected, I presume excited my attention, as I recollect them vividly, not connected with shame, though some I do, but as something which by having produced a great effect on my mind, gave pleasure like a tragedy. I recollect when at Mr. Case’s inventing a whole fabric to show how fond I was of speaking the *truth!* . . .”

“1819. July (ten and a half years). Went to the sea at Plas Edwards. I remember a certain shady green road (where I saw a snake) and a waterfall, with a degree of pleasure, which must be connected with the pleasure from scenery, though not directly recognised as such. The sandy plain before the house has left a strong impression, which is obscurely connected with an indistinct remembrance of curious insects, probably a *Cimex* mottled with red, and *Zygoena*, the burnet moth.¹ I was at that time very passionate (when I swore like a trooper) and quarrelsome. The former passion has, I think, nearly wholly but slowly died away. . . The memory now flashes across me of the pleasure I had in the evening on a blowy day walking along the beach by myself and seeing the gulls and cormorants wending their way home in a wild and irregular course. Such poetic pleasures, felt so keenly in after years, I should not have expected so early in life.”

To fill in the picture of Charles and his sisters in those early days I often wish that we had their side of the correspondence, or that we might join them under the trees in the garden at The Mount and hear them discussing the absent Charles and the latest letter received. Emma Wedgwood might well have been sitting under the trees with the young Darwins on one of the frequently interchanged visits, and the slow-travelling

¹ He almost decided to collect all dead insects he could find, for his sisters impressed on him that it would be wrong to kill them.

letters, often crossed with a different coloured ink, and difficult to decipher, must have been pored over long and affectionately. Or perhaps the last batch of the *Journal* was being discussed at Maer, for the sisters were to send it on there if they did not think it too childish; he wanted their opinion.

The household at Maer, with the Wedgwood cousins and his silent and reserved uncle and boundlessly hospitable aunt, must have crowded into his mind on the far off tropic nights as often as he thought of England and home. Life at Maer seems to have made a deep impression of happiness on a wide circle of cousins and friends; and was it not the home of Emma, Charles' future wife? There was a sense of freedom absent from The Mount; endless good talk, plenty of books, a pleasant house built of stone, and a garden with enchanted memories of sitting out on summer nights, long conversations, singing, laughter, and listening to the waterfowl on the mere at the bottom of the slope. Charles' mother, of whom he remembered so little, was Josiah's sister, and both were the children of the more famous Josiah, the Potter and founder of the Wedgwood Potteries at Etruria. Josiah of Maer, and Bessy his wife, had nine children, of whom eight lived to grow up. Emma, whom Charles married in 1840, was the youngest, and one year his senior. The geniality of the family was not of Josiah's making; Sydney Smith said of him: "Wedgwood is an excellent man; it is a pity he hates his friends." He had great good sense and judgment, and had a special liking for his nephew and a belief in him, talking more openly with him than he did with others; indeed his intervention weighted the balance in favour of Charles' acceptance of the proposal to join the *Beagle*. The opening of the shooting season always found Charles ready at Maer; it was in the autumn of 1831, just after he had refused the first tentative suggestion from Professor Henslow that he should go as naturalist on the *Beagle*, that he hastened to Maer on September 1st, and his uncle put a very different light on the matter, as will be told later.

A few years after his return home Charles and Emma became engaged to be married, and some passages in her letters show him to us through her eyes as he then was, with the experience of the voyage behind him, but before his light-

hearted buoyancy of spirits was burdened by perpetual ill-health.

She wrote: "He is the most open transparent man I ever saw, and every word expresses his real thoughts. . . . He is particularly affectionate, and very nice to his father and sisters, and perfectly sweet-tempered, and possesses some minor qualities that add particularly to one's happiness, such as not being fastidious, and being humane to animals." He was fond of talking, and scarcely ever out of spirits; even when he was unwell, he continued sociable, and was "not like the rest of the Darwins, who will not say how they really are". She did not think it so important a thing as did Aunt Sarah that he drank no wine, but nevertheless "a pleasant thing." Alas! he is no play-goer, but "he stands concerts very well", she writes; indeed after a long fast he could become "ravenous for the pianoforte". Perhaps his genuine love of music was already on the wane in the busy London period, when Emma wrote; certainly during the voyage his love of music was deep and genuine. As to the sister arts, it is on record that a small volume of Milton was his constant pocket companion on his inland expeditions; though as for painters, he had little opinion of "birds of that feather"; and he was alarmed at his own extravagance when he spent six guineas on two landscapes by the artist accompanying the *Beagle*.

Chapter 2

EDUCATION

IN THE summer of 1831 Charles was still leading an easy-going desultory existence before entering the Church when he received the offer to join the *Beagle* as naturalist. He had finished with Cambridge; medicine as a profession he had already rejected, to Dr. Darwin's sorrow, for he longed to see his son settling to a steady gentlemanly life. Indeed he could not look favourably on the wild suggestion of the voyage, and only gave reluctant consent when persuaded that natural history was very suitable to a clergyman. Neither he nor

Charles guessed that the new venture would lead him along very different paths, and for years the tacit assumption persisted that the voyage was only a prelude to taking orders. I think in the end Dr. Robert must have been sufficiently wise to recognise the new steadiness of purpose that grew from the stern discipline of the voyage as it could hardly have grown in any other way.

Since the days when the boy of nine aspired to a knowledge of all the different pebbles on his father's drive, until the young man of twenty-two was asked to fill the post of naturalist on board the *Beagle*, how had his education helped him for such an undertaking, when science was little thought of as a career; and who had the acumen to pick him out as the right man?

The story of his education shall here be told briefly; the seven years at Dr. Butler's school in Shrewsbury where he boarded, he himself condemned utterly. "Nothing could have been worse for the development of my mind than Dr. Butler's school, as it was strictly classical, nothing else being taught except a little ancient geography and history. The school as a means of education to me was simply a blank." Possibly his memories have painted too harsh a picture; it may be that his admitted admiration for the Odes of Horace, together with a great fondness for all kinds of reading—including the historical plays of Shakespeare, which he used to take to an old window in the thick walls of the school—were at any rate encouraged by Dr. Butler's methods, even if at the expense of any other mental training. Amongst the pile of natural history books he took with him on the *Beagle* he made room for his Greek Testament; perhaps his plan to fit in "a little Classics, not more" than on Sundays, was a concession to Dr. Butler's memory even if the intention was not always carried out.

One hundred and twenty years ago no schools catered for the scientific mind; education meant a classical education, and boys with no aptitude for languages but with a craving for other kinds of knowledge had to find means of their own to gain their ends, which if carried to a conclusion can be a very valuable self-training indeed. Charles and his brother Erasmus, five years his senior, made a fair laboratory

out of their father's tool-house in the garden, where many chemical experiments were performed by the two boys—Charles acting as Erasmus' servant. Erasmus at this time must have had a keen interest in the sciences other than natural history, and Charles as a schoolboy followed him with enthusiasm; the school got wind of their exploits, and Charles was nicknamed Gas, whilst Dr. Butler publicly rebuked him for wasting his time over such useless subjects.

When he was sixteen and a half, his father took him from Shrewsbury and sent him to Edinburgh University to join Erasmus, who was already finishing his medical training, though not intending to practise. Here he found much to stimulate him, especially in the company of other students and older men with strong tastes in natural history. He collected marine animals in the tidal pools and made friends with the fishermen, and sometimes accompanied them on their trawling expeditions. He even did some clinical work in the wards, but his soft heart could not bear the operating theatre and the gruesome sights before the days of chloroform. He inveighed bitterly against the dullness of the invariable lecture as the only means of instruction, and wrote home to Caroline: "Dr. Duncan is so very learned that his wisdom has left no room for his sense, and he lectures, as I have already said, on the *Materia Medica*, which cannot be translated into any words expressive enough of its stupidity. . . . At twelve the Hospital, after which I attend Monro on Anatomy. I dislike him and his lectures so much that I cannot speak with decency about them."

In later life he deplored the absence of any training in dissection: "this has been an irremediable evil, as well as my incapacity to draw." Nevertheless at Edinburgh he found others ruled by the same enthusiasms that more and more possessed him; he could discuss the problems that haunted him, though when on a walk his companion burst forth into pæans of praise of the Lamarckian doctrines of evolution, Charles could only listen with silent astonishment. Nor would he in later life acknowledge any great effect on his own views on evolution from familiarity with his grandfather, Erasmus Darwin's, works, where again evolutionary views are foreshadowed, there being too little support of factual evidence in either for Charles'

liking. He himself was to search the earth for twenty-five years for facts bearing on evolution before he was ready to put forward his own theory: facts from seedsmen, facts from animal fanciers, facts from farmers, besides his own observations and those derived from other scientists.

Nevertheless this exchange of views with other keen minds must have meant much in the Edinburgh days; so did the meetings of the scientific societies which he joined, where he even read a paper before the Plinian Society on minor discoveries concerning the microscopic marine animals which he had collected whilst trawling with the fishermen. At another society's meetings he heard some interesting lectures on American birds by Audubon, whose enthusiastic sympathy for the living animal both in his writing and in his paintings, must have been congenial to Charles. But in these discourses Audubon sneered somewhat unjustly at Waterton, for whom Charles had a great admiration; Charles felt alienated, and they met no more. He had a curious slight contact with Waterton during the Edinburgh period; he had become acquainted with a negro who had travelled with him, and who earned his living in Edinburgh by stuffing birds. Charles used often to sit with him, and found him pleasant and intelligent, besides a good instructor in the art of stuffing animals. Sitting with the negro listening to travellers' tales must have led to many wild castles in the air about the far-off lands he already craved to visit.

He went to Edinburgh at the age of sixteen, eager for knowledge, and found much that was good; perhaps more from the uses he made of his opportunities than from the university curriculum. He made friends with the fishermen and went trawling with them, and sat stuffing birds and talking to his friend the negro traveller; whilst he could not speak "with decency" of the lectures and the lecturers, they were so nauseatingly dull. Indeed he was almost disgusted with the science of geology for good by the incredible dullness of Professor Jameson's lectures. Yet geology was to become his first love amongst the sciences, and he went to Edinburgh prepared and asking for a philosophical treatment of the subject. An old man in Shrewsbury had made a great impression on his mind when quite a boy, by discussing with him a large erratic

boulder that still stands in the town, called the Bell-stone, and the old man solemnly assured the boy that the world would come to an end before anyone would explain how the stone came to lie where it did, the nearest rocks of the kind being found no nearer than Cumberland or Scotland. Charles often thought of the wonderful stone, so that when he first read of the action of icebergs in transporting boulders over long distances, he rejoiced in this rational explanation of the mystery. Yet all his eager hopes were turned to dislike and despair when he listened to the geological Dryasdust in Professor Jameson, and he determined never to study the distasteful subject.

Dr. Robert began to despair of his son, when after two years at Edinburgh he was no nearer to becoming the successful young physician. So he suggested that he should go to Cambridge and take orders. "During the three years which I spent at Cambridge my time was wasted, as far as the academical studies were concerned, as completely as at Edinburgh and at school." But there again he met those who were to be his friends for his life-time, and found much that was stimulating and delightful outside the university curriculum. He had been too much sickened by lectures in Edinburgh to attempt Professor Sedgwick's geology course at Cambridge, though he got to know him, and went on a geological tour with him in North Wales, which proved later a very valuable help in meeting the challenge of the new geological problems of the voyage. Beetle collecting became a ruling passion, and to the end of his life he remembered the exact look of tree, post or bank, where certain rare captures were made in the Cambridge fens. One day behind some old bark on a tree-trunk, two rare beetles were seized, one with either hand; then a third appeared, and to release his right hand he popped one in his mouth; unfortunately it proceeded to eject a very acrid fluid so that he had to spit it out, and lost both it and the third specimen. He tells the story in his *Autobiography*, and one feels that the loss of the beetles was still at the age of sixty-seven slightly rankling in his mind. But this was not scientific collecting; he never dissected, and hardly even compared, but it probably gave him a useful insight into the varieties and specific differences of one section of insect life. Nor did he study botany, although Pro-

fessor Henslow's lectures which he attended might well have put him on the path.

It was not in the rôle of lecturer that Henslow exerted a far-reaching influence on the young Darwin, but as a much-loved and much-revered friend. Henslow had a wide knowledge in many branches of science, and kept open house once a week for young and old, where Darwin soon found himself at home. There must have been a strong affinity between the two, and in the last year at Cambridge Henslow used often to ask him back to the family dinner, and together they went for long almost daily walks. Darwin wrote of him: "His strongest taste was to draw conclusions from long-continued minute observations." All the warmth of Charles' allegiance went out to the older man with a deep personal affection. His open-hearted enthusiasms sometimes waned as the years brought a clearer understanding of character; but not so in the case of Henslow. To the end of his days he retained the deepest gratitude and admiration for this good man, and the highest respect for his moral qualities.

Chapter 3

THE OFFER

IT is not too much to say that meeting Henslow at Cambridge and becoming his intimate friend did in fact change the whole course of Darwin's career, for without Henslow the offer of the *Beagle* post would not have reached him. Henslow must have reciprocated the warm feelings of the younger man, and judged correctly those dormant possibilities in the ardent beetle-collector, or he would never have acted as intermediary and suggested Darwin's name when approached to furnish a suitable naturalist for the *Beagle* voyage. Henslow had at first thought of accepting the post himself, but his wife's distress caused him to give it up, so he placed the golden opportunity in the hands of his favourite pupil, and wrote: ". . . I have stated that I consider you to be the best qualified person I know of who is likely to undertake such a situation. I state this not in the

supposition of your being a *finished* naturalist, but as amply qualified for collecting, observing, and noting, anything worthy to be noted in Natural History. . . . Captain FitzRoy wants a man (I understand) more as a companion than a mere collector, and would not take anyone, however good a naturalist, who was not recommended to him likewise as a gentleman. . . . Don't put any modest doubts or fears about your disqualifications, for I assure you I think you are the very man they are in search of; so conceive yourself to be tapped on the shoulder by your bum-bailiff and affectionate friend, J. S. Henslow." Thus came the critical offer in the end of August, 1831, a few months after he had taken his degree at Cambridge: "a good place amongst the *οἱ Πολλοὶ* or crowd of men who do not go in for honours." Hardly any academical training lay behind him; geology in the lecture-rooms of Edinburgh had filled him with disgust for the subject; botany he had only touched on in Henslow's lectures; dissection he had done none at all. The study of Paley's *Evidences* had delighted him in the clarity of the logic: the premises he took for granted at that time. Yet with so little to show, Henslow pressed him to accept the offer, and other older men must also have perceived in him something exceptional. Luckily for the geological work of the voyage, which was to put him to the test so soon, Henslow had persuaded him to take up the study of the subject after taking his degree, so that in the summer of 1831 he was "working like a tiger" at a geological map of Shropshire, before joining Sedgwick on a geological tour of North Wales. The value of this belated self-training cannot be over-estimated in what was so soon to follow. Indeed it was of the same order as the self-discipline of the voyage itself, when concentration on the work in hand superseded all else. His mind had never run easily in academical grooves, and though he took no pleasure in going counter to existing convictions, he possessed something of the rebel mentality, which then even less than now could find full scope in the prescribed curriculum. His love of theorising and of observing, which had found such sympathetic appreciation in Henslow, could at last have full sway. He wrote to his old master from Shropshire, during these weeks before leaving for North Wales: "I suspect that the first expedi-

tion I take, clinometer and hammer in hand, will send me back very little wiser and a good deal more puzzled than when I started. As yet I have only indulged in hypotheses, but they are such powerful ones that I suppose, if they were put into action for but one day, the world would come to an end."

The story of how Charles Darwin came to be entered on the books of H.M.S. *Beagle* as naturalist on the long voyage of circumnavigation has often been told. Captain Beaufort, Hydrographer, Captain FitzRoy, Prof. Henslow of Cambridge, Dr. Robert Darwin, his uncle Josiah Wedgwood, all had their share, pulling this way and that, until Robert's unwilling permission was gained by Josiah's cogent reasoning.

Charles has described those crucial days in a preface to the *Diary of the Beagle*, and in his autobiography; how he received the letter already quoted from Henslow on his return home from Wales, whence he had hastened so as to be ready for the shooting at Maer on September 1st. "For at that time I should have thought myself mad to give up the first days of partridge-shooting for geology or any other science."

"I had been wandering about North Wales on a geological tour with Professor Sedgwick when I arrived home on Monday 29th of August. My sisters first informed me of the letters from Prof. Henslow & Mr. Peacock offering to me the place in the Beagle which I now fill.—I immediately said I would go; but the next morning finding my Father so much averse to the whole plan, I wrote to Mr. Peacock to refuse his offer. On the last day of August I went to Maer, where everything soon bore a different appearance. I found every member of the family so strongly on my side, that I determined to make another effort. In the evening I drew up a list of my Father's objections, to which Uncle Jos wrote his opinion & answer. This we sent off to Shrewsbury early the next morning & I went out shooting. About 10 o'clock Uncle Jos sent me a message to say he intended going to Shrewsbury & offering to take me with him. When we arrived there, all things were settled, & my Father most kindly gave his consent."

Here are the letters which must have reached Shrewsbury on the morning of August 30th, giving Dr. Robert considerable matter for thought. Firstly, Charles' to his Father; followed

by the list of Dr. Robert's objections, which Charles had drawn up for Josiah's consideration; and finally Josiah's own views.

[MAER]

August 31st [1831]

My dear Father,

I am afraid I am going to make you again very uncomfortable—but upon consideration I think you will excuse me once again stating my opinions on the offer of the voyage.—My excuse and reason is, [is] the different way all the Wedgwoods view the subject from what you and my sisters do.—

I have given Uncle Jos, what I fervently trust is an accurate and full list of your objections, and he is kind enough to give his opinion on all. The list and his answers will be enclosed, but may I beg of you one favour, it will be doing me the greatest kindness if you will send me a decided answer—Yes or No—; if the latter I should be most ungrateful if I did not implicitly yield to your better judgement and to the kindest indulgence which you have shown me all through my life,—and you may rely upon it I will never mention the subject again; if your answer should be Yes, I will go directly to Henslow and consult deliberately with him and then come to Shrewsbury. The danger appears to me and all the Wedgwoods not great—the expence cannot be serious, and the time I do not think anyhow, would be more thrown away than if I staid at home.—But pray do not consider that I am so bent on going, that I would for one *single moment* hesitate if you thought that after a short period you should continue uncomfortable.—I must again state I cannot think it would unfit me hereafter for a steady life.—I do hope this letter will not give you much uneasiness.—I send it by the car tomorrow morning; if you make up your mind directly will you send me an answer on the following day by the same means. If this letter should not find you at home, I hope you will answer as soon as you conveniently can.—

I do not know what to say about Uncle Jos' kindness, I never can forget how he interests himself about me.

Believe me, my dear Father,

Your affectionate son,

Charles Darwin.

P.S. Frank would be much obliged if you would forward the Crockery to the Hill.

- “1. Disreputable to my character as a Clergyman hereafter.
 2. A wild scheme.
 3. That they must have offered to many others before me the place of Naturalist.
 4. And from its not being accepted there must be some serious objection to the vessel or expedition.
 5. That I should never settle down to a steady life hereafter.
 6. That my accommodations would be most uncomfortable.
 7. That you, that is, Dr. Darwin, should consider it as again changing my profession.
 8. That it would be a useless undertaking.”

Finally also enclosed, was Josiah Wedgwood's letter to Dr. Darwin, with "Read this last" in Charles's hand-writing.

MAER,

August 31, 1831.

My dear Doctor,

I feel the responsibility of your application to me on the offer that has been made to Charles Charles has put down what he conceives to be your principal objections, and I think the best course I can take will be to state what occurs to me upon each of them.

1. I should not think that it would be in any degree disreputable to his character as a Clergyman. I should on the contrary think the offer honourable to him; and the pursuit of Natural History, though certainly not professional, is very suitable to a clergyman.

2. I hardly know how to meet this objection, but he would have definite objects upon which to employ himself, and might acquire and strengthen habits of application, and I should think would be as likely to do so as in any way in which he is likely to pass the next two years at home.

3. The notion did not occur to me in reading the letters; and on reading them again with that object in my mind I see no ground for it.

4. I cannot conceive that the Admiralty would send out a bad vessel on such a service. As to objections to the expedition, they will differ in each man's case, and nothing would, I think, be inferred in Charles's case, if it were known that others had objected.

5. You are a much better judge of Charles's character than I can be. If on comparing this mode of spending the next two years with the way in which he will probably spend them if he does not accept this offer, you think him less likely to be rendered unsteady and unable to settle, it is undoubtedly a weighty objection. Is it not the case that sailors are prone to settle in domestic and quiet habits?

6. I can form no opinion on this further than that if appointed by the Admiralty he will have a claim to be as well accommodated as the vessel will allow.

7. If I saw Charles now absorbed in professional studies I should probably think it would not be advisable to interrupt them; but this is not, and I think, will not be the case with him. His present pursuit of knowledge is in the same track as he would have to follow in the expedition.

8. The undertaking would be useless as regards his profession, but looking upon him as a man of enlarged curiosity, it affords him such an opportunity of seeing men and things as happens to few. You will bear in mind that I have had very little time for consideration, and that you and Charles are the persons who must decide.

I am, My dear Doctor,
Affectionately yours,
Josiah Wedgwood.

The rest of the story after Dr. Robert's final consent shall be told in the words of the Preface to the *Diary*.

"I shall never forget what very anxious & uncomfortable days these two were, my heart appeared to sink within me, independently of the doubts raised by my Father's dislike to the scheme. I could scarcely make up my mind to leave England even for the time which I then thought the voyage would last. Lucky indeed it was for me that the first picture of the expedition was such an highly coloured one.

"In the evening I wrote to Mr. Peacock & Capt. Beaufort & went to bed very much exhausted. On the 2nd I got up at 3 o'clock & went by the Wonder coach as far as Brickhill; I then proceeded by postchaises to Cambridge. I there staid two days consulting with Prof. Henslow. At this point I had nearly given up all hopes, owing to a letter from Cap. FitzRoy to Mr Wood, which threw on every thing a very discouraging appearance. On Monday 5th I went to London & that same day saw Caps. Beaufort & FitzRoy. The latter soon smoothed away all difficulties, & from that time to the present, has taken the kindest interest in all my affairs. On Sunday 11th sailed by Steamer to Plymouth in order to see the Beagle. I returned to London on 18th. On Monday the 19th by mail to Cambridge, where after taking leave of Henslow on Wednesday night I got to St Albans & so by the Wonder to Shrewsbury on Thursday 22nd. I left home on October 2nd for London, where I remained after many & unexpected delays till the 24th on which day I arrived at Devonport & this journal begins."

So the die was cast, and Dr. Darwin's caution was overruled by Josiah Wedgwood's good judgment and good sense. The expenses would be heavy, but Dr. Darwin would defray them willingly enough when once convinced of the scheme's respectability. The preliminary expenditure was considerable, though Charles could not agree to the Captain's extravagant suggestion of spending £60 on pistols. The letters to his sisters give the details of the turmoil of preparations that ensued; travelling by coach between Shrewsbury and Cambridge, where Henslow had to be consulted on many points; staying in London where final purchases had to be made. He took with him a hand-magnifier, a microscope, equipment for blow-pipe analysis, a contact goniometer (for measuring the angles of crystals), and a magnet, besides a small library of books. All these had to be packed and the inevitable last moment arrangements completed before he made his last farewells and arrived in Plymouth on Monday, October 24th, 1831. His hopes of a speedy departure were dashed, and delays dragged on for two whole months, leaving a memory of misery and anxiety recorded in his *Autobiography*. "These two months at Plymouth were the most miserable which I ever spent, though I exerted myself in various ways. I was out of spirits at the thought of leaving all

my family and friends for so long a time, and the weather seemed to me inexpressibly gloomy. I was also troubled with palpitations about the heart, and like many a young ignorant man, specially one with a smattering of medical knowledge, was convinced that I had heart-disease. I did not consult any doctor as I fully expected to hear the verdict that I was not fit for the voyage, and I was resolved to go at all hazards."

But there were some compensations in the miserable delay; he learnt to know his companions, and he could arrange and rearrange his equipment in the Poop cabin allotted to him; he could begin to feel "a fine naval fervour", without suffering continual sea-sickness. He occupied himself with helping FitzRoy in his experiments with the dipping needle and in desultory natural history in the neighbourhood, usually accompanied by one of the young officers. The account of the preparations on board give the impression that every inch was used for stowing away all the necessaries. Darwin was tall, a disadvantage when your hammock has to be slung in a limited space, and his only expedient was to remove the top drawer where his clothes were stored before nightfall to gain the extra foot in length for the foot-clews of his hammock.

Captain FitzRoy saw to every detail in the equipment of the expedition himself; he took a great pride in his instruments and had with him twenty-two chronometers. He also took a great pride in the health of his crew, and supplied anti-scorbutics; pickles, dried apples, lemon juice; also between five and six thousand canisters of Kilner and Moorsom's preserved meat, vegetable and soup. The lengthy delay was partly caused by his scrupulous care in refitting the *Beagle* for the expedition, and from the fact that she was found to be so rotten when recommissioned in 1831 as the result of the long previous voyage, that much of her woodwork had to be rebuilt. But improvements were made, increasing her tonnage from 235 to 242 tons burthen by raising the upper deck, which also made her safer in heavy weather. On the voyage they were to test Harris's new lightning conductors, an innovation consisting of copper plates let into the masts and yards and connecting with the water beneath. She was rigged as a barque, although belonging to the class of ten-gun brigs, nicknamed "coffins" in the navy from their

behaviour in severe gales. But the magnificent seamanship of Captain FitzRoy brought her safely through all the rigours of the storms encountered without carrying away a spar. On November 23rd the ship was moved to Barnet Pool, the carpenters and painters had completed their work, the stores were stowed away, but still the winds remained contrary. Darwin began to understand the operations of a sailing-ship in full working order, and he felt a nautical thrill as he heard the coxwain's piping and the men working at the hawsers to the sound of a fife. Then when the weather cleared, Christmas celebrations intervened and almost the whole crew was disabled through drunkenness; December 26th was a day of anarchy with punishments of flogging and eight or nine hours of heavy chains, so that when they sailed on December 27th Charles was haunted during his first week of sea-sickness and misery by the horror of the scene.

In looking back, Darwin attributed his habits of methodical work to the absolute necessity of tidiness where space was so limited. That he made of the voyage a period of intensive scientific training was a remarkable feat in the young man of twenty-two, with his high spirits and easy outlook on life, all the more so from the knowledge the young Darwins had that they need make no effort to support themselves. Unlike Thomas Henry Huxley,¹ the circumstances of whose early career ran along somewhat parallel lines, Darwin seldom reveals any emotional conflict, never any bitterness. Nor did he have to face the financial anxieties which so added to the bitter schooling of Huxley's youth. In Darwin's more equable nature, struggle and conflict seemed to play little part. Whilst Huxley waged a ceaseless war, both within himself and against man and circumstance, his qualities emerging as victories against visible and invisible foes, the young Darwin had little ambition and at the outset hardly more than a craving to collect beetles and examine the world around him with his own eyes instead of through the spectacles of his elders; there was little to mark him out as there was in the young Huxley, either in intellectual ambition or in his emotional receptiveness.

¹ T. H. Huxley's *Diary of the Voyage of H.M.S. Rattlesnake*. Edited by Julian Huxley, 1935.

With his high spirits and comfortable optimism it is all the more remarkable that he forced on himself the severe conditioning of the voyage. That very discipline was a sign of what was to come; and the *Beagle* manuscripts show how the dominating sway and the integrity of his scientific purpose came to possess him more and more. The congenial work acted like a release; here at last was the right channel for his vast latent energies, a final direction and goal for his enthusiasms. His bent towards collecting, when indulged in, had often in the past been more or less of an illicit occupation, and now in his new rôle, it suddenly became his lawful and prescribed duty.

It is the discovery of this scientific purpose that unfolds before us in the letters and note-books; from the first tentative assertion after a few weeks on board, through the intervening years when he begins to hope he will be listened to by real geologists, and sees himself living in lodgings with good big rooms in some vulgar part of London working at his results; until through the fervent study of the infinite host of living beings and the constant building of geological castles in the air, a real conviction asserts itself, a firmer faith in the value and utility of his own efforts.

But it was not only that at last the collector, the observer and the logician in him were satisfied; that now he could shoot, amass specimens and reason on the geological ages without running counter to any other more immediate rule of work; the congenial path along which his new duty lay included a new and profound emotional satisfaction.

He was at last able to begin to set together in a complete scheme his one true worship, that of the works of nature; to weld a whole compounded of his logical thought and his emotions. He was able to give all his powers to what passed in his mind "while travelling across the wild deserts . . . or glorious forests or pacing the deck of the poor little *Beagle* at night." Again and again in the letters stress is laid on this exalted adoration which was so intimately bound up with his search for a more coherent, unifying explanation for the world-plan as he saw it. Perhaps there is no real antithesis between the intellectual and the emotional approach; but so much has been

said on the subject of the intellectual setting of the voyage for Darwin's mental development, that I believe this other factor should be more noticed. Darwin was at that time destined for the Church; now for the first time he could give full rein to what was his true vocation; and was he not also studying the works of that Creator whom later he believed he would more specifically serve? His father had given his consent, and likewise drafts on his bank; Uncle Jos, that wisest of men, had pleaded for him and had turned the balance; all the cousins had backed him. Nay, his appointment was in the first place due to the fanatically religious Captain FitzRoy, so it was clear that his work must lie along the seeming paths of orthodoxy and the existing order; though during those nightly pacings of the *Beagle's* decks as the years and months passed by, the existing order must have begun to crumble in his mind.

But the point which these letters and the entries in the pocket-books confirm is that his almost religious fervour for all aspects of nature, from the vast phenomenon of Andean elevation to the detailed structure of coralline rock, received a new sanction on the voyage, which acted as a release to all his powers. He began to grope his way towards a rationalisation of his worship, a unification of the processes he saw at work all round him. Perhaps as the years passed, and his energies, dimmed by ill-health, were more and more concentrated, his search for underlying causes led to a weakening of his appreciation of works of nature, as it certainly did of works of art. In his autobiography he bitterly regrets the atrophy of his powers of appreciation of good pictures, poetry and of music; the plays of Shakespeare had become intolerably dull to him, alas; whilst music set his thoughts working too hard at the problem most on his mind. But his worship of nature never wholly left him; he would seek no altars to worship at other than the garden at Down and the quiet Kentish country, for he could not be persuaded to leave home. But the satisfaction in the daily walk along the Sand-walk, beyond the cultivated garden and overlooking the chalky turf and wooded valley, was the emotional satisfaction of the older man, taking the place of the intensity of delight of the boy who had walked on the beach alone and seen the gulls and cormorants blown about

the sky; replacing, too, those moments of intense æsthetic emotion of the young man on his travels, perhaps seated in a Brazilian forest, perhaps viewing the remote and sublime heights whilst crossing the Andes.

Chapter 4

CAPTAIN ROBERT FITZROY

OF THE influential factors of these years, one has hardly been enough recognised. The dominating personality of Captain Robert FitzRoy, Commander of the expedition, with whom Darwin was necessarily thrown into such extremely close contact, did in fact play a curiously important rôle in the drama of those years.¹ From the outset they seemed to be mutually suited to one another; after the first interviews, so decisive in Charles's career, FitzRoy wrote to Captain Beaufort, the Admiralty Hydrographer: "I like what I see of him much, and I now request that you will apply for him to accompany me as Naturalist." The very same evening Darwin wrote home to his sister: "It is no use attempting to praise him as much as I feel inclined to do, for you would not believe me." Soon he refers to him as "my beau ideal of a Captain". After a few weeks at sea FitzRoy wrote again to the Hydrographer: "Darwin is a very sensible hard-working man, and a very pleasant mess-mate. I never saw a 'shore-going fellow' come into the ways of a ship so soon and so thoroughly as Darwin", whilst later he writes to Captain Beaufort, "Darwin is a regular Trump." FitzRoy must have appreciated Charles' simple openness and good temper; he himself was a difficult man to get on with, and a wide divergence in their intellectual outlook must soon have made itself felt. One of FitzRoy's early questions was: "Shall you bear being told that I want the cabin to myself? when I want to be alone. If we treat each other this way, I hope we shall suit; if not, probably we should wish each other at the devil." His temper was violent, but Charles

¹ See *Robert FitzRoy and Charles Darwin*, by Nora Barlow, Cornhill Magazine, April, 1932.

would always avoid a quarrel if he could, and they kept an affection and essential respect for each other's integrity to the end of the voyage, in spite of "several serious quarrels".

Severe he was in carrying out his duties as Commanding Officer; but it was a severity combined with strictest justice and led to a contented ship and loyal officers. They admired his courage and magnificent seamanship, and many of the crew had been with him and Captain King on the earlier voyage. In *Memories of Old Friends*, by Caroline Fox, Vol. II, there is a tribute to FitzRoy worth quoting, with an unsolicited testimonial of the warm admiration of his officers. "Lieutenant Hammond dined here. He was with Capt. FitzRoy on the *Beagle*, and feels enthusiastically towards him. As an instance of his cool courage and self-possession, he mentioned a large body of Fuegians, with a powerful leader, coming out with raised hatchets to oppose them. FitzRoy walked up to the leader, took the hatchet out of his hand, and patted him on the back; this completely subdued his followers."

Hammond was often Darwin's companion on his shorter expeditions; "I have seen more of him than of any other and like him accordingly", Charles wrote. But from stammering and disliking the service, he left the *Beagle* before the voyage was completed. Other officers often figure in the Letters and Notebooks: Wickham, the First Lieutenant, and later to become Governor of Queensland. "Wickham is a glorious fellow", wrote Darwin; "By far the most conversible person on board; I do not mean talks most, for in that respect Sullivan quite bears away the palm." It was Wickham who was responsible for order and tidiness on board, and he used to revile and curse the "Fly-catcher" or "Philosopher", as he was nicknamed, for all his "d——d beastly bedevilment" of the litter of the specimens. "If I were skipper, I would soon have you and all your d——d mess out of the place." Sullivan, later to become Admiral Sir James Sullivan, K.C.B., who bore away the palm in the matter of talk, was the Second Lieutenant and remained an intimate friend of Darwin's to the end of his life; he, too, gave his tribute to Captain FitzRoy as an admirable commander who kept his crew and officers contented and zealous in their work under often extremely difficult conditions.

In his *Autobiography*¹ Darwin sums up the Captain's character, and gives some account of those quarrels not mentioned in the letters; the mature judgment is very different from the rose-coloured enchantment of the early accounts written to his sisters, before Charles had discovered that curious twist in his beau ideal's mentality. At the end of the quotation, there is mention of an occasion, long after their return to England, when Darwin offended him "almost beyond mutual reconciliation". I have no doubts myself that this was on religious grounds, for his religious intransigence became more and more apparent in later life; but I believe the germs of it were enough during the voyage to have had a marked effect on the discussions that must have taken place between the two, as Darwin's geological views began to formulate, and his beloved hypotheses grew. Charles Darwin wrote thus of FitzRoy after a space of forty years:—

"FitzRoy's character was a singular one, with many very noble features; he was devoted to his duty, generous to a fault, bold, determined and indomitably energetic, and an ardent friend to all under his sway. He would undertake any sort of trouble to assist those whom he thought deserved assistance. He was a handsome man, strikingly like a gentleman with highly courteous manners, which resembled those of his maternal uncle the famous Ld. Castlereagh, as I was told by the Minister at Rio.

"FitzRoy's temper was a most unfortunate one, and was shown not only by passion, but by fits of long-continued moroseness against those who had offended him. His temper was usually worst in the early morning, and with his eagle eye he could generally detect something amiss about the ship, and was then unsparing in his blame. The junior officers when they relieved each other in the forenoon used to ask 'whether much hot coffee had been served out this morning?' which meant how was the captain's temper? He was also somewhat suspicious and occasionally in very low spirits, on one occasion bordering on insanity. He seemed to me often to fail in sound

¹ Quoted from the Preface to the *Beagle Diary*, Camb. Univ. Press, 1933. In the published *Autobiography* less than half of what follows is printed.

judgment and common sense. He was very kind to me, but was a man very difficult to live with on the intimate terms which necessarily followed from our messing by ourselves in the same cabin. We had several quarrels, for when out of temper he was utterly unreasonable. For instance, early in the voyage at Bahia in Brazil he defended and praised the slavery which I abominated, and told me that he had just visited a great slave owner, who had called up many of his slaves and asked them whether they were happy, and whether they wished to be free, and all answered no. I then asked him perhaps with a sneer, whether he thought that the answer of slaves in the presence of their master was worth anything. This made him excessively angry, and he said that as I doubted his word we could not live any longer together. I thought that I should have been compelled to leave the ship; but as soon as the news spread which it did quickly, as the Captain sent for the first Lieutenant to assuage his anger by abusing me, I was deeply gratified by receiving an invitation from all the gun-room officers to mess with them. But after a few hours FitzRoy showed his usual magnanimity by sending an officer to me with an apology and a request that I would continue to live with him. I remember another instance of his conduct. At Plymouth, before we sailed he was extremely angry with a dealer in crockery who refused to exchange some articles purchased in his shop; the Captain asked the man the price of a very expensive set of china and said 'I should have purchased this if you had not been so disobliging.' As I knew that the cabin was amply stocked with crockery, I doubted whether he had any such intention; and I must have shown my doubts in my face, for I said not a word. After leaving the shop, he looked at me, saying 'You do not believe what I have said,' and I was forced to own that it was so. He was silent for a few minutes, and then said 'You are right, and I acted wrongly in my anger at the blackguard.'

"At Conception in Chile, poor FitzRoy was sadly overworked and in very low spirits; he complained bitterly to me that he must give a great party to all the inhabitants of the place. I remonstrated and said I could see no such necessity on his part under the circumstances. He then burst out into a

fury, declaring that I was the sort of man who would receive any favours and make no return. I got up and left the cabin without saying a word, and returned to Conception where I was then lodging. After a few days I came back to the ship, and was received by the Captain as cordially as ever, for the storm had by this time quite blown over. The first Lieutenant, however, said to me, 'Confound you, philosopher, I wish you would not quarrel with the Skipper; the day you left the ship I was dead-tired (the ship was refitting) and he kept me walking the deck till midnight abusing you all the time.'

"The difficulty of living on good terms with a Captain of a Man-of-War is much increased by its being almost mutinous to answer him as one would answer anyone else."

"I saw FitzRoy only occasionally after our return home, for I was always afraid of unintentionally offending him, and did so once almost beyond mutual reconciliation. He was afterwards very indignant with me for having published so unorthodox a book (for he became very religious) as *The Origin of Species*." When Huxley and Hooker fought Darwin's battle at the famous British Association meeting held at Oxford in 1861, FitzRoy, who was present, rose to record his disagreement and disapproval. "He regretted the publication of Mr. Darwin's book, and denied Professor's Huxley's statement that it was a logical statement of facts."

Poor FitzRoy. In after years he must have questioned the wisdom of choosing Charles Darwin to fill the post of naturalist on the *Beagle*. For there was a secondary purpose behind his zeal to increase the usefulness of the voyage; after his conversion to the belief in the most literal sense of the truth of every word contained in the Bible, he longed that every "young branch of the tree of knowledge" should contribute its quota, "and that sooner or later the truth of every statement contained in that record (*i.e.*, the Bible) would be proved." What an irony that the man who wrote that sentence was the main instrument in obtaining for Charles Darwin the post that ensured for him five years of the most ideal training imaginable to turn him into one of those "false philosophers" against whom FitzRoy inveighed so bitterly.

The forced intimacy of these two high-minded, eager young men, cooped up for weeks together in a ten-gun brig, sharing the hazards and excitements of the sea passages and of the expeditions amongst the islands or inland, was a forcible influence in those already fully charged years. Neither can have remained unaware of the trend of the other's thoughts, and there is evidence from their parallel accounts of common experiences, that they discussed the daily happenings in detail. As the years passed, FitzRoy became more and more a passionate believer in the literal truth of the first chapters of Genesis, whilst Darwin's thoughts were fixed on the vast geological ages, far out-spanning the time therein allotted to the creation of the world. Would not FitzRoy's over-emphasis on the creationist point of view have drawn Darwin to a closer scrutiny of the whole question? Possibly his allegiance to his old friend may even have helped to delay the publication of all the accumulated evidence in favour of evolution until such a time as it seemed to him uncontrovertible; or at any rate it may have caused him to be very wary in putting the trend of his thoughts into the printed pages of the editions of the *Beagle Journal*; although it is now certain from extracts from the little pocket books, that the trend was already definitely fixed, even during the years of the voyage.

In FitzRoy's volume describing the voyage he often alludes to Darwin in warm terms. He tells of an adventure in the Beagle Channel, off Tierra del Fuego, when a huge wave caused by an ice-fall from a glacier nearly lost the party their whale-boat on which their safety depended, and that Darwin was amongst the first to reach it by running from their night encampment to save it. He tells of an expedition off Port St. Julian in South America, when in the heat of the day and absence of water, FitzRoy succumbed to exhaustion. Darwin volunteered to go forward another two miles, to where there appeared to be an expanse of glittering water, only to find that it was a field of snow white salt. He admits that the frequent cargoes of what he had begun by tolerating with a smile as rubbish that Mr. Darwin used to bring on board, were proving to be valuable remains of extinct animals. Mr. Darwin used his pick-axe in earnest; FitzRoy admired his hard-working

qualities, for he was a passionate hard-worker himself. Besides this mutual respect that endured in its essentials through all the vicissitudes of the voyage, there was also a very deep affection. Charles's warmth must have helped the austere, suffering, silent man. When FitzRoy was leaving England later for a long period, Charles wrote him moving letters of farewell. "I cannot bear the thoughts of your leaving the country without seeing you once again; the past is often in my memory, and I feel that I owe to you much bygone enjoyment and the whole destiny of my life." . . . "Farewell, dear FitzRoy, I often think of your many acts of kindness to me, and not seldomest of the time, no doubt quite forgotten by you, when before reaching Madeira, you came and arranged my hammock with your own hands, and which, as I afterwards heard, brought tears into my Father's eyes."

With that picture we will leave him, forgiving him all his foibles, and his "consummate skill in looking at everything and everybody in a perverted manner".

PART TWO

The Letters

THE first six letters of the series were written between September 4th and September 17th, 1831, in the preliminary agitation before final departure, and whilst some uncertainty still hung in the air. They were written from Cambridge, where his old friend and "bum bailiff", Professor Henslow, was giving him final advice; from London, where he was staying in his brother's rooms at 17 Spring Gardens; from Devonport where he went to inspect the vessel and his future quarters. Oddly enough there are none during the long wearisome wait already described, those two months of interminable delay which were the "most miserable" which he had ever spent. He was at Plymouth from October 24th until December 27th, when the *Beagle* actually put out to sea. During all that time he was expecting to leave, and was beset by anxiety neuroses and imaginary heart troubles. What a pity that the sisters failed to treasure the letters which he surely must have written in these wretched weeks, as they did with such care those written when the adventure had actually begun. He would not see a doctor for fear of being told that he was not in a condition to leave England, and he never faltered in his determination to see the glories of the tropical world. He helped Captain FitzRoy in his meteorological work, reading and comparing the barometers each day and testing instruments. Perhaps it was not quite so dreary as his memory painted it; he learnt to know and like the officers, and had shooting matches with Sullivan and Bynoe for sundry bottles of wine to be drunk at Madeira; they managed to make his hammock comfortable and he acquired the seamanlike art of getting into it. He had ample time to learn the ways of the ship and to stow all his belongings methodically in the space allotted to him.

LETTER NO. 1

[The greater part printed, *Life and Letters*, Vol. I, p. 200.]

[To Miss Susan Darwin]

CAMBRIDGE.

Sunday morning

[Sep. 4, 1831]

My dear Susan,

As a letter would not have gone yesterday, I put off writing till to-day.—I had rather a wearisome journey, but got into Cambridge very fresh.—The whole of yesterday I spent with Henslow, thinking of what is to be done—and that I find is [a] great deal. By great good luck I know a man of the name of Wood, nephew of Lord Londonderry; he is a great friend of Capt. Fitzroy and has written to him about me. I heard a part of C.F.'s letter dated some time ago, in which he says "I have a right good set of officers, and most of my men have been there before". It seems that he has been there for the last few years; he was then second in command with the same vessel that he has now chosen.—He is only 23¹ years old; but [has] seen a deal of service, and won the gold medal at Portsmouth. The Admiralty says his maps are most perfect.—He had choice of two vessels and he chose the smallest.

Henslow will give me letters to all travellers in Town whom he thinks may assist me.—Peacock² has sole appointment of Naturalist; the first person offered was Leonard Jenyns, who was so near accepting it that he packed up his clothes.—But having two livings he did not think it right to leave them, and to the great regret of all his family.—Henslow himself was not very far from accepting it: for Mrs. Henslow most generously and without being asked gave her consent, but she looked so miserable that Henslow at once settled the point.—

Do not forward Henslow's letter: you may open it if you like.—And now for giving you some trouble. Look in my bedroom, what is the last number that I have got of Griffiths Animal Kingdom? [Erased in original]—Look in bedroom over the Edinburgh Journal of Science or some such title

¹ FitzRoy was born in 1805 and was therefore 26.

² George Peacock, 1791-1858. Lowndean Professor of Astronomy at Cambridge, and an influential member of the Senate. Later became Dean of Ely.

and see whether the following papers are in it; three by Humboldt on "Isothermal Lines": two by Coldstream and Fioggo on "Meteorology"; one by Leslie on "Meteorological Observations"; Tell Edward to get all Shre. bills; to order three jointed hoops for catching beetles like my former ones only rather stronger, all to fit into one. [Erased in original.]

I should be obliged if my Father would place to my account here £100 if at present convenient—ditto at London—what Bank?

I am afraid there will be a good deal of expence at first.—Henslow is much against taking many things; it is a mistake all young travellers fall into.—I write as if it was settled: but Henslow tells me by *no means* to make up my mind till I have had long conversations with Capts. Beaufort and Fitzroy.

Goodbye, you will hear from me constantly;—direct 17 Spring Gardens. Tell *nobody* in Shropshire yet.—Be sure not.

C. Darwin

I was so tired that evening I was in Shrewsbury that I thanked none of you for your kindness half so much as I felt. Love to my Father.

The reason I don't want people told in Shropshire: in case I should not go, it will make it more flat.

LETTER NO. 2

[Printed in *Life and Letters*, Vol. I, p. 201]

17, SPRING GARDENS,
LONDON.

Monday
[Sep. 5, 1831]

I have so little time to spare that I have none to waste in rewriting letters, so that you must excuse my bringing up the other with me and altering it.—The last letter was written in the morning: in middle of day Wood received a letter from C. Fitzroy, which I must say was *most* straightforward and *gentlemanlike*, but so much against my going, that I immediately gave up the scheme,—and Henslow did the same; saying that he thought Peacock has acted *very wrong* in misrepresenting things so much.—I scarcely thought of going to town,

but here I am; and now for more details, and much more promising ones.—Capt. Fitzroy is [in] town and I have seen him; it is no use attempting to praise him as much as I feel inclined to do for you would not believe me.—One thing I am certain, nothing could be more open and kind than he was to me.—It seems he had promised to take a friend with him, who is in office and cannot go,—and he only received the letter five minutes before I came in; and this makes things much better for me, as want of room was one of Fitzroy's greatest objections.—He offers me to go share in everything in his cabin if I like to come; and every sort of accomodation that I can have, but they will not be numerous.—He says nothing would be so miserable for him as having me with him if I was uncomfortable, as in [a] small vessel we must be thrown together, and thought it his duty to state everything in the worst point of view: I think I shall go on Sunday to Plymouth to see the Vessel.—There is something most extremely attractive in his manners and way of coming straight to the point.—If I live with him, he says I must live poorly,—no wine, and the plainest dinners.—The scheme is not certainly so good as Peacock describes: C. Fitzroy advises me not [to] make [up] my mind quite yet: but that seriously he thinks it will have much more pleasure than pain for me.

The Vessel does not sail till the 10th October,—it contains 60 men, 5 or 6 officers, etc., but is a small vessel;—it will probably be out nearly 3 years. I shall pay to mess the same as Captain does himself, £30 per annum; and Fitzroy says if I spend, including my outfitting, £500, it will be beyond the extreme.—But now for still worse news; the round the world is not *certain*, but the chance most excellent. Till that point is decided, I will not be so.—And you may believe, after the many changes I have made, that nothing but my reason shall decide me.

Fitzroy says the stormy sea is exaggerated; that if I do not chuse to remain with them, I can at any time get home to England, so many vessels sail that way, and that during bad weather (probably two months), if I like, I shall be left in some healthy, safe and nice country: that I shall always have assistance;—that he has many books, all instruments, guns, at my

service;—that the fewer and cheaper clothes I take the better.—The manner of proceeding will just suit me; they anchor the ship and then remain for a fortnight at a place.

I have made Cap. Beaufort perfectly understand me: he says if I start and do not go round the world, I shall have good reason to think myself deceived.—I am to call the day after tomorrow and, if possible, to receive more certain instructions.—The want of room is decidedly the most serious objection: but Cap. Fitzroy (probably owing to Wood's letter) seems determined to make me [as] comfortable as he possibly can.—I like his manner of proceeding.—He asked me at once "Shall you bear being told that I want the cabin to myself? when I want to be alone.—If we treat each other this way, I hope we shall suit; if not, probably we should wish each other at the Devil". We stop a week at the Madeira Islands: and shall see most of [the] big cities in S. America. C. Beaufort is drawing up the track through the South Sea.—I am writing in great hurry: I do not know whether you take interest enough to excuse treble postage.—I hope I am judging reasonably, and not through prejudice, about Cap. Fitzroy: if so I am sure we shall suit. I dine with him to-day. I could write great deal more if I thought you liked it, and I had at present time.—There is indeed a tide in the affairs of man, and I have experienced it, and I had *entirely* given it up till 1 to-day.

Love to my father, dearest Susan,

Good-bye,

Ch. Darwin.

LETTER NO. 3

[Printed in *Life and Letters*, Vol. I, p. 206]

[To Miss Susan Darwin]

17, SPRING GARDENS,

Tuesday

[Sep. 6, 1831]

My dear Susan,

Again I am going to trouble you. I suspect if I keep on at this rate, you will sincerely wish me at Terra del Fuego, or any other Terra but England.—First I will give my commissions.—Tell Nancy to make me soon 12 instead of 8 shirts: tell Edward

to send me up in my carpet-bag (he can slip the key in the bag tied to some string), my slippers, a pair of lightish walking-shoes—my Spanish books, my new microscope (about 6 inches long and 3 or 4 deep) which must have cotton stuffed inside; my geological compass, my Father knows that: a *little* book, if I have got it in bedroom—Taxidermy. Ask my Father if he thinks there would be any objection to my taking Arsenic for a little time, as my hands are not quite well, and I have always observed that if I once get them well, and change my manner of living about the same time, they will generally remain well.—What is the dose?¹—Tell Edward my gun is dirty: what is Erasmus's direction? tell me if you think there is time to write and to receive an answer before I start, as I should like particularly to know what he thinks about it. I suppose you do not know Sir J. Macintosh's direction?

I write all this as if it was settled, but it is not more than it was, excepting that from Cap. Fitzroy wishing me so much to go, and from his kindness, I feel a predestination I shall start.—I spent a very pleasant evening with him yesterday: he must be more than 23 years old; he is of a slight figure, and a dark but handsomer edition of Mr. Kynaston, and, according to my notions, preeminently good manners. He is all for Economy, excepting on one point—viz., fire arms. He recommends me strongly to get a case of pistols like his, which cost £60!! and never to go on shore anywhere without loaded ones, and he is doubting about a rifle; he says I cannot appreciate the luxury of fresh meat here. Of course I shall buy nothing until everything is settled: but I work all day long at my lists, putting in and striking out articles.—This is the first really cheerful day I have spent since I received the letter, and it all is owing to the sort of involuntary confidence I place in my beau ideal of a Captain.—

We stop at Teneriffe. His object is to stop at as many places as possible. He takes out 20 Chronometers, and it will be a "sin" not to settle the longitude. He tells me to get it down in writing at the Admiralty that I have the free choice to leave as soon and whenever I like. I daresay you expect I shall turn back at the Madeira: if I have a morsel of stomach left, I won't

¹ Charles was troubled with eczema.

give up.—Excuse my so often troubling and writing: the one is of great utility, the other a great amusement to me.—Most likely I shall write tomorrow: answer by return of post.

Love to my father, dearest Susan,
C. Darwin.

As my instruments want altering, send my things by the “Oxonian” the same night.

LETTER NO. 4

[Printed in *Life and Letters*, Vol. I, p. 207]

[To Miss Susan Darwin]

[LONDON]

Friday morning.
[Sep. 9, 1831]

My dear Susan,

I have just received the parcel: I suppose it was not delivered yesterday owing to the Coronation.—I am very much obliged to my Father and everybody else.—Everything is done quite right: I suppose by this time you have received my letter written next day, and I hope will send off the things.—My affairs remain in statu quo—Cap. Beaufort says I am on the books for victuals, and he thinks I shall have no difficulty about my collections when I come home. But he is too deep a fish for me to make him out.—The only thing that now prevents me finally making up my mind, is the want of certainty about South Sea Islands, although morally I have no doubt we should go there, whether or no it is put in the instructions. Cap. Fitzroy says I do good by plaguing Cap. Beaufort, it stirs him up with a long pole. Cap. Fitzroy says he is sure he has interest enough (particularly if this administration is not everlasting—I shall soon turn Tory!), anyhow, even when out, to get the ship ordered home by whatever track he likes.—From what Wood says I presume Dukes Grafton and Richmond interest themselves about him.—By the way, Wood has been of the greatest use to me, and I am sure his personal introduction of me inclined Cap. Fitzroy to have me.—To explain things from the very beginning: Cap. Fitzroy first wished to have [a] Naturalist, and then he seems to have taken a sudden

horror of the chances of having somebody he should not like on board the Vessel: he confesses his letter to Cambridge was to throw cold water on the scheme.—I don't think we shall quarrell about politics, although Wood, (as might be expected from a Londonderry), solemnly warned Fitzroy that I was a Whig.—Cap. FitzRoy was before Uncle Jos,—he said, "Now your friends will tell you a sea Captain is the greatest brute on the face of the creation; I do not know how to help you in this case, except by hoping you will give me a trial". How one does change.—I actually now wish the voyage was longer before we touched Land. I feel my blood run cold at the quantity I have to do.—Everybody seems ready to assist me. The Zoological want to make me a corresponding member; all this I can construe without crossing the Equator;—but one friend is quite invaluable, viz. a Mr. Yarrell, a stationer, and excellent naturalist. He goes to the shops with me and bullies about prices (not that I yet buy); hang me if I give £60 for pistols.—

Yesterday all the shops were shut, so that I could do nothing—and I was child enough to give £1. 1. for an excellent seat to see the procession¹—and it certainly was very well worth seeing.—I was surprised that any quantity of gold could make a long row of people quite glitter.—It was like only what one sees in picture-books of Eastern processions.—The King looked very well and seemed popular: but there was very little enthusiasm; so little that I can hardly think there will be a Coronation this time 50 years.—

The life Guards pleased me as much as anything: they were quite magnificent; and it is beautiful to see them clear a crowd: you think that they must kill a score at least, and apparently they really hurt nobody, but most decidedly frighten them.—Wherever a crowd was so dense that the people were forced off the Causeway, one of these six-feet gentleman, on a black horse, rode straight at the place, making his horse rear very high, and fall on the thickest spot: you would suppose men were made of sponge to see them shrink away.—In the evening there was an illumination, and much grander than the one on the Reform Bill. All the principal streets were crowded just like a Race ground;—carriages generally being six abreast,

¹The Coronation of William IV.

and I will venture to say not going 1 mile an hour.—Duke of Northumberland learnt a lesson last time: for his house was very grand; much more so than the other great nobility, & in much better taste: every window in his house was full of perfectly straight lines of brilliant lights: and from their extreme regularity and number, had a beautiful effect. The Paucity of invention was very striking; crowns, anchors, and “W.R.’s” were repeated in endless succession.—The prettiest were gass pipes with small holes; they were almost painfully brilliant.—I have written so much about the Coronation, that I think you will have no occasion to read [the] *Morning Herald*.

For about the first time in my life I find London very pleasant: Hurry, bustle, and noise are all in unison with my feelings.—and I have plenty to do in spare moments. I work at Astronomy: as I suppose I would astound a sailor if one did not know how to find Lat. and Long.—I am now going to Cap. Fitzroy, and will keep letter open till evening for anything that may occur.—I will give you one proof of Fitzroy being a good officer;—all officers are the same as before; $\frac{2}{3}$ of his crew, and the 8 marines who went before, all offered to come again: so the service cannot be so very bad. The Admiralty have just issued orders for a large stock of Canister meat and Lemon juice etc.—I have just returned from spending a long day with Cap. Fitzroy, driving about in his gig, and shopping.—This letter is too late for to-day’s post.—You may consider it settled that I go: yet there is room for change if any untoward accident should happen: this I can see no reason to expect. I feel convinced nothing else will alter my wish of going.—I have begun to order things. I have procured case of good strong pistols and excellent rifle for £50; there is a saving; good telescope with compass, £5, and these are nearly the only expensive instruments I shall want. Cap. Fitzroy has everything: I never saw so (what I should call, he says not) extravagant a man: as regards himself, but as economical towards me.—How he did order things. His fire arms will cost £400 at least:—I found carpet-bag when I arrived; all right and much obliged. I do not think I shall take any Arsenic:—Shall send partridges to Mr. Yarréll, much obliged. Ask Edward to *bargain with* Clemson to make for my gun: 2 *spare* hammers or cocks, 2 main

springs: 2 sere-springs: 4 nipples or plugs:—I mean one for each barrel, except nipples, of which there must be two for each: all of excellent quality, and set about them immediately; tell Edward [to] make enquiries about prices. I go on Sunday per packet to Plymouth, shall stay one or two days, then return, and hope to find letter from you;—a few days in London: then Cambridge, Shrewsbury, London, Plymouth, Madeira, is my route.—It is great bore my writing so much about Coronation; I could fill another sheet.—I [have] just been with Cap. King, Fitzroy's senior officer last expedition: he thinks that the expedition will suit me. Unasked he said Fitzroy's temper was perfect: he sends his own son with him as midshipman.

The key of my microscope was forgotten. It is of no consequence.

Love to all,

Chas. Darwin.

LETTER NO. 5

[*Not previously published*]

[*To Miss Susan Darwin*]

DEVONPORT.

Wednesday evening

[Sep. 14, 1831]

My dear Susan,

I arrived here yesterday evening: after a very prosperous sail of three days from London.—I suppose breathing the same air as a Sea Captain is a sort of a preventive: for I scarcely ever spent three pleasanter days—of course there were a few moments of giddiness, as for sickness I utterly scorned the very name of it.—There were 5 or 6 very agreeable people on board, and we formed a table and stuck together, and most jolly dinners they were.—Cap. Fitzroy took a little Midshipman (who by the way knows Sir F. Darwin, his name is Musters), and you cannot imagine anything more kind and good humoured than the Captain's manners were to him.—Perhaps you thought I admired my beau ideal of a Captain in my former letters: all that is quite a joke to what I now feel.—Everybody

praises him, (whether or no they know my connection with him), and indeed, judging from the little I have seen of him, he well deserves it.—Not that I suppose it is likely that such violent admiration as I feel for him, can possibly last;—no man is a hero to his valet, as the old saying goes;—and I certainly shall be in much the same predicament as one.—The vessel is a very small one; three masted; and carrying 10 guns: but everybody says it is the best sort for our work, and of it's class it is an excellent vessel: new, but well tried, and $\frac{1}{2}$ again the usual strength.—The want of room is very bad, but we must make the best of it.—I like the officers, (as Cap. Fitzroy says, they would not do for St. James), but they are evidently [a] very intelligent, active, determined set of young fellows.—I keep on balancing accounts; there are several *contras* which I did not expect, but on the other hand, the *pros* far outweigh them.—The time of sailing keeps on receding in a greater ratio than the present time draws on: I do not believe we shall sail till the 20th of October.—I am exceedingly glad of this, as the number of things I have got to do is quite frightful.—I do not think I can stay in Shrewsbury more than 4 days. I leave Plymouth on Friday, and shall be in Cam: at the end of next week. I found the money at the Bank, and am much obliged to my Father for it.—My spirits about the voyage are like the tide, which runs one way, and that is in favour of it; but it does so by a number of little waves, which may represent all the doubts and hopes that are continually changing in my mind. After such a wonderful high wrought simile I will write no more, so good-bye, my dear Susan,

Love to my Father.

Yours,
C. Darwin.

LETTER NO. 6

[Not previously published, except short passage]

[To Miss Susan Darwin]

17, SPRING GARDENS.

Saturday, 17th
[Sep. 17, 1831]

My Dear Susan,

I daresay you have received my letter from Plymouth.—

I have nothing particular to write about, excepting to tell you on what day it is most likely I shall arrive in Shrewsbury. —I go on Monday night to Cam:—& most probably shall leave it on Wednesday or Friday, and shall arrive the following morning at 5 o'clock in Shrewsbury: have my bed ready accordingly.—What wonderful quick travelling it is. I came from Plymouth, 250 miles, in 24 hours, and arrived this morning. When I wrote last I was in great alarm about my cabin: the cabins were not then marked out: but when I left they were, and mine is a capital one, certainly next best to the Captain's, and remarkably light.—My companion most luckily, I think, will turn out to be the officer whom I shall like best. Cap. Fitzroy says he will take care that one corner is so fitted up that I shall be comfortable in it, and shall consider [it] my home; but that also I shall always have the run of his.—My cabin is the drawing one, and in the middle is a large table over which we two sleep in hammocks; but for the first two months there will be no drawing to be done, so that it will be quite a luxurious room, and a good deal larger than the Captain's cabin.

I don't care whom you now tell, for all is fixed and certain;—and I feel *well up it*, not but what this has often been a difficult task, and my reason has been the only power that was capable of it: for it is most painful whenever I think of leaving for so long a time, so many people whom I love.—

But no more of this from myself or from any of you.—I have been in capital spirits ever since all was fixed, and if I go to the bottom, I shall go on this one point like a rational creature.—The use of the fire arms is most important: they almost lived for months, last voyage, on the produce of them; so much so that Government allows powder and shot.—Not to mention it is never safe to go on shore without loaded arms; this is always sufficient to keep the natives pretty quiet. The object of the voyage is to make Maps of Eastern side of Terra del Fuego and Patagonia: likewise to settle Longitude of many places more accurately than they are at present: on the other side they named more than 50 new islands, so perfectly unknown is that part of the coast.—

I had intended writing to Maer and shall certainly do

so.—Have my shirts marked DARWIN and no number.—

Good-bye, love to my Father,

Your affectionate

Chas. Darwin.

I shall leave Shrewsbury on Friday 30th or before.

LETTER NO. 7

[*Printed in Life and Letters, Vol. I, p. 226*]

[*To Dr. Robert Darwin*]

BRAZILS,

BAHIA OR ST. SALVADOR.

[Feb. 8—March 1, 1831]

My dear Father,

I am writing this on the 8th February, one day's sail past St. Jago (Cape de Verd), and intend taking the chance of meeting with a homeward-bound vessel somewhere about the Equator.—The date, however, will tell this whenever the opportunity occurs.—I will now begin from the day of leaving England, giving a short account of our progress.—We sailed, as you know, on the 27th December, and have been fortunate enough to have had from that time to the present a fair and moderate breeze. It afterwards proved that we escaped a heavy gale in the Channel, another at Madeira, and another on [the] coast of Africa;—but in escaping the gale, we felt its consequence,—a heavy sea. In the Bay of Biscay there was a long and continued swell, and the misery I endured from sea-sickness is far far beyond what I ever guessed at.—I believe you are curious about it. I will give all my dear-bought experience.—Nobody who has only been to sea for 24 hours has a right to say that sea-sickness is even uncomfortable. The real misery only begins when you are so exhausted that a little exertion makes a feeling of faintness come on.—I found nothing but lying in my hammock did me any good.—I must especially except your receipt of raisins, which is the only food that the stomach will bear. On the 4th January we were not many miles from Madeira, but as there was a heavy sea running, and the Island lay to windward, it was not thought worth while to beat up to

it.—It afterwards has turned out it was lucky we saved ourselves the trouble. I was much too sick even to get up to see the distant outline.—On the 6th in the evening, we sailed into the harbour of Santa Cruz—I now first felt even moderately well, and I was picturing to myself all the delights of fresh fruit growing in beautiful valleys, and reading Humboldt's descriptions of the island's glorious views,—when perhaps you may nearly guess at our disappointment, when a small pale man informed us we must perform a strict quarantine of 12 days. There was a death-like stillness in the ship; till the Captain cried "Up Jib", and we left this long wished for place.—We were becalmed for a day between Teneriffe and the Grand Canary, and here I first experienced any enjoyment: the view was glorious. The peak of Teneriffe was seen amongst the clouds like another world.—Our only drawback was the extreme wish of visiting this glorious island. *Tell Eyton¹ never to forget either Canary Islands or S. America*; that I am sure it will well repay the necessary trouble, but that he must make up his mind to find a good deal of the latter.—I feel certain he will regret it if he does not make the attempt.—From Teneriffe to St. Jago the voyage was extremely pleasant.—I had a net astern the vessel which caught great numbers of curious animals, and fully occupied my time in my cabin, and on deck the weather was so delightful and clear, that the sky and water together made a picture. On the 16th we arrived at Port Praya, the capital of Cape de Verds, and there we remained 23 days, viz. till yesterday, the 7th February.—The time has flown away most delightfully, indeed nothing can be pleasanter; exceedingly busy, and that business both a duty and a great delight. I do not believe I have spent one half hour idly since leaving Teneriffe: St. Jago has afforded me an exceedingly rich harvest in several branches of Natural History.—I find the descriptions scarcely worth anything of many of the commoner animals that inhabit the Tropics. I allude, of course, to those of the lower classes.—Geologising in a volcanic country is most delightful; besides the interest attached to itself, it leads you into most beautiful retired spots.—Nobody but a person fond

¹ Eyton, of St. John's College, Cambridge, with whom he had often discussed a voyage to the Canaries, later became an ornithologist of repute.

of Nat: history can imagine the pleasure of strolling under cocoa-nuts, in a thicket of bananas and coffee plants, and an endless number of wild flowers.—And this Island, that has given me so much instruction and delight, is reckoned the most uninteresting place that we perhaps shall touch at during our voyage. It certainly is generally very barren,—but the valleys are more exquisitely beautiful from the very contrast.—It is utterly useless to say anything about the scenery; it would be as profitable to explain to a blind man colours, as to [a] person who has not been out of Europe, the total dissimilarity of a tropical view.—Whenever I enjoy anything, I always either look forward to writing it down, either in my log Book (which increases in bulk), or in a letter.—So you must excuse raptures, and those raptures badly expressed.—I find my collections are increasing wonderfully, and from Rio I think I shall be obliged to send a cargo home.—All the endless delays which we experienced at Plymouth have been most fortunate, as I verily believe no person ever went out better provided for collecting and observing in the different branches of Natural History.—In a multitude of Counsellors I certainly found good.—I find to my great surprise that a ship is singularly comfortable for all sorts of work.—Everything is so close at hand, and being cramped makes one so methodical, that in the end I have been a gainer.

I already have got to look on going to sea as a regular quiet place, like going back to home after staying away from it. In short, I find a ship a very comfortable house, with everything you want, and if it was not for seasickness the whole world would be sailors. I do not think there is much danger of Erasmus setting the example, but in case there should be, he may rely upon it he does not know one tenth of the sufferings of sea sickness.

I like the officers much more than I did at first, especially Wickham, and young King, and Stokes, and indeed all of them. The Captain continues steadily very kind and does everything in his power to assist me. We see very little of each other when in harbour, our pursuits lead us in such different tracks.—I never in my life met with a man who could endure nearly so great a share of fatigue. He works incessantly, and

when apparently not employed, he is thinking. If he does not kill himself, he will, during this voyage, do a wonderful quantity of work. I find I am very well, and stand the little heat we have had as yet, as well as anybody. We shall soon have it in real earnest. We are now sailing for Fernando Noronha, off the coast of Brazil, where we shall not stay very long, and then examine the shoals between there and Rio, touching perhaps at Bahia. I will finish this letter when an opportunity of sending it occurs.

Feb. 26th. About 280 miles from Bahia. On the 10th we spoke the packet *Lyra*, on her voyage to Rio. I sent a short letter by her, to be sent to England on first opportunity. We have been singularly unlucky in not meeting with any homeward bound vessels, but I suppose [at] Bahia we certainly shall be able to write to England. Since writing the first part of letter, nothing has occurred except crossing the Equator and being shaved. This most disagreeable operation consists in having your face rubbed with paint and tar, which forms a lather for a saw which represents the razor, and then being half drowned in a sail filled with salt water. About 50 miles north of the line, we touched at the rocks of St. Paul; this little speck (about $\frac{1}{4}$ mile across) in the Atlantic has seldom been visited. It is totally barren, but is covered by hosts of birds; they were so unused to men that we found we could kill plenty with stones and sticks. After remaining some hours on the island, we returned on board, with the boat loaded with our prey. From this we went to Fernando Noronha, a small island where the Brazilians send their exiles. The landing there was attended with so much difficulty owing [to] a heavy surf, that the Captain determined to sail the next day after arriving. My one day on shore was exceedingly interesting; the whole island was one single wood, so matted together by creepers that it was very difficult to move out of the beaten path. I find the Natural History of all these unfrequented spots most exceedingly interesting, especially the geology.

I have written this much in order to save time at Bahia.

Decidedly the most striking thing in the Tropics is the novelty of vegetable forms. Cocoa-nuts could well be imagined

from drawings, if you add to them a graceful lightness which no European tree partakes of.—Bananas and Plantains are exactly the same as those in hothouses; the Acacias or Tamarinds are striking from Blueness of their foliage; but of the glorious orange trees, no description, no drawing, will give any just idea; instead of the sickly green of our oranges, the native ones exceed the Portugal laurel in the darkness of their tint, and infinitely exceed it in beauty of form. Cocoa-nuts, Papaws, the light green Bananas, and oranges loaded with fruit, generally surround the more luxuriant villages. Whilst viewing such scenes, one feels the impossibility that any description should come near the mark, much less be overdrawn.

March 1st, Bahia or St. Salvador. I arrived at this place on the 28th Feb. and am now writing this letter after having in real earnest strolled in the forests of the New World.—“No person could imagine anything so beautiful as the antient Town of Bahia; it is fairly enbosomed in a luxuriant wood of beautiful trees, and situated on a steep bank, overlooks the calm waters of the great bay of All Saints. The houses are white and lofty, and from the windows being narrow and long, have a very light and elegant appearance; convents, porticos, and public buildings vary the uniformity of the houses; the bay is scattered over with large ships. In short,—and what can be said more,—it is one of the finest views in the Brazils”. (Copied from my journal). But the exquisite, glorious pleasure of walking amongst such flowers and such trees, cannot be comprehended but by those who have experienced it. Although in so Low a Latitude the weather is not disagreeably hot, but at present it is very damp, for it is the rainy season. I find the climate as yet agrees admirably with me. It makes one long to live quietly for some time in such a country. If you really want to have a notion of tropical countries, *study* Humboldt. Skip the scientific parts, and commence after leaving Teneriffe. My feelings amount to admiration the more I read him.—Tell Eyton (I find I am writing to my sisters!) how exceedingly I enjoy America, and that I am sure it will be a great pity if he does not make a start.

This letter will go on the 5th, and I am afraid will be some time before it reaches you:—it must be a warning, how in other

parts of the world, you may be a long time without hearing from [me]. A year might by accident thus pass. About the 12th we start for Rio, but remain some time on the way in sounding the Albrolos shoals. Tell Eyton as far as my experience goes, let him study Spanish, French, Drawing, and Humboldt. I do sincerely hope to hear of (if not to see him) in S. America. I look forward to the letters in Rio. Till each one is acknowledged, mention it's date in the next.

We have beat all the ships in mæneuvering, so much so that the Commanding Officer says we need not follow his example, because we do everything better than his great ship. I begin to take great interest in naval points, more especially now, as I find they all say we are the No. 1 in South America. I suppose the Captain is a most excellent officer. It was quite glorious to-day how we beat the *Samarang* in furling sails. It is quite a new thing for a "sounding ship" to beat a regular man-of-war, and yet the *Beagle* is not at all a particular ship; Erasmus will clearly perceive it when he hears that in the night I have actually sat down in the sacred precincts of the Quarter Deck.— You must excuse these queer letters and recollect they are generally written in the evening after my day's work. I take more pains over my Log Book, so that eventually you will have a good account of all the places I visit.

Hitherto the voyage has answered *admirably* to me, and yet I am now more fully aware of your wisdom in throwing cold water on the whole scheme: the chances are so numerous of it turning out quite the reverse; to such an extent do I feel this, that if my advice was asked by any person on a similar occasion, I should be very cautious in encouraging him.—I have not time to write to anybody else: so send to Maer to let them know that in the midst of the glorious tropical scenery, I do not forget how instrumental they were in placing me there. I will not rapturize again: but I give myself great credit in not being crazy out of pure delight.

Give my love to every soul at home, and to the Owens. I think one's affections, like other good things, flourish and increase in these tropical regions. The conviction that I am walking in the New World is even yet marvellous in my own eyes, and I daresay it is little less so to you, the receiving a

letter from a son of yours in such a quarter. Believe me, my dear Father, your most affectionate son,

Charles Darwin.

(I find after the first page, I have been writing to my sisters.)

This letter has written in pencil on the cover "Recd. the 3rd of May, 1832. First letter after leaving England." The short letter, written February 10th, must have reached Shrewsbury very few days later, as it has the red Falmouth post mark dated May 3, 1832.

LETTER NO. 8

[Not previously published]

[To Dr. Robert Darwin]

2 DAYS' SAIL S.W. OF ST. JAGO.

Lat. 11N.

Feb. 10th, 1832.

My dear Father,

I have a long letter all ready written, but the conveyance by which I send this is so uncertain, that I will not hazard it, but rather wait for the chance of meeting a homeward bound vessel. Indeed I only take the opportunity, as perhaps you might be anxious not having sooner heard from me. All day long we have been in chase of a packet bound to Rio, and have this evening overtaken her: tomorrow a boat will go on board of her, and this letter will be conveyed to Rio, and from thence to Shrewsbury or to the fire.—We have had a most prosperous, quick and pleasant voyage. At first—indeed till the Canary Islands—I was unspeakably miserable from sea-sickness, and even now a little motion makes me squeamish. We did not stop at Madeira owing to its blowing fresh, and at the Canary Islands they wanted to put us in strict quarantine for 12 days. Sooner than submit to that, we sailed to Cape de Verd, and arrived at St. Jago on the 16th January, having left England on the 27th December. The voyage from Teneriffe to St. Jago was very pleasant, and our three weeks at it have been quite delightful. St. Jago, although generally reckoned very unin-

teresting, was [to] me most exciting. Of course the little vegetation that there was, was purely tropical, and my eyes have already feasted on the exquisite form and colours of Cocoa-nuts, Bananas, and the beautiful orange trees. Hot-houses give no idea of their forms, especially orange trees, which in their appearance are as widely different and superior to the English ones, as their fresh fruit is to the imported.

Natural history goes on excellently, and I am incessantly occupied by new and most interesting animals. There is only one sorrowful drawback; the enormous period of time before I shall be back in England. I am often quite frightened when I look forward. As yet everything has answered brilliantly. I like everybody about the ship, and many of them very much. The Captain is as kind as he can be. Wickham is a glorious fine fellow. And what may appear quite paradoxical to you, is that I *literally* find a ship (when I am not sick) nearly as comfortable as a house. It is an excellent place for working and reading, and already I look forward to going to sea as a place of rest—in short, my home. I am thoroughly convinced that such a good opportunity of seeing the world might not occur again for a century. I think—if I can so soon judge, I shall be able to do some original work in Natural History. I find there [is] so little known about many of the Tropical animals.

The effect of my sending this letter, will be to spoil my longer one; but I was determined not to lose any opportunity (at Cape de Verds there was none), and it is doubtful how long it will be before we arrive at Rio. The Albrothos Banks on the coast of Brazil may last us some time. As yet I have not felt the heat more than in England. In about a week it will be widely different. You will always find my letters home very badly written, as I am exactly in [the] case of having half an hour's talk, and then it would be a struggle what should come out first. This delay in letters will be a lesson not too soon to expect letters.

Give my very best love to everybody and believe me, my dearest Father,

Your most affectionate son,

Charles Darwin.

LETTER NO. 9
[Not previously published]

[To Miss Caroline Darwin]

[Ap. 2, 1832.]

My dear Caroline,

We are now about 100 miles East of Rio, and tomorrow, the 3rd of April, we expect to arrive at the capital of the Brazils. My last letter was from Bahia, which place the *Beagle* sailed from on the 18th of last month. On the whole I much enjoyed my first visit to S. America. I was however, very unfortunate in being confined to my hammock for 8 days by a prick on the knee becoming much inflamed. Bahia has one great disadvantage in being situated on so large a space, that it was impossible for us to walk but in one direction. Luckily it was by far the most beautiful. The scenery here chiefly owes it's charm to the individual forms of the vegetation; when this is united to lofty hills and a bold outline, I am quite sure the incapability of justly praising it will be almost distressing. I talk of *enjoying Bahia* in order to be moderate: but this enjoyment, (weighted with 8 days confinement), is well worth all the misery I endured between England and Teneriffe. I am looking forward with great interest for letters, but with very little pleasure to answering them. It is very odd what a difficult job I find this same writing letters to be.—I suppose it is partly owing to my writing everything in my journal: but chiefly to the number of subjects, which is so bewildering that I am generally at a loss either how to begin or end a sentence, and this all hands must allow to be an objection.

The *mean* temperature of Bahia was 80°: being more accustomed to heat I suffered less from it then than at Praya, where mean temperature was 73°. The great difference of climate in the Tropics and colder zones, consists in the higher temperature of the nights. A mean of 84° for the whole year, (at Guyara in Columbia), is the hottest place in the world, so certainly I have experienced a very considerable degree. To me it is most enjoyable: I had expected to wish for the cold thawing days which you have lately been shivering under: no, give me the regions of Palms and Oranges, and away with frost and snow. It requires a little additional energy to set

about anything, and a good deal more to resist a siesta after dinner. When having so indulged, one wakes bathed in perspiration, but with the skin as cool as a young child.

We shall in all probability stay more than a month at Rio. I have some thoughts, if I can find tolerably cheap lodgings, of living in a beautiful village about 4 miles from this town. It would be excellent for my collections, and for knowing the Tropics. Moreover I shall escape caulking and painting, and various other bedevilmments which Wickham is planning. One part of my life as sailor (and I am becoming one, i.e. knowing ropes and how to put the ship about etc.) is unexpectedly pleasant: it is liking the bare living on blue water: I am the only person on the ship who wishes for long passages: but of course I cautiously bargain with Aeolus, when I pray to him that with the winds he may keep the sea equally quiet. Coming out of Bahia my stomach was only just able to save it's credit. I will finish this letter full of I, I, I, when at Rio.

Rio de Janeiro. April 5th. I, this morning received your letter of December 3rd, and Catherine's of Feb. 4th. We lay to during last night, as the Captain was determined we should see the harbour of Rio, and be ourselves seen, in broad daylight. The view is magnificent and will improve on acquaintance: it is at present rather too much to behold mountains as rugged as those of Wales, clothed in an ever-green vegetation, and the tops ornamented by the light form of the Palm. The city, gaudy with it's towers and cathedrals, is situated at the base of these hills, and commands a vast bay, studded with men of war, the flags of which bespeak every nation. We came, in first rate style, alongside the Admiral's ship, and we, to their astonishment, took in every inch of canvass, and then immediately set it again. A sounding ship doing such a perfect mæneuvre with such certainty and rapidity is an event hitherto unknown in that class. It is a great satisfaction to know that we are in such beautiful order and discipline. In the midst of our Tactics, the bundle of letters arrived.—“Send them below”, thundered Wickham, “Every fool is looking at them and neglecting his duty”. In about an hour I succeeded in getting mine;—the sun was bright and the view resplendent: our little ship was working like a fish, so I said to myself—I will

only just look at the signatures. It would not do: I sent wood and water, Palms and Cathedrals, to old Nick and away I rushed below, there to feast over the thrilling enjoyment of reading about you all. At first the contrast of home, vividly brought before one's eyes, makes the present more exciting: but the feeling is soon divided and then absorbed by the wish of seeing those who make all associations dear. It is seldom that one individual has the power [of] giving to another such a sum of pleasure, as you this day have granted me. I know not whether the conviction of being loved, be more delightful, or the corresponding one of loving in return. I ought to know for I have experienced them both in excess. With yours I received a letter from Charlotte, talking of parsonages in pretty countries, and other celestial views. I cannot fail to admire such a short sailor-like "splicing" match. The style seems prevalent, Fanny seems to have done the business in a ride. Well, it may be all very delightful to those concerned, but as I like unmarried woman better than those in the blessed state, I vote it a bore; by the fates, at this pace I have no chance for the parsonage. I direct of course to you as Miss Darwin. I own I am curious to know to whom I am writing. Susan, I suppose, bears the honours of being Mrs. J. Price. I want to write to Charlotte, and how and where to direct I don't know: it positively is an inconvenient fashion this marrying: Maer won't be half the place it was, and as for Woodhouse, if Fanny was not perhaps at this time Mrs. Biddulph, I would say poor dear Fanny till I fell to sleep. I feel much inclined to philosophize, but I am at a loss what to think or say: whilst really melting with tenderness, I cry my dearest Fanny;—why, I demand, should I distinctly see the sunny flower garden at Maer on the other hand? but I find that my thoughts and feelings and sentences are in such a maze, that between crying and laughing I wish you all good night.

April 6th. A merchant in this town is going to visit a large estate about 150 miles in the country. He has allowed me to accompany him. On the 8th we start, and do not return for a fortnight. It is an uncommon and most excellent opportunity, and I shall thus see, what has been so long my ambition, virgin forest uncut by man and tenanted by wild beasts. You

will all be terrified at the thought of my combating with Alligators and Jaguars in the wilds of the Brazils: the expedition is really quite a safe one, else I will wager my life, my host and companion would not venture on it. I believe a packet will sail before I return, if so, this letter will go. I will of course write again from Rio. When I return I shall live in a cottage at the village of Botofogo. Earl and King will be my companions: I look forward to living there as an Elysium. The house and garden is overwhelmed by flowers and is situated close to a retired lake, or rather loch, as it is connected with the sea, but land-locked by lofty hills. I suppose we shall be here for 5 weeks: and then to Monte Video, which will be my direction for a very long time. With your nice letters I received a most kind and affectionate one from Henslow. It is not impossible I shall have occasion to draw for some money. Most certainly this is the most expensive place we shall perhaps ever again visit. My time is so very much occupied, that my letters must be for the whole family. Before leaving Rio, I shall send a begging letter for some books, (the enjoyment of which is immense) and instruments. I have a great deal of plague in getting my passport: a revolution is expected tomorrow which made it more difficult. I am very sleepy and hot, so my dearest Caroline and all of you, Good-bye.

Yours very affectionately,

Chas. Darwin.

My love to everybody who cares for me. I hope I shall hear from Mr. Owen (and Fanny). His so kindly talking of me I value more than almost anybody.

The Owen family lived at Woodhouse, some miles from Shrewsbury; Mr. Owen was a Shropshire squire, and Charles used often to go to Woodhouse for the shooting. The young Darwins, Wedgwoods and Owens used to meet often—there were riding parties, dances, and frequent friendly visits, and a singing class at The Mount which the Owen girls used to attend. What a happy, care-free intimacy it must have been, with a special place reserved in his heart for Fanny.

Charlotte was Charlotte Wedgwood, another great favourite of Charles'. And here was Charles far away, whilst poor dear Fanny became Mrs. Biddulph and Charlotte was to marry Charles Langton

and deprive him of all hopes of the pretty parsonage;—it was almost more than he could bear. Perhaps the comforting memories of the sunny Maer flower garden brought the memory of Emma vividly and consolingly to his mind.

LETTER NO. 10

[Not previously published]

[To Miss Caroline Darwin]

BOTOFOGO BAY.

April 25th [1832]

My dear Caroline,

I had sealed up the first letter, all ready to be sent off during my absence: but no good opportunity occurred, and so it and this will go together. I take the opportunity of MacCormick returning to England, being invalided, i.e. being disagreeable to the Captain and Wickham. He is no loss. Derbyshire is also discharged the service, from his own desire, not choosing his conduct, which has been bad about money matters to be investigated.—All this has been a long parenthesis.

My expedition lasted 15 days, most of which were ones of uncommon fatigue: I suppose for a civilized country, travelling could not be worse: the greatest difficulty in getting anything to eat, and not undressing for the 5 first days. I was very unwell for 2 days, and the misery of riding in a scorching sun for about 10 hours was extreme. My horror of being left utterly destitute in a Venda will be better than any schoolmaster to make me learn Spanish as soon as we get into those countries. On the other side, there was a great interest and novelty in seeing the manner of living amongst the Brazilians, which [I had the] rare opportunity of doing during a few days in which I resided at a Fazenda,—that is, one of the most interior cleared estates. Their habits of life were quite patriarchal; forest and flowers and birds I saw in great perfection, and the pleasure of beholding them is infinite. I advise you to get a French engraving, *Le Foret du Brasil*: it is most true and clever. This letter will be odds and ends, as really I have scarcely time for writing. I send in a packet my commonplace Journal. I have taken a fit of disgust with it, and want to get

it out of my sight: any of you that like may read it. A great deal is absolutely childish. Remember however this, that it is written solely to make me remember this voyage, and that it is not a record of facts, but of my thoughts, and in excuse recollect how tired I generally am when writing it.

Earl and myself are now living in this most retired and beautiful spot. I trust to spend a most delightful fortnight. I have begun however with a bad omen,—whilst landing, the boat was swamped; a heavy sea knocked me head over heels and filled the boat. I never shall forget my agony, seeing all my useful books, papers, instruments, microscopes etc. etc., gun, rifle,—all floating in the salt water; everything is a little injured, but not much. I must harden myself to many such calamities. It is very lucky I have such nice lodgings, as the ship is turned inside out: a large party of the officers have gone up the river in the cutter.—I came just too late for this cruise. I believe King is coming to live here: he is the most perfect pleasant boy I ever met with, and is my chief companion. Wickham is a fine fellow, and we are very good friends, which in a selfish way is no common advantage. And now for the Captain, as I daresay you feel some interest in him. As far as I can judge, he is a very extraordinary person. I never before came across a man whom I could fancy being a Napoleon or a Nelson. I should not call him clever, yet I feel convinced nothing is too great or too high for him. His ascendancy over everybody is quite curious: the extent to which every officer and man feels the slightest rebuke or praise, would have been before seeing him, incomprehensible. It is very amusing to see all hands hauling at a rope, they not supposing him on deck, and then observe the effect when he utters a syllable; it is like a string of dray horses, when the waggoner gives one of his awful smacks. His candour and sincerity are to me unparalleled, and using his own words his “vanity and petulance” are nearly so. I have felt the effects of the latter: but the bringing into play the former ones so forcibly makes one hardly regret them. His greatest fault as a companion is his austere silence: produced from excessive thinking: his many good qualities are great and numerous: altogether he is the strongest marked character I ever fell in with.

Be sure you mention the receiving of my journal; as anyhow to me it will [be] of considerable future interest, as it is an exact record of all my first impressions; and such a set of vivid ones they have been, must make this period of my life always one of interest to myself. If you will speak quite sincerely, I shall be glad to have your criticisms. Only recollect the above mentioned apologies.

I like this sort of life very much: I can laugh at the miseries of even Brazilian travelling. I must except one morning when I did not get my breakfast till one o'clock, having ridden many miles over glaring sand. Generally one is obliged to wait 2 hours before you can get anything to eat, be the time what it may. Although I like this knocking about, I find I steadily have a distant prospect of a very quiet parsonage, and I can see it even through a grove of Palms.

Friday. The Captain has just paid us a visit, and taken me to the Minister's where I dine on Monday, and meet the very few gentlemen there are in the place. He has communicated to me an important piece of news: the *Beagle* on the 7th May sails back to Bahia. The reason is a most unexpected difference is found in the Longitudes: it is a thing of great importance, and the Captain has written to the Admiralty accordingly. Most likely I shall live quietly here. It will cost a little, but I am quite delighted at the thought of enjoying a little more of the Tropics; I am sorry the first part of this letter has already been sent to the *Tyne*; I must tell you for your instruction that the Captain says Miss Austen's novels are on everybody's table, which solely means the Jerseys, London-derrys, etc.

You shall hear from me again from Rio; how I wish I could do the same from you. Remember me most affectionately to everybody, and to my Father, Susan and to Catherine and to Erasmus. The latter must not forget to write to me. I would write to each of you, only it is in reality useless. Goodbye and good-night to all of you.

Yours ever affectionately,

Charles Darwin.

April 26th. Rio de Janeiro.

LETTER NO. 11

[Not previously published]

[To Miss Catherine Darwin]

Botofogo Bay,
Rio de Janeiro.May-June [1832]
[Postmark, Shrewsbury
Aug. 3, 1832]

My dear Catherine

I have now altogether received three letters: yours and Caroline's together, which latter I have answered and also sent my Journal by the *Tyne*, which was returning to England. Susan's (and one from Mr. Owen) I received May 3rd. The *Beagle* has not yet returned; so I am living quietly here, and thoroughly enjoying so rare an opportunity of seeing the country, and collecting in every branch of Natural History. I have just been re-reading all your nice affectionate letters, and in consequence I have summoned resolution to begin a letter. I am so wearied of writing letters and telling the same story, that if I stumble through this, it is almost more than I expect. I have sent a list of commissions for poor Erasmus to execute: directed to Whyndam Club. Tell my father I am afraid some of them are expensive, but he cannot imagine the value such things are in a country where even a watch never yet has been manufactured. I am very glad to hear the hot-house is going on well; how when I return I shall enjoy seeing some of my old friends again:—do get a Banana plant, they are easily reared and the foliage is wonderfully beautiful. I have not yet ceased marvelling at all the marriages: as for Maer and Woodhouse, they might as well be shut up. I received a very kind letter from Mr. Owen and Fanny. The former contained the warmest expressions of friendship to my Father. (This letter will be odds and ends.) I suppose by this time you see how uncertain ship-letters must always be. When we get to the South and have a 5 months cruize without seeing an homeward bound sail, together with the chance both before and after, the time might be almost indefinite between two of my letters. The Admiral's secretary here was under Cap. Maling: who seems to have had a great deal of duty at a very

precarious time: the secretary says that Mrs. Maling entirely managed the political part.

June 6th. The *Beagle* has returned from Bahia and brought most calamitous news:—a large party of our officers and two sailors before leaving Rio, went a party in the Cutter for snipe shooting up the bay. Most of them were slightly attacked with fever: but the two men and poor little Musters were seized violently and died in a few days. The latter and one man were buried at Bahia. The poor little fellow only two days before his illness, heard of his mother's death. What numbers snipe-shooting has killed, and how rapidly they drop off. The *Beagle* will stay another 14 days at least and then we sail for Mont Video, touching I hope at St. Catherines. She is getting in beautiful order: increased our complement, got a new gun, put up boarding nettings and rigged sweeps: and now there is not a pirate afloat whom we care for, and a thousand savages together would be harmless. I have written letters to Charlotte, Mr. Owen, Fox, Henslow and Herbert; I mention it, being always anxious when it is possible, to know whether my letters have arrived safely. I received a nice long one from Caroline dated Maer, and directed to Mr. Darwin, H.M.S. Am I a ship? or is His Majesty's ship *Beagle* a dog? that you stick a *the* before it. One would suppose she did not know the Jibboom from the Taffrill to see her direct in such a manner.—(odds and ends as I before said). Capt. Harding, brother of Mrs. Hunt, second Captain of the *Warspite* is here and is very civil to me. He sent to me to say he had 800 men under his command, and that I might have a boat for an hour or week as I choose.

One of our officers lives at Falmouth—he gives the following direction for letters; there are two packets sail every month, one for Rio, and the other touching at Rio, proceeds to M. Video. This one sails the Friday after the third Tuesday in the month, and is of course the best way of sending my monthly letter. The letter ought to be in a day before the Friday. Whenever you should [be] in doubt about direction, put South American Station. Till I tell you, stick to Monte Video. You cannot imagine anything more calmly and delightfully than these weeks have passed by: there never was a greater piece of good luck than the *Beagle* returning to Bahia.

Give my best love to Marianne, and thank her for her postscript: and tell her to remember me most kindly to Dr. Parker. Remember me to all friends, especially to Major Bagley and the Eytons. Tell Tom to keep his courage up, for the Canaries or Madeira would be very feasible. I drew £40 (mentioned in my last letter) and I am afraid I shall be forced to draw £10 more. I really am very sorry, but 12 weeks here instead of 4 has been a great increase. My lodgings and board only cost 22 shillings per week. I am ashamed to send so uninteresting a letter; but it will be to you unintelligible how difficult I find writing letters. At latter end of this month (June), we sail for Monte Video. Our first cruize will be I believe down the coast to Rio Negro, where there is a small settlement of Spaniards. Our next will be to where man has never yet been: (that is as far as is known). How glad I am the *Beagle* does not carry a year's provisions: formerly it was like going into the grave for that time. Living with the Capt. is a great advantage in having what society there is at my command. I am [the] only one in the ship who is regularly asked to the Admiral's, Chargé D'Affaire's, and other great men.

With my very best love to everyone, dear Katty,

Yours most affectionately,

Chas. Darwin.

This letter was sent on by Catherine to Mrs. Parker (Marianne) at Overton; Catherine writes on back: "Car. and Susan go to Osmaston next Saturday, so I suppose you will come next Monday—dear M. we shall be very snug, I hope.

Yours, Catherine."

LETTER NO. 12

[Not previously published]

[To Miss Catherine Darwin]

Rio de Janeiro.

H.M.S. *Beagle*.

July 5th [1832]

My dear Catherine,

I have only $\frac{1}{4}$ of an hour to write this—Sullivan will put it in his parcel, so that it will only cost common postage. I

have received your letter directed Monte Video, and previous to it one from Caroline from Maer. Tomorrow we sail for Monte Video. If the wind is not directly against us, we shall touch at Cape Frio, the celebrated scene of diving for the *Thetis* wreck. They have fished up 900,000 dollars. If we are lucky enough (and it is very probable) to have a gale off St. Catherines, we shall run in there. I expect to suffer terribly from sea-sickness, as we are certain to have bad weather. After lying a short time at Monte Video, we cruize to the South, but not I believe below Rio Negro. The geography of the country is as little known as interior of Africa. I long to put my foot where man has never trod before, and am most impatient to leave civilized ports.

We are all very anxious about reform: the last news brought intelligence that Lord Grey would perhaps re-continue in.—Would ask Erasmus to add to the books; Pennants quadruped, (if not too late), in my bedroom,—and Humboldt, Tableaux de la Nature. You cannot imagine what a miser-like value is attached to books, when incapable of procuring them. We have been 3 months here and most undoubtedly I well know the glories of a Brazilian forest. Commonly I ride some few miles, put [up] my horse and start by some track into the impenetrable mass of vegetation. Whilst seated on a tree, and eating my luncheon in the sublime solitude of the forest, the pleasure I experience is unspeakable. The number of undescribed animals I have taken is very great: and some to Naturalists, I am sure, very interesting. I attempt class after class of animals, so that before very long I shall have [a] notion of all, so that if I gain no other end, I shall never want an object of employment and amusement for the rest of my life. (Sullivan only gives me 5 minutes more). I am now writing in my own snug corner,—and am as comfortable as man can be. I am only obeying orders in thus writing a short letter. When on the desert coasts of Patagonia, you will be a long time before hearing from me. My Journal is going on better: but I find it inconvenient having sent the first part home on account of the dates. Give my very best love to my Father and all others.

Most affectionate,

Chas. Darwin.

LETTER NO. 13

[Not previously published, except short extract]

[To Miss Susan Darwin]

[July 14-Aug. 7, 1832]

My dear Susan,

As in all probability we shall stay but a short time at Monte Video, I take the opportunity of an idle evening at sea to begin a letter. We are now (July 14th) about 300 miles from Rio: to-day for the first time we have a fair wind: before this, calms and light contrary winds were only disturbed by squalls and gales. For a week I suffered much from sickness, but am now nearly well again. Everybody is full of eagerness to commence our real work. After laying in fresh water at Monte Video, we sail for Rio Negro. Comparatively near as this is to the civilized world, yet the whole coast and interior country is *totally* unknown. Falconers account, inaccurate as it must be, is the only one. I expect grand things in Natural History, but if that fails, the whole world I suppose, does not produce so much game in any one spot. I believe the Captain will proceed many miles up the river, and I trust I shall be of the party. I cannot imagine anything more interesting: the only thing unpropitious is the ferocity of the Indians. But I would sooner go with the Captain with 10 men, than with anybody else with 20. He is so very prudent and watchful as long as possible, and so resolutely brave when pushed to it.

As far as we are able to guess, the following is the rough outline for the future. After coast of Patagonia, return to Monte Video, and then proceed to Terra del¹ [Fuego], and settle the Fuegians. Back to Monte Video. Afterwards to Valparayso. From which point one more cruize will be to the south, and after that the wide world is open to us. Even the prospect of walking where European never before has, hardly recompenses for leaving the glorious regions of the Tropics: already is the change of weather perceptible. Everyone has put on cloth cloathes, and preparing for still greater extremes, our beards are all sprouting. My face at present looks of about the same tint as a half-washed chimney sweeper. With my

¹Tierra del Fuego is always referred to as T. del, or Terra del.

pistols in my belt and geological hammer in hand, shall I not look like a grand barbarian?—Before leaving Rio we heard the news of Lord Grey's minority, and are all most anxious to see how it will end. It is not very likely that we shall receive letters before our return from the south: this will be a sad disappointment to me, as I then expect an answer to my Bahia letter, for this gives to a correspondence an appearance of closer connection. I do not think I have ever given you an account of how the day passes. We breakfast at 8 o'clock. The invariable maxim is to throw away all politeness:—that is, never to wait for each other, and bolt off the minute one has done eating, etc. At sea, when the weather is calm, I work at marine animals, with which the whole ocean abounds; if there is any sea up, I am either sick or contrive to read some voyage or Travels. At one we dine. You shore-going people are lamentably mistaken about the manner of living on board. We have never yet (nor shall we) dined off salt meat. Rice and Pea and Calavanses are excellent vegetables, and with good bread—who could want more? Judge Alderson could not be more temperate, as nothing but water comes on the table. At 5 we have tea. The Midshipmen's berth have all their meals an hour before us, and the gun-room an hour afterwards.

July 30th. Monte Video. The packet will arrive here in a few days, so that I will make another attempt to fill my letter. We arrived here on the 26th, after a long and disagreeable passage. The weather has been too heavy or too light. I expect the further we proceed south, the more uncomfortable I shall find sea-life. It was quite curious how much I felt the change of climate. The thermometer has scarcely been below 50° , but yet with thick clothes I could not make myself warm.

Wherever we go there is sure to be some disturbance; as we passed the Frigate, she made signal to us "clear for action" and "prepare to cover our boats". When shortly afterwards a heavy force in boats with Carronades ready mounted passed by us to go to the Mole. This merely turned out to be a substantial argument to convince the inhabitants they must not plunder British property. I have only had one good walk on the turf plains which one has so often read about. There is



Mole, Palace and Cathedral, Rio de Janeiro

PLATE 2



Different races of Fuegian Native

something very delightful in the free expanse, where nothing guides or bounds your walk, yet I am disappointed in them, and as far as regards scenery, imagination could not paint anything more dull and uninteresting. How different from the Brazilian forest, where I could sit for hours together and find every minute fresh objects of admiration. We certainly sail before another packet arrives from England. I am sorry for it. I quite long to hear from you after you have received a letter from me. I cannot thank you all too much for writing so regularly to me. The very regularity of time is a satisfaction as it prevents unreasonable expectation. My main object, Natural History, goes on very well, and I certainly have taken many animals etc. which would be interesting to Naturalists. Independent of this satisfaction, I have begun so many branches previously new to me, that even already I long to be in England to commence an attack upon several obscure little individuals. I am going to draw £25 which will make altogether since leaving England £80; out of this at least £20 has not been wasted, in as much it has been spent about my collection. For the next two months, even with my ingenuity, I do not think I shall be able to spend a penny. I have just received intelligence we sail tomorrow for Buenos Ayres. The Captain has heard some news about an old chart of the coast, and he thinks it of sufficient importance to go there. I am glad of it, the more places the merrier: when one is about one cannot see too many. At last I shall deliver the letter to Mr. Hughes from Mrs. Haycock. The packet calls here on Wednesday so I leave this letter to be forwarded. Give my love to all at dear old Shrewsbury, my dear old Granny.¹ I am and always shall be,

Yours very affectionately,

Chas. Darwin.

July 31st.

Monte Video.

The following is written across the earlier writing in redder ink.

MONTE VIDEO.

August 7th. I have procured my letter again in order to write some more. We run up to Buenos Ayres where a guard

¹ "Granny" was his nickname for Susan.

ship fired a shot close to us. This we took up as a great insult, and if our guns had been ready we should have returned it with interest. We immediately made sail and returned here. The Captain reported the circumstance to the frigate *Druid* lying at the Mouth, and she has gone up to Buenos Ayres and obtained ample satisfaction for the insult offered to us. Quarantine for the Cholera was the excuse!—we all thought we should at last be able to spend a quiet week, but alas, the very morning after the anchoring a serious mutiny in some black troops endangered the safety of the town. We immediately arrived and manned all our boats, and at the request of the inhabitants, occupied the principal fort. It was something new to me to walk with Pistols and Cutlass through the streets of a town. It has all ended in smoke. But the consequence is very disagreeable to us, since from the troubled state of the country we cannot walk in the country. The Packet will not sail yet for a week. And now for a bit of business; in my letter to Erasmus, I tell him Lieut. Blanchard will transact the shipping of my Box. We have just heard the news he has broke and gone to America. I hope Erasmus enquired at the London agent, Mr. Palsgrave No. 3, Lyons Inn, Strand. If so he will have heard of this. If not a letter had better be sent to Falmouth. I trust they are not lost. What a loss it will be to me. If they are regained there must be some means of forwarding them to M. Video. I am very sorry for all this trouble.

Yours affectionately,

Chas. Darwin.

On the 17th we start for the Rio Negro. Adieu.

This letter was evidently sent the round of the family, and the following messages are found in odd corners. "Susan says you must not destroy this letter." Caroline sends it on to Erasmus, and writes: "My dear Eras, I send C's letter per post as my opportunity has failed—Papa bids me tell you not to pay Vine's bill till he tells you. Thank you for your letter, you are very good writing and telling us London news. To satisfy your curiosity Simnels are not in season now—when they are your curiosity perhaps will be more satisfactorily satisfied. WE did not send the brawn. Aunt Bessy deserves all the thanks.

Yours affeclly, G. S. D."

Marianne sends it back to Caroline: "My dear C. I am exceedingly obliged to Papa for the tooth brush and message. About my knee, I have tried rubbing, but must leave it off, as it increased the pain, today I am a little lame, I believe in consequence of the rubbing, but I shall not walk and expect it to be as well as usual tomorrow. I am very glad you think of coming here [incomplete sentence torn by the seal] I beg to tell you that Henry [aged 5] has been in Jacket and Trowsers these two months, and has almost worn out a Jacket. I am much oblgd to Susan for taking the silk off my hands—Dr. Parker thinks she could not do less.

Love to all,

Yours, M.P."

LETTER NO. 14

[Not previously published]

[To Miss Caroline Darwin]

[Oct. 24, 1832]

—Nov. 24]

My dear Caroline,

We are now October 24th, within a few leagues of M. Video, and shall before morning drop our anchor there. This first cruize has afforded very little matter for letters or for any other purpose. You recollect the sand hillocks at Barmouth: we have sailed along 240 miles of coast, solely composed of such hillocks. Instead of being as at Barmouth merely a border for the sea, here in Patagonia they extend for some miles, till you reach the open plains, which are far less picturesque than the sand-hillocks. Even with this and a good deal of bad weather on our passage down, I have enjoyed the cruize. Our furthest point South was Bahia Blanca (a little N. of Rio Negro), where there is a small Spanish settlement or rather a fort against the Indians. On entering the bay we met a little Schooner in which was an Englishman who is connected with two other small vessels, (or rather covered boats), employed in sealing. The man was tolerably acquainted with the coast: the Captain thought this so fine a chance, that he has hired two of them and put two officers in each. They are now surveying the coast, which from the number of banks would have detained us a long time. On our return from Monte Video (which will be as soon as possible) we meet

them at Rio Negro, and leaving them to work, push on for the South. This second cruize will be a very long one: during it we settle the Fuegians, and probably survey the Falkland Islands: after this is over (it is an awful long time to talk about), we return to Monte Video: pick up our officers, and then round the Horn and once more enter the glorious, delicious inter-tropical seas. I find the peep of Tropical scenery has given me a tenfold wish to see more: it is no exaggeration to say, no one can know how beautiful the world we inhabit is, who has only been in the colder climes. The chief source of pleasure has been to me, during these two months, from Nat: History. I have been wonderfully lucky with fossil bones. Some of the animals must have been of great dimensions: I am almost sure that many of them are quite new: this is always pleasant, but with the antediluvian animals it is doubly so. I found parts of the curious osseous coat which is attributed to the *Megatherium*: as the only specimens in Europe are at Madrid (originally in 1798 from Buenos Ayres) this alone is enough to repay some wearisome minutes. Amongst living animals I have not been less fortunate. I also had in September some good sporting: I shot one day a fine buck and doe: but in this line I never enjoyed anything so much as Ostrich hunting with the wild Soldiers, who are more than half Indians. They catch them by throwing two balls, which are attached to the ends of a thong, so as to entangle their legs: it was a fine animated chace. They found the same day 64 of their eggs.

It is now nearly four months since I have received a letter, so you may imagine how anxious I am for tomorrow morning. We are all very curious about politicks: all that we know is that the bill is past: but whether there is a King or a republic, according to the Captain, remains to be proved.

Monte Video.—I have just received your letter of June 28th and Susan's of May 12th. Far from your letters *not* containing news, I am astonished at the wonderful number of events which monthly takes place, and I assure you no half famished wretch ever swallowed food more eagerly than I do letters. I received one from Fox: who seems to have been suffering from much illness: but he now writes in good spirits. Tell Susan her most elegant note of Tournure to Captain Beaufort has trav-

called here. Captain Beaufort included it in a civil note to me, "thinking that at the distance of 6,000 miles, the hand-writing of those dear to us is gratifying". The Captain is evidently a good hand at turning the Kaleidoscope of "thanks", "Gratitude", "compliments", etc. etc. If at any time you want to send me any large letters (including papers etc.) put it under cover to Captain Beaufort and he says he will forward them.

On Monday we run up to Buenos Ayres, as the Captain wants to communicate with the government. We shall stay there for a week. I intend to have some good gallops over the Pampas. I suppose you all well know Head's book:—for *accuracy* and animation, it is beyond praise. After returning here, we stay another week and then for Terra del. [Fuego]. This second cruize will I suppose last between 6 and 9 months: so make up your minds for a gap in my correspondence but *not in yours*. You need be in no fears about directions: till told to alter merely put S. America: all letters for H.M.S. ships pass through the Flag ship, which knows where to send to all on the station. Although my letters do not tell much of my proceedings, I continue steadily writing the journal: in proof of which, the number on the page is now 250. We are now November 11th beating down the river to Monte Video. We stayed a week at Buenos Ayres. I much enjoyed this long *cruise* on shore. The city is a fine large one, but the country beyond everything stupid. I saw a good deal of Mr. Hughes. Nothing could be more obliging than he was: he obtained a great deal of information for me, and has undertaken several troublesome commissions, which otherwise I never could have managed. When we winter in the Plata, I intend taking a long excursion to geologize the Uruguay country, and shall see him again in Buenos Ayres. I think I have infected him with a slight geological mania, which I hope he will encourage. We saw there also a Colonel Vernon, a brother-in-law of Miss Gooch: he is a very agreeable person and has actually come all this distance as a Tour: he intends going by land to Lima, and so by Mexico back to Europe. Very few fine gentlemen undertake such a tour as this. I forget whether I mentioned that during our previous stay at Monte Video, Mr. Hamond

joined us. He is a relation of poor little Musters and a very nice gentlemanlike person. We were generally companions on shore: our chief amusement was riding about and admiring the Spanish ladies. After watching one of these angels gliding down the streets, involuntarily we groaned out "How foolish English women are, they can neither walk nor dress".—And then how ugly Miss sounds after Signorita. I am sorry for you all. It would do the whole tribe of you a great deal of good to come to Buenos Ayres.

November 14th. Monte Video. I have just been again delighted with an unexpected stock of letters. One from Catherine July 25th, from Susan August 15th, from Erasmus 18th. These two last I owe to the change of time of sending them from the Tuesdays to the Fridays. As it is a special favour, thank dear old Erasmus for writing to me and doing all my various commissions. I am sorry the books turn out so expensive and not to be procured. I only knew them from references: of course any travels by those employed in Natural History are preeminently interesting to me. I am become quite devoted to Nat. History: you cannot imagine what a fine miserlike pleasure I enjoy when examining an animal differing widely from any known genus. No school-boy ever opened a box of plum cake so eagerly as I shall mine, but it is a pleasure which will not come for the next 9 months. I am glad the Journal arrived safe: as for showing it, I leave that entirely in your hands. I suspect the first part is abominably childish, if so do not send it to Maer. Also do not send it by the coach, (it may appear *ridiculous* to you), but I would as soon lose a piece of my memory as it. I feel it is of such consequence to my preserving a just recollection of the different places we visit.

When I get another good opportunity I will send some more. The *Beagle* is in a state of wonderful bustle and confusion;—there is not a corner even to the officers' cabins, where food is not stowed. The Captain seems determined that this at least shall not call us back. I look forward with a good deal of interest to Terra del [Fuego]: there are plenty of good anchorages: so that it may blow great guns if it likes, and we can laugh at it. Anything must be better than this detestable Rio Plata. I would much sooner live in a coal-barge in the

Cam.—Hurrah,—(Nov. 24th) have just received the box of valuables. Thank everybody who has had a finger in it, and Erasmus for packing them all up so well. Neither the Captain or myself have received (from some change in packets) any letters. I should have liked to have heard once again that you are all well and safe before my long absence—I may say, from this world. At Buenos Ayres I drew £20 for myself, and here Captain Fitzroy asked me if I could pay a year in advance for my mess. I did so, for I could not, although perhaps I ought, refuse to a person who is so systematically munificent to everyone who approaches him. So that now (one year being gone) am as at first starting two years in advance. Having drawn

[End of letter lost.]

Captain Beaufort presents his compliments to Miss Darwin with the enclosed letter, and perhaps she will pardon the liberty he takes in adding that Captain Fitzroy omits no opportunity of expressing the unqualified satisfaction he feels in Mr. Darwin's society,—& in his last dispatch he says "D. is equally liked & respected by every person in this ship".

Admiralty June 29 .32

This is Captain Beaufort's "elegant note of tournure" which was enclosed.

LETTER NO. 15

[Not previously published]

[To Miss Caroline Darwin]

Falkland Island,
Berkley Sound.

March 30th, 1833.

[—April 12th]

[Postmark Aug. 24—1833]

My dear Caroline,

The *Beagle* will sail in a few days for Monte Video, and as this sheet of paper is very large I have taken good time to begin my letter. It is now four months since my last letter, so I will write a sort of Journal of everything which has since happened. That we might not lose the long days we made a

straight course for the South: my first introduction to the notorious Terra del F was at Good Success Bay, and the master of the ceremonies was a gale of wind. This place was visited by Capt. Cook. When ascending the mountains, which caused so many disasters to Mr. Banks, I felt that I was treading on ground which to me was classic.¹ We here saw the native Fuegian: an untamed savage is I really think one of the most extraordinary spectacles in the world:—the difference between a domesticated and wild animal is far more strikingly marked in Man: in the naked barbarian, with his body coated with paint, whose very gestures, whether they may be peaceable or hostile are unintelligible, with difficulty we see a fellow creature. No drawing or description will at all explain the extreme interest which is created by the first sight of savages. It is an interest which almost repays one for a cruize in these latitudes: and this I assure you is saying a good deal.

We doubled Cape Horn on a beautiful afternoon: it was however the last we were doomed to have for some time. After trying to make head against the westerly Gales, we put into a cove near the Cape. Here we experienced some tremendous weather: the gusts of wind fairly tear up the water and carry clouds of spray. We again put to sea, with no better success, gales succeed gales, with such short intervals, that a ship can do nothing. After 23 days knocking about, we only reached false Cape Horn a few miles distant. The finale gale was worthy of the reputation which this climate since Anson's time, has possessed. The Captain considers it the most severe one he was ever in. We have already heard of two vessels which were wrecked at the very same period. At Breakfast I was remarking that a gale of wind was nothing so very bad in a good sea-boat: the Captain told me to wait till we shipped a sea: it was prophetic: for at noon we shipped a great one, and it is a sight for a landsman to remember. One of our boats was knocked to pieces and was immediately cut away: the water being deep on the deck, it did me an infinity of harm, as it wetted a great deal of paper and dried plants. I suffered also

¹ It is told in *Cook's Voyages*, Vol. I, Chap. IV, how Mr. Banks and Dr. Solander with several men were overtaken by night on a mountain side in the intense cold. Two men lost their lives, and Dr. Solander barely escaped.

much from sea-sickness and yet with all this I am becoming quite hardened: it makes me however, think with greater ecstasy of the warm serene air and the beautiful forms of the Tropics. No disciple of Mahomet ever looked to his seventh heaven with greater zeal, than I do to those regions. Having found good anchorage, we took the Fuegians and Matthews in a flotilla of boats to Jemmy Button's country. Jemmy's relations knew him, but having forgotten his language and being dressed in clothes, they paid no attention to him, and were much more earnest in begging for knives, etc. Having dug a garden and built houses, the Captain went (taking me with him) on a long surveying cruize with two boats: when we returned to the Settlement, things were in a ruinous condition, almost everything had been plundered, and the Fuegians had made such signs to Matthews that the Captain advised him not to stay with them. These Fuegians are Cannibals: but we have good reason to suppose it carried on to an extent which hitherto has been unheard of in the world. Jemmy Button told Matthews a long time since, that in winter they sometimes eat the women:—certain it is the women are in a very small proportion. Yet we could not believe it. But the other day a Sealing Captain said that a Fuegian boy whom he had, said the same thing. Upon being asked "Why no eat dogs?" the boy answered "Dog catch otter:—woman good for nothing: man very hungry." He said they smothered them: it is difficult to disbelieve two such distinct explicit accounts and given by boys. Was ever anything so atrocious heard of, to work them like slaves to procure food in the summer, and occasionally in winter to eat them. I feel quite a disgust at the very sound of the voices of these miserable savages.

This boat expedition was exceedingly interesting: we went about 300 miles, and were absent 23 days. The worst part was the Fuegians being in such large bodies, that we were often obliged to find a quiet sleeping place after it was dark. This often precluded us from the greatest luxury—a shingle beach for a bed. The greater part of the way was in the Beagle Channel, an arm of the sea which connects the Atlantic and Pacific. Some of the scenes from their retirement and others from their desolate air, were very grand. Glaciers descend to

the water's edge: the azure blue of the ice, contrasted with the white snow, and surrounded by dark green forests, were views as beautiful as they were novel to me. An avalanch falling into the water put us for a second in great peril. Our boats were hauled up on the beach, but a great wave rushed onwards and nearly dashed them to pieces: our predicament, without food and surrounded by Savages, would not have been comfortable.

We arrived here in the Falkland Islands in the beginning of this month, and after such a succession of gales that a calm day is quite a phenomenon. We found to our great surprise the English flag hoisted. I suppose the occupation of this place has only just been noticed in the English papers: but we hear all the southern part of America is in a ferment about [it]. By the awful language of Buenos Ayres, one would suppose this great Republic meant to declare war against England! These islands have a miserable appearance: they do not possess a tree: yet from their local situation will be of great importance to shipping: from this cause the Captain intends making an accurate survey. A great event has happened here in the history of the *Beagle*:—it is the purchase of a large Schooner, 170 tons, only 70 less than the *Beagle*. The Captain has bought it for himself, but intends writing to the Admiralty for men, etc. etc. Wickham will have the command: it will double our work, perhaps shorten our cruize, will carry water and provisions, and in the remote chance of fire or sticking on a Corall reef, may save many of our lives. It is the present intention to take the Schooner to the Rio Negro, and there to refit, whilst the *Beagle* goes to Monte Video: if so I shall stay at the former place: as it is a nice wild place, and the Rio Plata I detest. I have been very successful in geology: as I have found a number of fossil shells in the very oldest rocks which ever have organic remains. This has long been a great desideratum in geology, viz the comparison of animals of equally remote epocks at different stations in the globe. As for living creatures, these wretched climates are very unfavourable: yet I have the great satisfaction to find my powers of examining and describing them have increased at a great pace. As for our future plans I know nothing: circumstances alter them daily. I believe we

must have one more trip to the South, before finally going round the Horn, or rather passing the St. of Magellan, for the Captain had enough of the great sea at the Cape to last him all his life. I am quite astonished to find I can endure this life: if it was not for the strong and increasing pleasure from Nat. History I never could.

It is a tempting thought to fancy you all round the fire and perhaps plaguing Granny¹ for some music. Such recollections are very vivid, when we are pitching bows under and I seasick and cold. Yet if I was to return home now, I should feel as if there had been no interval of time: I suppose it is from having so thoroughly made up my mind for a long absence.

March 8th. We have just had our usual luck in a heavy gale of wind: but I won't write any more for I have not half got over my sea-sickness, and am ready to exclaim all is vanity and vexation of spirit.

April 12th. Of this same vexation of spirit there is an abundance in a ship: it is paying a heavy price, but not too dear, to see all which we see: but such scenes it would be impossible to behold by any other means:—and for the zeal which this voyage has given me for every branch of Natural History I shall never cease being glad.

Wickham will be a heavy loss to this vessel: there is not another in the ship worth half of him. Hamond also, who lately joined the *Beagle*, from stammering and disliking the service, intends leaving it altogether. I have seen more of him than any other one, and like him accordingly. I can very plainly see there will not be much pleasure or contentment till we get out of these detestable latitudes, and are carrying on all sail to the land where Bananas grow. Oh those realms of peace and joy: I trust by this time next year, we shall be under their blue sky and clear atmosphere. At this instant we are shortening sail, as by the morning we expect to be in sight of the mouth of the Rio Negro. I send by the *Beagle* (if I stay behind) a bill for £60: I owe some little money and I hope to live on shore at the Rio Negro. I shall get your letters in about a month's time: a pleasure which thanks to you all never fails me. With my

¹ His sister Susan.

most affectionate love to my Father and to all of you and may you all be happy.

Believe me my dear Caroline,

Yours very sincerely,

Chas. Darwin.

I have drawn a bill of £70. I shall stay nearly two months at the R. Negro.

The story of Jemmy Button and the two other Fuegians, York Minster and Fuegia Basket, whom FitzRoy had taken on the earlier expedition, is told more fully in Part III, p. 170. He had educated them in England for the intervening years and was now returning them to their native country. Also there are more details of the adventure of the big wave, p. 176.

LETTER NO. 16

[Mostly printed in *Life and Letters*, Vol. I, p. 244]

[To Miss Catherine Darwin]

MALDONADO.

RIO PLATA.

May 22nd 1833.

[— July, 1833]

My dear Catherine,

Thanks to my good fortune and my good sisters I have to acknowledge the following string of letters: (August I received many months ago); September 12th Caroline: October 14th Catherine, November 12th Susan: December 15th Caroline: and January 13th Caroline. My last folio letter was dated on the sea: after being disappointed at the Rio Negro, the same foul winds and ill fate followed me to Maldonado: so that the *Beagle* proceeded direct to M. Video. Here we remained only one night, when I received your four first letters. I really had not time to open and alter my letter, but sent it as it was. Leaving M. Video we came directly to Maldonado, I the next day took up my residence on shore. The *Beagle* has not yet returned (for she went again there) from M. Video, and I know nothing of our future plans: the purchase of the Schooner has so altered everything. I have been living here for the last three weeks: it is a quiet little village, surrounded on

all sides by the endless succession of green turf hills and stony ridges. I have had one little excursion which I enjoyed very much: I procured two trustworthy men and a troop of horses and have had a twelve days' ride into the interior: the country continues very similar; so that one dreadfully misses the georgeous views of Brazil. I saw however a good deal of the Gauchos; a singular race of countrymen. "Head's gallop" gives a most faithful picture: nothing can, I think, be more spirited & just than his remarks.

Besides your letters, I received several others:—one from Charlotte, two from Fox; also one of the very kindest I ever received in my lifetime from Mrs. Williams. I am very sorry to hear from your latter letters, that she has lost so much of the Owen constitution: I am very sure that with it, none of the Owen goodness has gone.

I most devoutly trust that next Summer (your Winter) will be the last on this side of the Horn: for I am become thoroughly tired of these countries: a live Megatherium would hardly support my patience; the good people of Shropshire who say I shall find cruizing in the South-seas stupid work, know very little of the numberless invertebrate animals, which abound in the intertropical ocean. If it was not for these and still more for Geology, I would in a short time make a bolt across the Atlantic to good old Shropshire. In for penny in for pound:—I have worked very hard (at least for me)—at Nat. History, and have collected many animals, & observed many geological phenomena; & I think it would be a pity, having gone so far, not to go on and do all in my power in this my favourite pursuit; & which I am sure will remain so for the rest of my life.

The following business piece is to my Father: having a servant of my own would be a really great addition to my comfort,—for these two reasons; as at present, the Captain has appointed one of the men always to be with me, but I do not think it just thus to take a seaman out of the ship;—and 2nd when at sea, I am rather badly off for anyone to wait on me. The man is willing to be my servant, & ALL the expences would be under £60 per annum. I have taught him to shoot & skin birds, so that in my main object he is very useful. I have now

left England nearly $1\frac{1}{2}$ years: & I find my expenses are not above £200 per annum:—so that it being hopeless (from time) to write for permission, I have come to the conclusion you would allow me this expence. But I have not yet resolved to ask the Captain: and the chances are even that he would not be willing to have an additional man in the ship. I have mentioned this because for a long time I have been thinking about it.¹

June:—I have just received a bundle more letters.—I do not know how to thank you all sufficiently:—one from Catherine Feb. 8th:—another from Susan March 3rd, together with notes from Caroline & from my Father. I almost cried for pleasure at receiving it—it was very kind, thinking of writing to me. My letters are both few, short and stupid in return for all yours; but I always ease my conscience by considering the Journal as a long letter. If I can manage it, I will before doubling the Horn, send the rest. I am quite delighted to find the hide of the Megatherium has given you all some little interest in my employments. These fragments are not however by any means the most valuable of the Geological relics. I trust & believe that the time spent in this voyage, if thrown away for all other respects, will produce its full worth in Nat. History. And it appears to me, the doing what *little* one can to encrease the general stock of knowledge, is as respectable an object of life, as one can in any likelihood pursue. It is more the result of such reflections (as I have already said) than much immediate pleasure, which now makes me continue the voyage: together with the glorious prospect of the future, when, passing the Strait of Magellan, we have in truth the world before us. Think of the Andes; the luxuriant forest of the Guayquil, the islands of the South Seas, & New South Wales. How many magnificent & characteristic views, how many & curious tribes of men we shall see,—what fine opportunities for geology and for studying the infinite host of living beings:—is not this a prospect to keep up the most flagging spirit? If

¹ Sims Covington, who started on the voyage as "Fiddler and Boy to the Poop Cabin," became his servant in the second year, thus releasing him from much of the drudgery of the collector. Old Robert gave his willing consent to the arrangement.

I was to throw it away, I don't think I should ever rest quiet in my grave; I certainly should be a ghost & haunt the Brit. Museum.

How famously the Ministers appear to be going on; I always much enjoy political gossip, & what you at home think will etc etc take place. I steadily read up the weekly Paper; but it is not sufficient to guide one's opinion: and I find it a very painful state not to be as obstinate as a pig in politicks. I have watched how steadily the general feeling, as shown at elections, has been rising against Slavery.—What a proud thing for England, if she is the first Europæan Nation which utterly abolishes it. I was told before leaving England, that after living in Slave countries, all my opinions would be altered; the only alteration I am aware of is forming a much higher estimate of the Negro character. It is impossible to see a Negro, and not feel kindly towards him; such cheerful, open, honest expressions & such fine muscular bodies. I never saw any of the diminutive Portuguese, with their murderous countenances, without almost wishing for Brazil to follow the example of Hayti; and considering the enormous healthy looking population, it will be wonderful if at some future day it does not take place. There is at Rio a man (I know not his titles) who has large salary to prevent (I believe) the landing of slaves: he lives at Botofogo, & yet that was the bay, where during my residence, the greater number of smuggled slaves were landed. Some of the Anti-slavery people ought to question about his office; it was the subject of conversation at Rio amongst some of the Lower English.

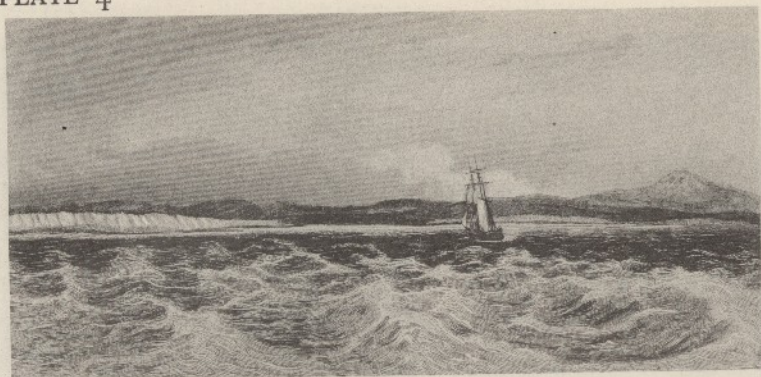
June 19th. I write this letter by patches:—I have just spent a day on board to see old Wickham, who has returned from his little hired Schooner to be Captain of the new one. This same Schooner will produce the greatest benefits to me. The Captain, always anxious to make everybody comfortable, has given me all Stokes' (who will be in the Schooner) drawers in the Poop cabin, and for the future nobody will live there except myself. I absolutely revel in room: I would not change berths with anyone in the ship. The cause of our very long delay here is coppering the Schooner: as soon as this is finished, the *Beagle* will go for a month to Rio Negro, return to the R. Plata

& take in provisions for the whole summer. The Captain is anxious to then be able to pass on to Concepcion on the other side. I am ready to bound for joy at the thoughts of it:—Volcanic plains: beds of Coal: lakes of Nitre, and the Lord only knows what more. If this was certain I would hatch a grand plan, viz. of now remaining behind, & posting up to Buenos Ayres; I heard of so many curious things there; per contrà at R. Negro cliffs almost built of fossil shells. Was ever a Philosopher (my standard name on board) placed between two such bundles of Hay? The worst of it is the B. A. bundle is rather expensive, & nearly all the £70 is gone in paying what I owed, & in my long residence here.—And then the mere reading the sum total from July 31 to 32 is enough to give one an indigestion: what it must have been to have paid it, I don't know. I shall go on board—in a week's time, and then I shall know more. [July] 6th. I am now living on board: the packet has just come in, but no letter for poor me; I have no right to growl, for I suppose the Captain Beaufort parcel has robbed this month. Farewell for the future to regular correspondence. You must direct hereafter to Valparayso. Our plans are (always wind and waves permitting) to go for a month to the banks off the Rio Negro, return to the Plata; find the Schooner ready, take in at M. Video one year's provisions, and hark away to the land of storms; in the Autumn (your Spring), pass the Straits of Magellan: I am ready to bound for joy at this prospect, I long to bid adieu to the Atlantic. Already I almost fancy I see through a long vista of storms, the blue sky of the Tropics.—I wrote the other day to Mr. Hughes at Buenos Ayres, and I am sorry to hear he has left that place, chiefly from ill-health. I have asked the Captain & obtained his consent respecting a servant,—but he has saved me much expence by keeping him on the books for victuals, & will write to the Admiralty for permission. So that it will not be much more than £30 per annum. I shall now make a fine collection in birds & quadrupeds, which before took up far too much time. We here got 80 birds and 20 quadrupeds. Tell Caroline to thank Charlotte very much for writing to me. When we are on the other side, I shall have more to say, and will then write to thank her. I have lost all



Woollaston Island, near Cape Horn

PLATE 4



Berkeley Sound and Port Louis, Falkland Islands

interest in this part of America, and I feel more inclined to growl than write civilly to any-body.

July 14th. We have just had a trip to Monte Video, & in a few days go Southwards: I received a letter of Caroline, May 1st: my last was the Beaufort parcel in March; the April one alas is lost: *excepting* when the letters are sent from *home*, remember the 3s. 6d. is temptation for any-body to tear up the letter. By the same packet which takes this, the rest of my journal will arrive, through Capt. Beaufort;—so if it does not come, you will know where to enquire about it. The journal latterly has not been flourishing, for there is nothing to write about in these well-known uninteresting countries. The letter ought to have made as it were two distinct ones: but when living on shore, I did not hear of conveyance to M. Video. Once more I must thank you all for writing: it is so very delightful having a regular correspondence. Give my love to my Father & Erasmus & all of you: God bless you all, my dear Katty:—your most affectionately,

Chas. Darwin.

P.S. When you read this, I am afraid you will think that I am like the Midshipman in Persuasion, who never wrote home, *excepting* when he wanted to beg; it is chiefly for more books, those most valuable of all valuable things:—“Fleming’s philosophy of Zoology”, and “Pennant’s Quadrupeds”;—these I have at home: “Davy’s consolation on Travel”; “Scoresby, Arctic regions”: “Playfair & Hutton, Theory of the earth”: “Burchel’s travells”: “Paul Scroope on Volcanoes”: a pamphlet by T. Dalyell,—Observations on the Planariae, Edinburgh; “Caldcleugh’s travels in S. America”. If any of these books are expensive, strike them out. Tell Erasmus I shall be very much obliged, if with my Father’s consent, he will undertake the commission. If the 8th Vol. of Humboldt, or Sedgwick and Conybeare’s geological book is out, I should like them both. You people at home cannot appreciate the exceeding value of Books. Carry has 3s. 6 tape measure of about $1\frac{1}{2}$ feet. I have lost mine: I have at present a double convex lens, fitted to the object-glass, and about one inch in diameter; now I want one on a larger scale, and with longer focal distance,

for illuminating opake objects: it must be fixed on a stand, with plenty of motions. I want to use it by placing it near the microscope, & thus have steady light on opake objects. I daresay an Optician must have made some such contrivance. Also another box of Promethians (I blush like this red¹ ink when I ask for it), but the Natives here are so much astounded at them, that I have wasted a great many:—& lastly 4 pairs of very strong walking shoes from Howell if he has my measure; it is impossible to procure them in this country.

I guess, as the Yankys say, this [is] a pretty considerable tarnation impudent Postscript: I have no doubt Capt. Beaufort will undertake to forward the box to Valparaiso.

LETTER NO. 17

[Not previously published]

[To Miss Caroline Darwin]

BUENOS AYRES.

September 20 [1833]

Dear Caroline,

I have just returned from a grand expedition; as a merchant vessel sails tomorrow for Liverpool, I will write as much as I can before I go to bed. The *Beagle* after leaving Maldonado, sailed for the Rio Negro. When [there] I determined to go by land to Bahia Blanca & wait for the vessel; & subsequently having heard that the country was tolerably safe, I proceeded on to the city. It is a long journey, between 500 & 600 miles, through a district till very lately never penetrated except by the Indians, & never by an Englishman. There is now a bloody war of extermination against the Indians. The Christian army is encamped on the Rio Colorado; in the progress, a few months since, from Buenos Ayres, General Rosas left at every 10 or 15 leagues, 5 soldiers & a troop of horses. When I was at the Colorado the General gave me an order for these horses:—so fair an opportunity for Geology was not to be neglected, so that I determined to start at all hazards. The horses &c were all gratis. My only expence (about £20) was

¹ The Post-script is "crossed" in redder ink.

hiring a trusty companion.—I am become quite a Gaucho, drink my Mattee & smoke my cigar, & then lie down & sleep as comfortably with the Heavens for canopy, as in a feather bed. It is such a fine healthy life; on horse-back all day, eating nothing but meat, & sleeping in a bracing air, one awakes as fresh as a lark. From Rio Negro to the Colorado, it is a dreary uninhabited camp, with only two brackish springs:—from the latter place to Bahia Blanca there are the *Postas*.—From Bahia Blanca to the Rio Salado the *Postas* are irregular, & excepting these, there is not an habitation.—There is sometimes an hovel & sometimes not, & the soldiers live entirely on deer & ostriches. The wildness & novelty of this journey gave it great interest to me, & the danger is not nearly so great as it appears, for the Indians are now all collecting in the Cordilleras for a great battle this Summer. I stopped two days to examine the Sierra da Ventana, a curious mountain which rises in the vast plain; the ascent was excessively fatiguing, & there was but little to reward one for the trouble.—The plain merely resembles a sea without its beautiful colour. At the Guardia del Monte, I found some more of the armour of the giant Megatherium, which was to me very interesting, as connecting the Geology of the different parts of the Pampas. I likewise at Bahia Blanca found some more bones more perfect than those I formerly found,—indeed one is nearly an entire skeleton.

The *Beagle* is now at Monte Video or Maldonado. I received a letter from the Captain, enclosing one from Catharine dated London, May 29th. As I have not my letter-case here, I cannot say whether I received the April one.—I shall soon be on horse-back again; there is a river to the North (the Carcarana) the banks of which are so thickly strewed with great bones, that they build part of the Corral with them. Every person has observed them, so they must be very numerous. I shall then return to M. Video, & join the *Beagle*. At the latter end of next month she sails for the Straits of Magellan, & likewise pays the Falkland Islands another visit. I am now living in the house of a most hospitable English merchant:—it appears quite strange writing in an English furnished room, & still more strange to see a lady making tea. I shall be obliged to draw rather largely for money. I do it

with more confidence, as I know for certain after leaving the Plata, there will be 5 or 6 months of Southern economy.—I cannot at present say exactly what sum. Travelling is very cheap in this country; the only expence is procuring a trusty companion, but in that depends your safety, for a more throat-cutting gentry do not exist than these Gauchos on the face of the world. It is now the Spring of the year, & everything is budding & fresh: but how great a difference between this & the beautiful scenes of England. I often think of the Garden at home as a Paradise: on a fine summer evening, when the birds are singing, how I should enjoy to appear like a ghost among you, whilst working with the flowers.—These are pleasures I have to view, through the long interval of the Pacific & Indian oceans.

Good bye, God bless you all.—My dear Caroline, when shall we have a ride together? Yours most affectionately,

Chas. Darwin.

Give my very best love to my Father.

LETTER NO. 18

[Not previously published]

[To Miss Caroline Darwin]

BUENOS AYRES.

October 23rd, 1833

Dear Caroline,

A vessel will sail in an hour's time to Liverpool, & I will write as much as I can. I have just returned from an adventurous tour. I think I mentioned my intention of starting to the Northern parts of the Province.—I by chance procured Capt. Head's peon, & arrived after a rapid gallop at St. Fé—about 300 miles to the North: it was an interesting ride & good opportunity of seeing the real sea-like Pampas. At St. Fé I was most unfortunately rather unwell, so as to be unable to ride. I crossed over to the Bajada, the Capital of Entre Rios, & there staid some days; but finding so much time lost, I was obliged to embark on board a vessel down the Parana.—This immense river, with its islands full of Tigers and Capin-

chos, is so very great as to appear only like an oblong lake. When we arrived near Buenos Ayres, I left the vessel with the intention of riding into town. The minute I landed I was almost a prisoner, for the city is closely blockaded by a furious cut-throat set of rebels. By riding about (at a ruinous expence) amongst the different generals, I at last obtained leave to go on foot without passport into the city. I was thus obliged to leave my Peon & luggage behind; but I may thank kind providence I am here with an entire throat. Such a set of misfortunes I have had this month, never before happened to poor mortal. My servant (Covington by name & most invaluable I find him) was sent to the Estancia of the Merchant whose house I am staying in:—he the other day nearly lost his life in a quicksand, & my gun completely. We now hear the house is ransacked (& probably his clothes all stolen!). Communication with the country is absolutely cut off—he cannot come into town, & the *Beagle* before long sails to the South. Here is a pretty series of misfortunes, & there are plenty of smaller ones to fill up the gaps. I drew a bill a month ago for £80; I am very sorry to say I shall be obliged to draw another one, from the great unexpected misfortunes. After my Father's first great growl is over, he must recollect we shall be now 8 months to the South, where as last time I can neither spend or draw money,—the only security I can give which will be trusted.

Independent of all these uncommon mortifications & my illness at St. Fé preventing my return by the Rio Uruguay, through a most interesting Geological country, the tour answered well. It is quite magnificent when I consider I have ridden nearly 800 miles in a North & South direction, & the greater part through country most imperfectly known.

We are in a pretty state in this nice city,—they think nothing of cutting the throats of 30 prisoners whom they happened to take the other day:—& they are right; for what is it, to quietly stabbing all the Indian women above 20 years old or younger if ugly.—Oh these Creoles are such a detestably mean unprincipled set of men as I hope the world does not contain the like. There literally is only one Gentleman in Buenos Ayres, the English Minister. He has written to order the

Beagle up. But we sail under such particular instructions, I know not whether the Captain will come. If he does, all will be right about Covington; otherwise I shall be obliged to send some small vessel or body to smuggle him off the coast. In fact I am in a pretty pickle. I wish the confounded revolution Gentlemen would, like Kilkenny Cats, fight till nothing but the tails are left. Some of the good people expect the town to be plundered.—Which will [be] a very amusing episode to me. I will write again.

Chas. Darwin.

I sent home by Captain Beaufort about 2 or 3 months ago, some more of my Journal. Be sure acknowledge it, & in more than one letter.

LETTER NO. 19

[Not previously published]

[To Miss Caroline Darwin]

MONTE VIDEO.

November 13th.

1833

My dear Caroline,

I have to thank you for a letter dated September 1st & one from Susan July 22nd. Since I wrote from Buenos Ayres, I have suffered a host of vexations, but at last everything has ended prosperously. I with much trouble & by bribing, got my servant in to the town & then started for this place, almost expecting the *Beagle* to have sailed. I now find to my astonishment she will remain three weeks more in the river.—And here comes the whole purport of my letter, to announce more extravagance. I have really now been struggling for a whole week, but there is a very interesting geological formation on the coast of the Uruguay, & every day I hear of more facts respecting it. When I think I never shall be in this country again, I cannot bear to miss seeing one of the most curious pieces of Geology. I wish any of you could enter into my feelings of excessive pleasure which Geology gives as soon as one *partly understands* the nature of a country. I have drawn a bill for £50. I well know that considering my outfit, I have spent this year far more than I ought to do. I should be very

glad if my Father would make a real account against me, as he often says jokingly. I hope he will not think I say this impertinently; the sort of interest I take in this voyage, is so different a feeling to anything I ever knew before, that, as in this present instance, I have made arrangements for starting, all the time knowing I have no business to do it. I wish the same feeling did not act so strongly with the Captain. He is eating an enormous hole into his capital for [the] sake of advancing all the objects of the voyage. The Schooner, which will so very mainly be conducive to our safety, he entirely pays for.

I have just packed up a large box of specimens. I send home nearly 200 skins of birds & the smaller quadrupeds & a fine set of fossil bones. There is one skeleton, sufficiently mutilated, of an animal, of which I do not think there exists at present on the globe any relation. I am now living on shore in the house of an English merchant; as they are so busy chart-making on board that they would have nothing to say to me till this Packet sails. The whole coast of Patagonia is now completed, & please Providence, we trust by late in the Autumn to say the same of Tierra del Fuego. Poor Earl has never been well since leaving England, & now his health is so entirely broken up that he leaves us;—a Mr. Martens, a pupil of C. Fielding & excellent landscape drawer, has joined us. He is a pleasant person, & like all birds of that class, full up to the mouth with enthusiasm.

We are all beginning to long for "blue water", & I am sure I do, if it is merely to prevent my spending money. My present scheme is not a very great one. I go to Colonia del Sacramento, then up the coast of the Uruguay; to the R. Negro to the town of Mercedes; from thence back in direct line to M. Video or perhaps to the lime kilns at Paysandu, 25 leagues up the Uruguay. The whole round will be under 400 miles, & the whole country inhabited. There is peace at last at Buenos Ayres, so that I have lost very little of my property. Do you ever hear in England of these revolutions, which are considered as so important in this poor country? It is late. I am not in a writing humour, so I will wish you good night.

Give my love [to] all & my thanks for all the long & very nice letters. I will write again before we sail.

Yours very affectionately,

Love to Nancy.¹

Chas. Darwin.

LETTER NO. 20

[Mostly published in *Life and Letters*, Vol. I, p. 251]

[To Miss Catherine Darwin]

EAST FALKLAND ISLAND.

April 6th, 1834

My dear Catherine,

When this letter will reach you I know not—but probably some Man of war will call here before, in the common course of events I should have another opportunity of writing. I have received your letter dated September 27th, 1833, & Caroline's before that. Since leaving the Plata we have had pretty fine weather, & a very pleasant cruize. The gales have not been half so spiteful or so furious this year as last. We reached Port Desire without one, & there we stayed for about three weeks. We also went to Port St. Julian. I was exceedingly glad to have these opportunities of seeing Patagonia; it is a miserable country; great sterile plains abounding with salt & inhabited by scarcely any animals except the Guanaco.² I was very lucky and managed to kill a couple of these animals: one of which gave us fresh meat for dinner on Christmas day. The Geology of this district abounds with interest; the recent elevation of this whole side of S. America can be most clearly proved. At Port St. Julian I had the good fortune to find some very perfect bones of what I believe is some sort of Mastodon or Elephant.

There is nothing like Geology; the pleasure of the first day's partridge shooting or first day's hunting cannot be compared to finding a fine group of fossil bones, which tell their story of former times with almost a living tongue.

After entering the Sts of Magellan, we had a very inter-

¹ Nancy was his old nurse.

² The S. American lama.

esting interview with the Patagonians, the giants of the older navigators. They are a very fine set of men, & from their large Guanaco mantles & long flowing hair, have a very imposing appearance. Very few, however, were over 6 feet high, but broad across the shoulders in proportion to this. They have so much intercourse with Sealers & Whalers, that they are semi-civilized. One of them who dined with us eat with his knife & fork as well as any gentleman. Many of them could talk a little Spanish. For observations we ran on to Port Famine; justly so called from the terrible sufferings of Sarmiento's colony. Of this there is not now the least vestige: everything is covered up by the deep entangled forest of Beech. We then returned to the outside coast, & completed the Chart of the Eastern side. When this was finished, after visiting some of the Southern islands, we beat up through the magnificent scenery of the Beagle Channel to Jemmy Button's country. We could hardly recognize poor Jemmy; instead of the clean well-dressed stout lad we left him, we found him a naked thin squalid savage. York & Fuegia had moved to their own country some months ago; the former having stolen all Jemmy's clothes. Now he had nothing excepting a piece of blanket round his waist. Poor Jemmy was very glad to see us & with his usual good feeling brought several presents (otter skins which are most valuable to themselves) for his old friends. The Captain offered to take him to England, but this to our surprise, he at once refused: in the evening his young wife came alongside & showed us the reason. He was quite contented; last year in the height of his indignation, he said, "his country, people no *sabe* nothing;—damned fools." Now they were very good people, with *too* much to eat & all the luxuries of life. Jemmy & his wife paddled away in their canoe loaded with presents & very happy. The most curious thing is that Jemmy instead of recovering his own language, has taught all his friends a little English: "J. Button's canoe & Jemmy's wife come"; "give me knife" etc., was said by several of them. We then bore away for this island,¹—this little miserable seat of discord. We found that the Gauchos under pretence of a revolution, had murdered & plundered all the Englishmen

¹ E. Falkland Island.

whom they could catch, & some of their own countrymen. All the economy at home makes the foreign movements of England most contemptible: how different from old Spain. Here we, dog-in-the-manger fashion, seize an island & leave to protect it a Union Jack; the possessor has been of course murdered; we now send a Lieutenant with four sailors, without authority or instructions. A man of war, however, ventured to leave a party of Marines, & by their assistance & the treachery of some of the party, the murderers have all been taken:—there being now as many prisoners as inhabitants. This island must someday become a very important halting place in the most turbulent sea in the world; it is midway between Australia & South Seas, to England. Between Chili, Peru etc. & the Rio Plata & Rio de Janeiro. There are fine harbours, plenty of fresh water & good beef: it would doubtlessly produce the coarser vegetables. In other respects it is a wretched place. A little time since I rode across the island & returned in four days: my excursion would have been longer, but during the whole time it blew a gale of wind with hail & snow; there is no fire wood bigger than Heath, & the whole country is more or less an elastic peat bog. Sleeping out at night was too miserable work to endure it for all the rocks in South America. We shall leave this scene of iniquity in two or three days & go to the Rio de la St. Cruz: one of the objects is to look at the ship's bottom. We struck rather heavily on an unknown rock off Port Desire, & some of her copper is torn off. After this is repaired, the Captain has a glorious scheme: it is to go to the very head,—that is probably to the Andes,—of this river. It is quite unknown; the Indians tell us it is two or three hundred yards broad & horses can nowhere ford it! I cannot imagine anything more interesting. Our plans are then to go to Port Famine & there we meet the *Adventure*, who is employed in making the chart of the Falklands. This will be in the middle of Winter, so I shall see Tierra del [Fuego] in her white drapery. We leave the Straits to enter the Pacific by the Barbara Channel, one very little known, & which passes close to the foot of Mount Sarmiento (the highest mountain in the South, excepting Mt. !! Darwin!!). We then shall scud away for Concepcion in Chili. I believe the ship must once again steer

Southward, but if anyone catches me there again, I will give him leave to hang me up as scarecrow for all future naturalists. I long to be at work in the Cordilleras; the Geology of this side, which I understood pretty well, is so intimately connected with periods of violence in that great chain of mountains. The future is indeed to me a brilliant prospect; you say its very brilliancy frightens you; but really I am very careful. I may mention as a proof, in all my rambles, I have never had any one accident or scrape.

And now for some queries. Have you received a small square deal box, with part of my Journal, sent from the Plata in July 1833? (Through Captain Beaufort). Acknowledge it in more than one letter: recollect what a *bobbery* (a sea phrase) I made about the other parcel. I received a box with some delightful books & letter from Henslow: did Erasmus send it? There was not even a list of the books & I know not whom to thank. There is an Hon. Col. Walpole, consul-general at St. Jago de Chili. Have I not heard of some such man at Walcot? What sort of person is he? I do not recollect anything more to say: not having any apologetical messages about money is nearly as odd a feature in my letters, as it would have been in Dick Musgrove's. I am afraid it will be, till we cross the Pacific, a solitary exception.

Remember me most affectionately to all the Owens. Tell dear Fanny I do not know how to thank her at this distance for remembering me. Continue in your good custom of writing plenty of gossip: I much like hearing all about all things. Remember me most kindly to Uncle Jos & to all the Wedgwoods. Tell Charlotte (their married names sound downright unnatural) I should like to have written to her, to have told her how well everything is going on. But it would only have been a transcript of this letter, & I have a host of animals, at this minute, surrounding me, which all require embalming & numbering. I have not forgotten the comfort I received that day at Maer, when my mind was like a swinging pendulum.

Give my best love to my Father. I hope he will forgive all my extravagance,—but not as a Christian—for then I suppose he would send me no more money.

Good bye dear Katty to you & all the goodly sisterhood.
 Your affectionate brother,
 Chas. Darwin.

My love to Nancy. Tell her if she was now to see me with my great beard, she would think I was some worthy Solomon come to sell the trinkets.

I have enclosed a letter of my servant's, will you pay the postage & forward it: by being my servant he looses the penny priviledge, & his friends cannot afford 3/6.

LETTER NO. 21

[*Not previously published, except short extract*]

[*To Miss Catherine Darwin*]

A 100 miles South of Valparaiso.

Sunday

July 20th, 1834.

My dear Catherine,

Being at sea and the weather fine, I will begin a letter which shall be finished when we arrive in Port. I have received the whole series of letters up to yours of November, 1833. I wrote last from the Falkland Islands (where the *Conway* left for us a letter Bag); in this I mentioned receiving a Box: which must have come from Henslow. The next Man of War that comes round the Horn will bring the one from you. We left the Island of Chiloe a week since; for which place a succession of gales compelled us to bear up. We stayed there some days in order to refresh the men. Pigs and potatoes are as plentiful as in Ireland. With the exception of this weighty advantage, Chiloe, from it's climate, is a miserable hole. I forget whether you were at home when my friend Mr. Proctor was there, and told us about the place where his Uncle says it never ceases to rain. I am sure he must have meant Chiloe.

Altogether the last six months since leaving the Plata has been a most prosperous cruize. Much as I detest the Southern Latitudes, I have been enabled during this period, to do so much in Geology and Natural History, that I look back to Tierra del Fuego with grateful and almost kindly feelings. You asked me about the specimens which I send to Cambridge. I collect every living creature which I have time to catch and

preserve: also some plants. Amongst Animals, on principle I have lately determined to work chiefly amongst the Zoophytes or Coralls; it is an enormous branch of the organized world, very little known or arranged, and abounding with most curious yet simple forms of structures.

But to go on with our history; when I wrote from the Falklands we were on the point of sailing for the St. Cruz on the coast of Patagonia. We there looked at the *Beagle's* bottom: her false keel was found knocked off, but otherwise not damaged. When this was done, the Captain and 25 hands in three boats proceeded to follow up the course of the river of St. Cruz. The expedition lasted three weeks: from want of provisions we failed reaching as far as was expected, but we were within 20 miles of the great snowy range of the Cordilleras: a view which has never before been seen by Europæan eyes. The river is a fine large body of water; it traverses wild desolate plains, inhabited by scarcely anything but the Guanaco. We saw in one place smoke and tracks of the horses of a party of Indians: I am sorry we did not see them, they would have been out and out wild Gentlemen. In June, in the depth of winter, we beat through the Straits of Magellan: the great chain of mountains in which Sarmiento stands presented a sublime spectacle of enormous piles of snow. Scenery, however, is not sufficient to make a man relish such a climate. We passed out by the Magdalen Channel, an unfrequented and little known exit: on our passage up, before we were driven into Chiloe, Mr. Rowlett the purser died, having gradually sunk under a complication of diseases.

So much for the past: our future plans are as yet very uncertain. After Valparaiso, we shall go to Coquimbo to refit. Here the climate is fine, but everything else bad: the desert of Peru may be said to extend so far South, where mankind is only enticed to live by the richer metals. Next summer there is a good deal of work to be done behind and around Chiloe: how far I shall accompany the vessels I do not yet know.

Amongst all the things you and Susan have told me in the last letters, you do not even mention Erasmus: I hope the good lazy old gentleman is alive. Tell him I should like very much

to have one more letter from him: perhaps the box will bring one: if he would write to me four letters during the whole voyage, I would not grumble at all. As for all of you, you are the best correspondents a brother, 3,000 miles off, ever had. I wish you could inspire Erasmus with a little of the superabundance of your virtues. I am afraid he thinks your stock is sufficient for the whole family. I am much pleased to hear my Father likes my Journal: as is easy to be seen, I have taken too little pains with it. My Geological notes and descriptions of animals I treat with far more attention: from knowing so little of Natural History when I left England, I am constantly in doubt whether these will have any value. I have, however, found the Geology of these countries so different from what I read about Europe, and in consequence when compared with it so instructive to myself, that I cannot help hoping that even imperfect descriptions may be of some general utility. Of one thing I am sure; that such pursuits are sources of the very highest pleasures I am capable of enjoying. Tell my Father also, how much obliged I am for the affectionate way he speaks about my having a servant. It has made a great difference in my comfort: there is a standing order in the ship that no one excepting in civilised ports leaves the vessel by himself. By thus having a constant companion I am rendered much more independent in that most dependent of all lives, a life on board. My servant is an odd sort of person: I do not very much like him: but he is perhaps from his very oddity, very well adapted to all my purposes.

July 29th. Valparaiso. I have again to thank you all for being such good sisters as you are. I have just received three letters, one from each of you, in due order: the last being from Susan, February 12th. Also the box of books with sundry notes and letters. I am much obliged for your chain; I wear Caroline's pencil case suspended by it round my neck. Thank Granny for her purse. The little political books are very popular on board: I have not had time yet to read any of them. Everything came right in the box: the shoes are invaluable; tell Erasmus he is a very good old gentleman for doing all my commissions, but he would be still better if he would write once again:—four letters are too much, it will frighten him, so I

will change my demand into two, and they may be as short as he likes, so that they really come from him. One other message and I have done, it is to my Father that I have drawn a bill of £80. I must now hold out, as the only economical prospect, the time when we cross the South Seas. I hope this will not be considered as a little "South Sea scheme".

Valparaiso is a sort of London or Paris, to any place we have been to. It is most disagreeable to be obliged to shave and dress decently. We shall stay here two months, instead of going Northward, during which time the ship will be refitted and all hands refreshed. You cannot imagine how delightful the climate feels to all of us, so dry, warm and cheerful: it is not here as in Tierra del Fuego, where one fine day makes one fear the next will be twice as bad as usual. The scenery wears such a different aspect, I can sit on the hills and watch the setting sun brighten the Andes, as at Barmouth we used to look at Cader Idris. The time of year, being now winter, is very unfortunate for me: it is quite hopeless to penetrate the Cordilleras. There is a mountain near here, at Quillota, 4700 feet high. I am going in a few days to try to ascend it: I fear however the snow will be too thick. R. Corfield is living here: I cannot tell you how very obliging and kind he is to me. He has a very nice house and before long I am going on shore to pay him a visit; he presses me most good-naturedly to make his house my headquarters. I have had some long and pleasant walks in the country; I am afraid it is not a very good place for Natural History; after my first ride I shall know more about it. I have received two letters from Henslow, he tells me my treasures have arrived safe, and I am highly delighted at what he says about their value. What work I shall have when I return: there will be a glorious mass of what Wickham calls d—d beastly devilment. Although Wickham always was growling at my bringing more dirt on board than any ten men, he is a great loss to me in the *Beagle*. He is far the most conversible being on board, I do not mean talks the most, for in that respect Sullivan quite bears away the palm. Our new artist, who joined us at M. Video, is a pleasant sort of person, rather too much of the drawing-master about him: he is very unlike to Earl's eccentric character.

We all jog on very well together, there is no quarrelling on board, which is something to say. The Captain keeps all smooth by rowing everyone in turn, which of course he has as much right to do, as a gamekeeper to shoot Partridges on the 1st September.

When I began this long straggling letter, I had intended to have sent it per Admiralty: but now it must be sent by Liverpool, so there will be double postage to pay. Thank most affectionately those good dear ladies, Sarah W. and Fanny B. I am very sorry to find I have lost the second of Mr. Owen's letters. Remember me at Maer, Woodhouse, and I believe those two houses will include everyone I shall care anything about when I return. How everything will be altered by that time: looking at things from a distance, they appear to be undergoing changes far faster than when living amongst them. Will Erasmus be married? all these gay doing with Cab and horses portend something eventful. Can he build a castle in the air, where he does not quarrel with his wife in the first week? if he has arrived at such a pitch, I know well I shall find him a well-broken-in subjected husband. Give my best love to my Father, Erasmus and each of the Sisterhood.

Dear Katty,

Your most affectionate brother,

Charles Darwin.

There are several good dear people whom I should like much to write to, but at present I really have not the time. Thank Fanny for her nice good natured note: I have just re-read it. The sight of her handwriting is enough alone to make me long for this voyage to come to some end.

LETTER NO. 22

[*Not previously published*]

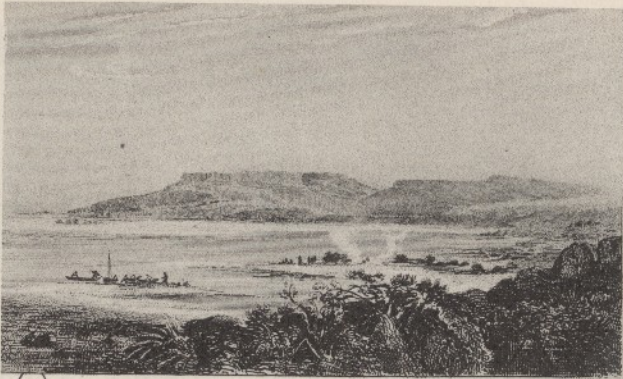
[*To Miss Caroline Darwin*]

[VALPARAISO]

August 9th, 1834

My dear Caroline,

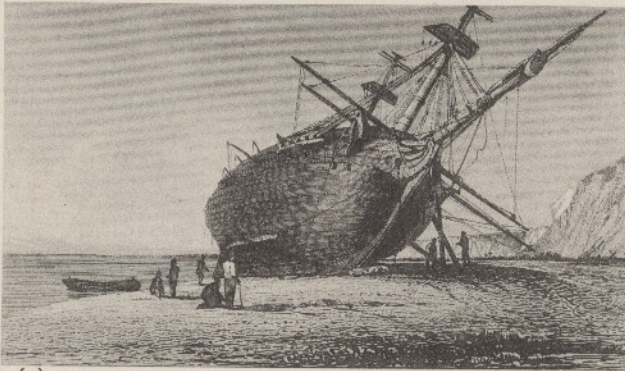
A ship sails for Liverpool tomorrow. I will try to scribble



(a)



(b)



(c)

The River Santa Cruz: (a) Repairing boat; (b) Distant Cordillera of the Andes; showing method of towing the three boats, the men hauling the line just visible on the left bank; (c) *Beagle* laid ashore for repairs



Remains of the Cathedral at Concepcion ruined by the great earthquake of 1835

this sheet full, & if so send it off. I received your letter, dated March 9th the day before yesterday, & Mr. Owen's long one. Give him my best thanks for writing so kindly to me; I will take an early opportunity of answering it. I am much pleased with what you have told me, respecting the fossil bones. I did not before understand in what particular way the head of the Megatherium came to be so much sought after. I presume the big box, which Erasmus was going to send to Plymouth for, is one which I directed to be left at Dr. Armstrong's (to save carriage). I am in great fear lest Mr. Clift should remove the numbers or marks attached to *any of the specimens*. Ask Erasmus to call on Mr. Clift & state how anxious I am on this point. All the interest which I individually feel about these fossils is their connection with the Geology of the Pampas, & this entirely rests on the safety of the numbers. Another point must clearly be explained to Mr. Clift; it is with reference to the Coll. of Surgeons paying the expence of the carriage. The ultimatum destinatum of *all* my collections will of course be to wherever they may be of most service to Natural History. *But ceteris paribus* the British Museum has the first claims, owing to my being on board a King's Ship. Mr. Clift must understand that *at present* I cannot say that any of the fossil Bones shall go to any particular Museum. As you may well believe I am quite delighted that I should have had the good fortune (in spite of sundry sneers about Seal & Whale bones) to have found fossil remains which can interest people such as Mr. Clift. A small box has been forwarded from B. Ayres to Liverpool for Henslow, with part of a head, which I think will be more useful than any which I have sent. With respect to the expence of the carriage, it is entirely in England,—everything *as yet* has been sent on the sea on "His Majesty's Service". But they are very heavy & bulky. Give my Father my best love & thanks for all his kindness about money, & tell him I can seriously say, that since leaving England I have spent none excepting in the furtherance of Natural History, & as little as I could in that, so that my time should not be thrown away. I am now living with Corfield; he is as hospitable & kind in deeds, as a Spaniard is in professions—than which I can say no more. It is most pleasant to meet with such a straight-forward, thorough

Englishman as Corfield is, in these vile countries. He has made his house so pleasant to me, that I have done less during the last fortnight, than in any time since leaving England. The day after tomorrow I start for a Geological excursion. Does it not *sound* awefully extravagant when I say I am going to buy a small troop of horses? With these I shall travel by a very round-about course to St. Jago, the gay capital of Chili. I shall there meet Corfield, who is going up to admire the beauties of Nature, in the form of Signoritas, whilst I hope to admire them among the Andes. I long to have a near view of this extraordinary & grand chain of mountains. At this time of year, however, it will not be possible to ascend to any height on account of the snow.

This is a very stupid letter to send, but you have often told me you would rather have a short letter than none. So take the consequences. Give my love to Marianne; we do not write to each other for the same reason—we are too busy with our children. She with Master Robert & Henry, etc., & I with Master Megatherium & Mastodon. If I have a good opportunity, I will send home some more of my Journal; which will give you some account of the Pampas galloping. I am ashamed of sending such a letter, but take the will for the deed, & believe me my dearest Caroline,

Yours most affectionately,

Chas. Darwin.

My love to everybody at home.

August 12th.

LETTER NO. 23

[Not previously published]

[To Miss Caroline Darwin]

October 13th, 1834

My dear Caroline,

I have been unwell & in bed for the last fortnight, & am now only able to sit up for a short time. As I want occupation, I will try to fill this letter. Returning from my excursion into the country, I staid a few days at some Gold-mines, & whilst

there I drank some Chichi, a very weak, sour, new-made wine. This half poisoned me. I staid till I thought I was well; but my first day's ride, which was a long one, again disordered my stomach & afterwards I could not get well; I quite lost my appetite & became very weak.¹ I had a long distance to travel & I suffered very much; at last I arrived here quite exhausted. But Bynoe, with a good deal of Calomel and rest, has nearly put me right again, & I am now only a little feeble. I consider myself very lucky in having reached this place; without having tried it, I should have thought it not possible; a man has a great deal more strength in him when he is unwell, than he is aware of. If it had not been for this accident, my ride would have been very pleasant. I made a circuit, taking in St. Jago. I set out by the valley of Aconcagua. I had some capital scrambling about the mountains. I slept two nights near the summit of the Bell of Quillota. This is the highest mountain out of the chain of the Andes, being 4700 ft. high. The view was very interesting, as it afforded a complete map of the Cordilleras & Chili. From here I paid a visit to a Cornish miner, who is working some mines in a ravine in the very Andes. I thoroughly enjoyed rambling about, hammer in hand, the bases of these great giants, as independently as I would the mountains in Wales. I reached the snow, but found it quite impossible to penetrate any higher. I now struck down to the South, to St. Jago, the gay capital of Chili. I spent a very pleasant week there, receiving unbounded hospitality from the few English merchants who reside there. Corfield was there also, & we lived together at an inn. St. Jago is built on a plain, the basin of a former inland sea. The perfect levelness of this plain is contrasted in a strange & picturesque manner with great snow-topped mountains which surround it. From St. Jago I proceeded to San Fernando, about 40 leagues to the South. Every one in the city talked so much about the robbers & murderers, I was persuaded to take another man with me; this added very much to the expense;² & now I do not think it was necessary. Altogether it has been

¹ His wise father was quite unable to give any good medical explanation of this illness when Charles gave him a fuller account of the symptoms on his return.

² For the first time an *s* appears in *expense*, written over his habitual *c*.

the most expensive excursion I ever made, & in return I have seen scarcely enough of the Geology to repay it. I was however lucky in getting a good many fossil shells from the modern formation of Chili. On my road to San Fernando, I had some more hammering at the Andes, as I stayed a few days at the hot springs of Cauquenes, situated in one of the valleys. From S. Fernando I cut across the country to the coast, & then returned, as I have said, very miserable, to Corfield's house here at Valparaiso. You will be sorry to hear the Schooner, the *Adventure*, is sold. The Captain received no sort of encouragement from the Admiralty, & he found the expense of so large a vessel so immense, he determined at once to give her up. We are now in the same state as when we left England, with Wickham for 1st Lieut., which part of the business anyhow is a good job. We shall all be very badly off for room; & I shall have trouble enough with stowing my collections. It is in every point of view a grievous affair in our little world; a sad tumbling down for some of the officers, from 1st Lieut. of the Schooner, to the miserable Midshipman's berth, & many similar degradations. It is necessary also to leave our little painter, Martens, to wander about the world. Thank Heavens, however, the Captain positively asserts that this change shall not prolong the voyage,—that in less than two years we shall be at New South Wales. I find being sick at stomach inclines one also to be home-sick. In about a fortnight the *Beagle* proceeds down the coast, touches at Concepcion & Valdivia, & sets to work behind Chiloe. I suspect we shall pay Tierra del Fuego another visit; but of this Good Lord deliver us: it is kept very secret, lest the men should desert; every one so hates the confounded country. Our voyage sounded much more delightful in the instructions than it really is; in fact it is a survey of S. America, & return by Cape of Good Hope instead of Cape Horn. We shall see nothing of any country excepting S. America. But I ought not to grumble, for the voyage is for this very reason, I believe, much better for my pursuits, although not nearly so agreeable as a tour. I will write again before sailing. I am however at present deeply in debt with letters. I received shortly since a very kind long one from Mr. Owen, which I will shortly answer. Letter writing is a task

which I thoroughly dislike. I do not mean writing to home, but to anybody else, for really after such an interval, I have nothing to tell but my own history, & that is very tedious! I have picked up one very odd correspondent, it is Mr. Fox the Minister at Rio. (It is the Mr. Fox, who in one of Lord Byron's letters is said to be so altered after an illness, that his *oldest Creditors* would not know him).

I forgot to thank Susan for her letter of May, & Catherine for her pithy message. *We* do not write because Mr. Owen does. I must previously have acknowledged your long letter for the foregoing month. We are all here in great anxiety to hear some political news. A ship sailed from Liverpool just after Ld. Grey's resignation, & we cannot guess who will succeed him.

Give my best love to my Father & all of you, & believe me, my very dear Caroline,

Yours affectionately,

Charles Darwin.

LETTER NO. 24

[*Mostly published in Life and Letters, Vol. I, p. 256*]

[*To Miss Catherine Darwin*]

VALPARAISO.

November 8th, 1834

[Shrewsbury post-mark, Ap. 8, 1835]

My dear Catherine,

My last letter was rather a gloomy one, for I was not very well when I wrote it. Now everything is as bright as sunshine. I am quite well again, after being a second time in bed for a fortnight. Captain Fitzroy very generously has delayed the ship 10 days on my account & without at the time telling me for what reason. We have had some strange proceedings on board the *Beagle*, but which have ended most capitally for all hands. Capt. Fitzroy has for the last two months been working *extremely* hard, & at [the] same time constantly annoyed by interruptions from officers of other ships: the selling the Schooner & its consequences were very vexatious; the cold

manner the Admiralty (solely I believe because he is a Tory) have treated him, & a thousand other etc etc, has made him very thin & unwell. This was accompanied by a morbid depression of spirits, & a loss of all decision & resolution. The Captain was afraid that his mind was becoming deranged (being aware of his hereditary predisposition), all that Bynoe could say, that it was merely the effect of bodily health & exhaustion after such application, would not do; he invalided & Wickham was appointed to the command. By the instructions Wickham could only finish the survey of the Southern part, & would then have been obliged to return direct to England. The grief on board the *Beagle* about the Captain's decision was universal & deeply felt. One great source of his annoyance was the feeling it impossible to fulfill the whole instructions; from his state of mind it never occurred to him that the very instructions order him to do as much of West coast as *he has time* for, & then proceed across the Pacific. Wickham (very disinterestedly giving up his own promotion) urged this most strongly, stating that when he took the command nothing should induce him to go to Tierra del Fuego again; & then asked the Captain what would be gained by his resignation? Why not do the more useful part & return as commanded by the Pacific? The Captain at last to everyone's joy, consented, & the resignation was withdrawn. Hurra! Hurra! it is fixed the *Beagle* shall not go one mile South of Cape Tres Montes (about 200 miles South of Chiloe) & from that point to Valparaiso will be finished in about 5 months. We shall examine the Chonos archipelago, entirely unknown, & the curious inland sea behind Chiloe. For me it is glorious; Cape Tres Montes is the most Southern point where there is much geological interest, as there the modern beds end. The Captain then talks of crossing the Pacific; but I think we shall persuade him to finish the coast of Peru, where the climate is delightful, the country hideously sterile, but abounding with the highest interest to a Geologist. For the first time since leaving England, I now see a clear & not so distant prospect of returning to you all; crossing the Pacific & from Sydney home will not take much time.

As soon as the Captain invalided, I at once determined to

leave the *Beagle*; but it was quite absurd what a revolution in five minutes was effected in all my feelings. I have long been grieved & most sorry at the interminable length of the voyage (although I never would have quitted it). But the minute it was all over, I could not make up my mind to return,—I could not give up all the geological castles in the air which I had been building for the last two years. One whole night I tried to think over the pleasure of seeing Shrewsbury again, but the barren plains of Peru gained the day. I made the following scheme (I know you will abuse me, & perhaps if I had put it in execution, my Father would have sent a Mandamus after me); it was to examine the Cordilleras of Chili during this Summer, & in the Winter go from Port to Port on the coast of Peru to Lima, returning this time next year to Valparaiso, cross the Cordilleras to Buenos Ayres, & take ship to England. Would this not have been a fine excursion, & in 16 months I should have been with you all. To have endured Tierra del Fuego & not seen the Pacific would have been miserable; as things are at present they are perfect. The intended completion of *small* parts of the survey of S.W. coast would have possessed no interest, & the coast is in fact frightfully dangerous & the climate worse than about Cape Horn. When we are once at sea, I am sure the Captain will be all right again. He has already regained his cool inflexible manner, which he had quite lost.

I go on board tomorrow. I have been for last six weeks in Corfield's house. You cannot imagine what a kind friend I have found him. He is universally liked & respected by the Natives & Foreigners. Several Chileno Signoritas are very obligingly anxious to become the Signoras of this house.

Tell my Father I have kept my promise of being extravagant in Chili. I have drawn a bill of £100. (Had it not better be notified to Mr. Robarts & Co.?) £50 goes to the Captain for ensuing year, & £30 I take to sea for the small ports; so that bona fide I have not spent £180 during these last four months. I hope not to draw another bill for six months.

All the foregoing particulars were only settled yesterday; it has done me more good than a pint of medicine, & I have not been so happy for the last year. If it had not been for my

illness, these four months in Chili would have been very pleasant; I have had ill luck, however, in only one little earthquake having happened. I was lying in bed when there was a party at dinner in the house; on a sudden I heard such a hubbub in the dining room,—without a word being spoken, it was devil take the hindmost who should get out first. At the same moment I felt my bed *slightly* vibrate in a lateral direction. The party were old stagers, & heard the noise which always precedes a shock; & no old stager looks at an earthquake with philosophical eyes.

Till you hear again you may direct to Valparaiso. If, however, it can be managed, far the best & cheapest mode is to get somebody in Liverpool to receive your letters & send them by the first ship which sails for this Port. I shall thus receive them very likely two months earlier than by the ordinary post. In this case they must be directed *to the care of R. Corfield Esq.*

I have written to Erasmus (directing Whyndam Club) to ask him to execute for me a commission; if he is not [in] London I daresay Hensleigh Wedgwood would be kind enough to do it, getting the letter to read from the Club.

Good bye to you all, you will not have another letter for some time, my dear Catherine.

Yours affectionately,

Charles Darwin.

My best love to my Father & all of you. Love to Nancy.

LETTER NO. 25
[Not previously published]

[To Miss Caroline Darwin]

[OFF VALPARAISO]

March 10th, 1835

[Received July 16th, 1835]

My dear Caroline,

We now are becalmed some leagues off Valparaiso, & instead of growling any longer at our ill fortune, I will begin this letter to you. The first & best news I have to tell is that our voyage has at last a definite & certain end fixed to it. I

was beginning to grow quite miserable, and had determined to make a start if the Captain had not come to his conclusion. I do not now care what happens. I know certainly we are on our road to England, although that road is not quite the shortest. On the 1st of June the *Beagle* sails from Valparaiso to Lima, touching only at one intermediate port;—from Lima direct to Guayaquil;—to the Galapagos,—Marquesas, so as to reach Otaheite middle of November, & Sydney end of January of next year.

This letter will be sent across land so will reach England soon: after receiving this you must direct till the middle of November to Sydney; then till the middle of June to the Cape of Good Hope. We expect to arrive in England in September 1836. The letters which come to S. America will not be lost, for the Captain will write to the Admiral to forward them to Sydney.

I do so long to see you all again. I am beginning to plan the very coaches by which I shall be able to reach Shrewsbury in the shortest time. The voyage has been grievously too long; we shall hardly know each other again. Independent of these consequences, I continue to suffer so much from sick-sickness, that nothing, not even Geology itself, can make up for the misery & vexation of spirit. But now that I know that I shall see you all again in the glorious month of September, I will care for nothing; the very thoughts of that pleasure shall drive sea-sickness & blue sea devils far away.

We are now on our road from Concepcion. The papers will have told you about the great earthquake of the 20th of February. I suppose it certainly is the worst ever experienced in Chili. It is no use attempting to describe the ruins; it is the most awful spectacle I ever beheld. The town of Concepcion is now nothing more than piles & lines of bricks, tiles & timbers. It is absolutely true there is not one *house* left habitable; some little hovels built of sticks & reeds in the outskirts of the town have not been shaken down, & these now are hired by the richest people. The force of the shock must have been immense, the ground is traversed by rents, the solid rocks are shivered, solid buttresses 6—10 feet thick are broken into fragments like so much biscuit. How fortunate it happened at

the time of day when many are out of their houses & all active; if the town had been overthrown in the night, very few would have escaped to tell the tale. We were at Valdivia at the time; the shock there was considered very violent, but did no damage, owing to the houses being built of wood. I am very glad we happened to call at Concepcion so shortly afterwards: it is one of the three most interesting spectacles I have beheld since leaving England.—A Fuegian Savage;—Tropical Vegetation;—& the ruins of Concepcion. It is indeed most wonderful to witness such desolation produced in minutes of time.

I wrote a short letter from Chiloe,¹ but forget at what date. We had a remarkably pleasant boat expedition along the Eastern coast. I am afraid it will be the last cruize of this sort. You cannot imagine what merry work such a wandering journey is; in the morning we never know where we shall sleep at night. Carrying, like snails, our houses with us, we are always independent. When the day is over we sit round our fire, & pity all you who are confined within houses.

I joined the Ship at the South extremity, & proceeded with her amongst the Chonos Isles & Tres Montes. There was a good deal of rough water; & the Geology not very interesting, but upon the whole this cruize has been a very fair one. Chiloe I have seen thoroughly, having gone round it & crossed it on horseback in two directions. I am tired of the restraint of those gloomy forests of the South, & shall enjoy the open country of Chili & Peru. Valdivia is a quiet little hamlet, just like those in Chiloe. We had an opportunity of seeing many of the famous tribe of Araucanian Indians; the only men in the Americas who have successfully withstood for centuries the conquering arms of the Europæans. During this cruize we have had the misfortune to lose 4 anchors; this is the cause of our now proceeding to Valparaiso; with only one anchor at the Bows it would not be safe to survey the coast. The *Beagle* will immediately return to Concepcion, from there resume the survey & continue to Coquimbo. Then she will return to Valparaiso, take in provisions, & start for Lima. I shall leave the Ship for the present, & not join her till the beginning of

¹ This letter is missing, as also is the later one from the Galapagos, mentioned in letter 30.

June; the Captain most kindly has offered to run into Coquimbo to pick me up on his way up the coast to Lima. I hope & trust it will not be too late to cross the Cordilleras; besides the interest of such a journey, I am most anxious to see a geological section of this grand range. Two days after we get in port, I will be off to St. Jago & cross the Andes by the bad pass, see Mendoza, & return by the common one. I am much afraid of this cloudy weather; if snow falls early I may be detained a prisoner on the other side! I shall be obliged to spend a good deal of money, but I can most conscientiously say I never spend a dollar without thinking whether it is worth it. I am sure my Father will not grudge me a little more money than usual; for this is the last journey I shall be able to take on shore, anyhow before we reach Sydney. Oh the precious money wasted in Cambridge. I am ashamed to think of it.

I am very glad of this spell on shore; my stomach, partly from sea-sickness & partly from my illness in Valparaiso, is not very strong. I expect some good rides will make another man of me. And now our Voyage for many months will be in fine warm weather & the fair trade wind. Again I shall see Palms & eat Bananas, & I look forward with pleasure to the very buzzing of the mosquitos. The Captain is quite himself again, & thank Heavens, as anxious to reach dear old England as all the rest of us. The interval appears nothing; I can almost fancy we are running up the chops of the Channel, & the lookout man has just hailed the "Lizard lights right ahead, Sir". There will be more men aloft that day than on the deck.

Valparaiso 13th. I am in all the delightful hurry of a quick march: tomorrow morning at four o'clock I start for St. Jago. I am yet very doubtful about the Andes, but hope for the best; a pretty thing if the snow falls whilst I am in Mendoza! In that case I should have to beg my way up to Potosi. I am now in Corfield's house, who is as hospitable & kind as he always is. Tell my Father I have drawn a bill for £60.

When we arrived the day before yesterday, I only received two letters, (both most full of interesting news) from Katty September, & Caroline October. The June, July, August ones have miscarried. I expect, however, they are in the Commodore's ships, & Commodores are fully privileged to forget the

entire concern of a ten gun Brig; others are sufferers with me. I am very sorry for this, because I actually suppose that Erasmus has written, & it will indeed be hard if I lose this; also it seems poor William Owen has badly hurt his leg. I wish they had not met this fate. You allude to some of the fossil bones being of value, & this of course is the very best news to me which I can hear. See how much obliged I am to all of you for your faithful performance of the promise of monthly letters. I might have been more than a year without hearing:—it is now 10 months.

God bless you all for the best Sisters anyone ever had.

I cannot write more, for horse-cloths, stirrups, pistols & spurs are lying on all sides of me. Give my most affectionate love to my dear Father.

Farewell,

Chas. Darwin.

LETTER NO. 26

[Half published in *Life and Letters*, Vol. I, p. 259]

[To Miss Susan Darwin]

VALPARAISO.

April 23rd, 1835

My dear Susan,

I received a few days since your letter of November: the three letters which I before mentioned are yet missing, but I do not doubt they will come to life.

I returned a week ago from my excursion across the Andes to Mendoza. Since leaving England I have never made so successful a journey; it has, however, been very expensive. I am sure my Father would not regret it, if he could know how deeply I have enjoyed it. It was something more than enjoyment: I cannot express the delight which I felt at such a famous winding up of all my Geology in South America. I literally could hardly sleep at nights for thinking over my day's work. The scenery was so new & so majestic; everything at an elevation of 12,000 ft. bears so different an aspect from that in a lower country. I have seen many views more beautiful, but

none with so strongly marked a character. To a Geologist also there are such manifest proofs of excessive violence; the strata of the highest pinnacles are tossed about like the crust of a broken pie. I crossed by the Portillo Pass, which at this time of year is apt to be dangerous, so could not afford to delay there. After staying a day in the stupid town of Mendoza, I began my return by Uspallata, which I did very leisurely. My whole trip only took up 22 days. I travelled with—for me—uncommon comfort, as I carried a *bed*! My party consisted of two Peons and ten mules, two of which were with baggage or rather food, in case of being snowed up. Everything however favoured me, not even a speck of this year's snow had fallen on the road. I do not suppose any of you can be much interested in Geological details, but I will just mention my principal results. Besides understanding to a certain extent, the description & manner of the force which has elevated this great line of mountains, I can clearly demonstrate that one part of the double line is of an age long posterior to the other. In the more ancient line, which is the true chain of the Andes, I can describe the sort & order of the rocks which compose it. These are chiefly remarkable by containing a bed of Gypsum nearly 2,000 ft. thick: a quantity of this substance I should think unparalleled in the world. What is of much greater consequence, I have procured fossil shells (from an elevation of 12,000 ft.). I think an examination of these will give an approximate age to these mountains as compared to the Strata of Europe. In the other line of the Cordillera there is a strong presumption (in my own mind conviction), that the enormous mass of mountains, the peaks of which rise to 13,000 & 14,000 ft., are so very modern as to be contemporaneous with the plains of Patagonia (or about with *upper* Strata of Isle of Wight). If this result shall be considered as proved, it is a very important fact in the theory of the formation of the world. Because if such wonderful changes have taken place so recently in the crust of the globe, there can be no reason for supposing former epochs of excessive violence. These modern Strata are very remarkable by being threaded with metallic veins of Silver, Gold, Copper, etc.; hitherto these have been considered as appertaining to older formations. In these

same beds (& close to a Gold mine) I found a clump of petrified trees, standing upright, with the layers of fine Sandstone deposited round them, bearing the impression of their bark. These trees are covered by other sandstones & streams of Lava to the thickness of several thousand feet. These rocks have been deposited beneath water, yet it is clear the spot where the trees grew, must once have been above the level of the sea, so that it is certain the land must have been depressed by at least as many thousand feet, as the superincumbent subaqueous deposits are thick.

But I am afraid you will tell me I am prosy with my Geological descriptions & theories.

You are aware that plants of Arctic regions are frequently found in lower latitudes, at an elevation which produces an equal degree of cold. I noticed a rather curious illustration of this law in finding on the patches of perpetual Snow, the famous Red Snow of the Northern Navigators. I am going to send to Henslow a description of this little Lichen, for him, if he thinks it worth while, to publish in some of the Periodicals. I am getting ready my last Cargo of specimens to send to England. This last trip has added half a mule's load, for without plenty of proof, I do not expect a word of what I have above written to be believed.

I arrived at this place a week since, & am as before living with Corfield. I have found him as kind & good-natured a friend as he is a good man. I staid also a week in St. Jago, to rest after the Cordilleras, of which I stood in need, & lived in the house of Mr. Caldcleugh (the author of some bad travels in S. America); he is a very pleasant person, & took an infinite degree of trouble for me. It is quite surprising how kind & hospitable I have found all the English merchants. Do mention to Mr. Corfield of Pitchford, under what obligations I lie to his son.

Amongst the various pieces of news of which your letter is full, I am indeed very sorry to hear of poor Col. Leighton's death. I can well believe how much he is regretted. It is a bitter reflection when I think what changes will have taken place before I return. I pray to Heaven I may return to see all of you.

When you write to the West Indies or Madeira, remember me most affectionately to Charlotte. I hope she will be happy there. When I enjoyed talking over all my schemes with her, how little did she expect to be so soon under a vertical sun & glowing atmosphere. I am surprised at any Husband liking to take his wife to such a country.

The *Beagle* after leaving me here, returned to Concepcion. Capt. Fitzroy has investigated with admirable precision the relative position of land & water since the great Earthquake. The rise is unequal, & parts of the coast are now settling down again, probably at each little trembling, which yet continue. The Isle of St. Maria has been elevated 10 ft.; Capt. Fitzroy found a bed of Muscles with putrid fish that many feet above high water mark.

The *Beagle* passed this port yesterday. I hired a boat & pulled out to her. The Capt. is very well; I was the first to communicate to him his promotion. He is fully determined nothing shall induce him to delay the voyage a month; if time is lost in one place, something else shall be sacrificed. Our voyage now will solely consist in carrying a chain of longitudes between important positions.

My holidays extend till the middle of July, so that I have ten weeks before me, & the *Beagle* will pick me up at any Port I choose. The day after tomorrow I start for Coquimbo. I have three horses & a baggage mule, & a Peon whom I can trust, having now accompanied me on every excursion. The people moreover to the *North*, have a capital character for honesty, i.e. they are not cut-throats. The weather there also will not be hot & it never rains. I shall extend my journey to Copiapo; it is a great distance, but I feel certain I shall be most amply repaid. Everything which can interest a Geologist is found in those districts. Mines of Rock-salt, Gypsum, Saltpetre, Sulphur; the rocks threaded with metallic veins; old sea-beaches; curious formed valleys; petrified shells; Volcanoes & strange scenery. The country geologically is entirely unknown (as indeed is the whole of south S. America), & I thus shall see the whole of Chili from the Desert of Atacama to the extreme point of Chiloe. All this is very brilliant, but now comes the black & dismal part of the Prospect:—that

horrid phantom Money. The country where I am going to is very thinly inhabited, & it will be impossible to draw bills. I am therefore obliged to draw the money here & transmit it there. Moreover it is necessary to be prepared for accidents: horses stolen; I robbed; Peon sick;—a pretty state I should be [in,] 400 or 500 miles from where I could command money. In short I have drawn a bill for £100-0-0, & this so shortly after having spent £60 in crossing the Andes. In September we leave the coast of America; & my Father will believe that I *will* not draw money in crossing the Pacific, because I *can* not. I verily believe I could spend money in the very moon. My travelling expences are nothing; but when I reach a point as Coquimbo, whilst my horses are resting, I hear of something very wonderful 100 miles off. A muleteer offers to take me for so many dollars, & I cannot, or rather never have, resisted the Temptation.

My Father's patience must be exhausted; it will be patience smiling at his son, instead of at grief. I write about it as a good joke, but upon my honor I do not consider it so. Corfield cashes the bill & sends it to his Father, who will bring it to the old Bank, where I suppose it can be transacted.

I received a long & affectionate letter from Fox; he alludes to a letter which I have never received. I shall write to him from Lima; at present I have my hands full. How strange it sounds to hear him talk of "his dear little wife". Thank providence he did not marry the simple charming Bessy. I shall be very curious to hear a verdict concerning the merits of the Lady. How the world goes round; Eyton married, I hope he will teach his wife to sit upright. I have written to him; I am sure he deserves to be happy. What are the two younger sons doing? I think from what I saw at Cambridge, Tom was worth the pair.

Your account of Erasmus' (does Erasmus live with the Hensleighs; for the last year their names have never in any letter been separated?) visit to Cambridge has made me long to be back there. I cannot fancy anything more delightful than his Sunday round of King's, Trinity & those talking giants, Whewell & Sedgwick. I hope your musical tastes continue in due force. I shall be ravenous for the Pianoforte.



Fuegian Wigwams at Hope Harbour in the Magdalen Channel



Fuegians going to trade with the Patagonians

Do you recollect, poor old Granny, how I used to torment your quiet soul every evening? I have not quite determined whether I will sleep at the Lion, the first night when I arrive per "Wonder", or disturb you all in the dead of the night; everything short of that is absolutely planned. Everything about Shrewsbury is growing in my mind bigger & more beautiful; I am certain the Acacia & Copper Beech are two superb trees; I shall know every bush, & I will trouble you young ladies, when each of you cut down your tree, to spare a few. As for the view behind the house, I have seen nothing like it. It is the same with North Wales; Snowden to my mind, looks much higher & much more beautiful than any peak in the Cordilleras. So you will say, with my benighted faculties, it is time to return, & so it is, & I long to be with you. Whatever the trees are, I know what I shall find all you. I am writing nonsense, so Farewell. My most affectionate love to all, & I pray forgiveness from my Father.

Yours most affectionately,
Charles Darwin.

You send my letters to Marianne, so I do not send my particular love to her. I suppose her young gentlemen will be a small troop of Grenadiers by the time I return. What a gang of little ones have come into the world since I left England.

LETTER NO. 27
[*Not previously published*]

[*To Miss Catherine Darwin*]

COQUIMBO

May 31st, 1835

My dear Catherine,

I have very little to write about; but as there will not be another opportunity for some time to send a letter, I will give an account of myself since leaving Valparaiso. My journey up here was rather tedious; I was obliged to travel so very slowly, that my animals might remain in good condition for the rest of their journey. The country is very miserable; so burnt up

& dry, that the mountains are as bare as turnpike roads, with the exception of the great Cacti covered with spines. I visited very many mines; & since I have been here, I have made an excursion up the valley to see some famous ones of Silver. I reached the foot of the Cordilleras.

The Geology goes on very prosperously; before I leave Chili I shall have a very good general idea of its structure. The day after tomorrow I start for Copiapò, passing through Guasko; on the 5th July the *Beagle* calls for me at that place; from whence to Iquique & Lima. This latter part of my journey will be still less interesting than the former, as I understand nearly all the road is a desert. There is one Traversia of a day and half without a drop of water. I shall be very glad when once again settled on board the *Beagle*. I am tired of this eternal rambling, without any rest. Oh what a delightful reflection it is, that we are now on our road to England. My method of travelling is very independent; & in this respect as pleasant as possible. I take my bed & a kettle, & a pot, a plate & basin. We buy food & cook for ourselves, always bivouacing in the open air, at some little distance from the house where we buy corn or grass for the horses. It is impossible to sleep in the houses on account of the fleas. Before I was fully aware of this, I have risen in the morning with my whole shirt punctured with little spots of blood; the skin of my body is quite freckled with their bites. I never formerly had any idea what a torment, in these hot dry climates, these ravenous little wretches could be. But "gracias a Dios", one month more & farewell for ever to Chili; in two months farewell South America. I have lately been reading about the South Sea. I begin to suspect there will not be much to see; that is after any one group with its inhabitants has been visited. Everyone however must feel some curiosity to behold Otaheite. I am lucky in having plenty of occupation for the sea part, in writing up my Journal & Geological Memoranda. I have already got two books of rough notes.

The *Beagle* is now in the Port, refitting before our long voyage. Everybody is living on shore in tents. Everything has been taken out of her, even to the ballast. She proceeds in a week's time to Valparaiso for 9 months' provisions. I hope

some vessel of war will come round before she sails; if not I shall not receive any other letter from you for the next 9 months, that is till we reach Sydney. From Valparaiso I send a large cargo of specimens to Henslow; & these will be the last, for the rest I shall be able to carry, more especially as every month my wardrobe becomes less & less bulky. By the time we reach England I shall scarcely have a coat to my back. And at present as you may see, I have scarcely an idea in my head. So Farewell.

Your affectionate Brother,

Chas. Darwin.

LETTER NO. 28

[Not previously published]

[To Miss Caroline Darwin]

LIMA.

July, 1835.

[Postmark Shrewsbury,]

Jan. 4, 1836

My dear Caroline,

My last letter was dated Coquimbo; I rejoice that I am now writing from Peru. I have received the three months' letters which were missing, and I know that in a few days I shall receive several more. In the meantime I will write an outline of our proceedings since the last letter. From Coquimbo I rode to Guasco where in the valley I staid a few days; from that place to Copiapò there is a complete desert of two and a half days' journey, during which the poor horses had not one single mouthful to eat. The valley of Copiapò is a narrow little stripe of vegetation between districts utterly sterile. Indeed the whole of Chili to the north of Coquimbo I should think would rival Arabia in its desert appearance. When in the valley of Copiapò I made two journeys to the Cordilleras and reached the divisions of the waters; it was most piercingly cold in those elevated regions, but the cloudless sky from which rain does not fall more than once in several years, looked bright and cheerful.—It is very hard and wearisome labor riding so much through such countries as Chili, and I was

quite glad when my trip came to a close. Excluding the interest arising from Geology such travelling would be downright Martyrdom. But with this subject in your mind there is food in the great surrounding scenes for constant meditation. When I reached the port of Copiapò, I found the *Beagle* there, but with Wickham as temporary Captain. Shortly after the *Beagle* got into Valparaíso, news arrived that H.M.S. *Challenger* was lost at Arauco, and that Captain Seymour, (a great friend of Fitzroy,) and crew, were badly off amongst the Indians. The old commodore in the *Blonde* was very slack in his motions—in short, afraid of getting on that lee-shore in the winter; so that Captain FitzRoy had to bully him and at last offered to go as Pilot.—We hear that they have succeeded in saving nearly all hands, but that the Captain and Commodore have had a tremendous quarrel; the former having hinted something about a Court-Martial to the old Commodore for his slowness.—We suspect that such a taught hand as the Captain is, has opened the eyes of everyone fore and aft in the *Blonde*, to a most surprising degree. We expect the *Blonde* will arrive here in a very few days and all are very anxious to hear the news; no change in state politicks ever caused in its circle more conversation than this wonderful quarrel between the Captain and the Commodore has with us.

The *Beagle* after leaving the port of Copiapò touched at Iquique, in Peru, a place famous for the exportation of nitrate of soda.—Here the country is an absolute desert; during a whole day's ride after leaving the Beach I saw only one vegetable production, and this was a kind of yellow Lichen attached to old Bones. The inhabitants sent forty miles for their water and fire-wood, and their provisions come from a greater distance.—From Iquique we came direct to this place where we have been for the last week. The country is in such a state of Anarchy, that I am prevented from making any excursion.—The very little I have seen of this country I do not like; the weather now in the winter season is constantly cloudy and misty and although it never rains there is an abundance of what the people are pleased to call Peruvian dew, but what in fact is a fine drizzle.—I am very anxious for the Galapagos Islands,—I think both the geology and Zoology cannot fail to

be very interesting. With respect to Otaheite, that fallen Paradise, I do not believe there will be much to see. In short, nothing will be very well worth seeing during the remainder of this voyage, excepting the last and glorious view of the shores of England.—This probably is the last letter I shall write from S. America; I have written also to Mr. Owen and Fox. With the three months' letters were two from Fox, the most kind and affectionate ones which could be written.—He gives me a long account of his wife; I hope she is as nice a little lady as he seems to think and assuredly deserves.—How very strange it will be thus finding all my friends old married men with families.

July 12th. I have received three more letters making the chain complete from England to February 1835.—Capt. Fitzroy has arrived in good spirits and in a short time we sail for the Galapagos. He has just stated five minutes ago on the Quarter Deck that this time [next] year we shall be very near to England. I am both pleased and grieved at all your affectionate messages, wishing me to return home.—If you think I do not long to see you again, you are indeed spurring a willing horse; but you can enter into my feelings of deep mortification if any cause even ill-health should have compelled me to have left the *Beagle*.—I say should have, because you will agree with me, that it is hardly worth while now to think of any such step.—Give my most affectionate love to poor dear old Erasmus, I am very glad that the same letter which brought an account of his illness, also told me of his recovery.—During my whole stay at Plymouth I have but one single recollection which is pleasant, and that was his visit to me. Indeed I do not know to what period of my life I can look back without such thoughts coming to mind. I received his half letter and am grieved that I shall neither receive the letter or box which he is going to send till we reach the C. of Good Hope. What a good name that Cape has; indeed it will be one of good hope when the *Beagle* passes it's bluff Head.—You will not hear from me for *upwards* of ten months, nor I from you, in which time may God bless you all for being such kind dear relations to me. Farewell.

Your affectionate brother,

Charles Darwin.

N.B.—If you do not understand my former directions about letters, you had better enclose them to Capt. Beaufort.—Remember a letter too much (i.e. too late) is better than one too little.

N.B. 2.—Tell my Father I have drawn a bill for £30 to take with me money for the Islands.

LETTER NO. 29

[Not published, except short extract]

[To Miss Susan Darwin]

LIMA.

August 3rd, 1835

My dear Susan,

I write to you again chiefly for the purpose of telling my Father that I have drawn a £50 bill *instead of* the £30 which I mentioned in my last letter. So that this must be notified to the Banker, otherwise he will be surprised at seeing the £50. Our prolonged stay in this place has caused me to draw for the extra money. This delay has been a grievous waste of time for *me*. The Captain discovered in Lima some old charts & Papers which he thinks of considerable importance. Two of the Midshipmen, Messrs. Usborne & Forsyth, are to be left behind to survey in a small Schooner the coast of Peru; afterwards they will return in a Merchant man to England. I wish indeed the last month had been spent at Guayaquil or the Galapagos: but as the Spaniard says "No hay remedio". The Captain in a note which he sent me today from Lima says: "Growl not at all. Leeway will be made up. Good has been done unaccompanied by evil,—ergo, I am happier than usual." So that I am glad to say that all this time will not be lopped off the period of our return. We shall go round the world like a Flying Dutchman, & without doubt if this was the third instead of the fifth year, the cruize would be delightful. We shall arrive at Sydney just at the right time of year; the Captain intends going within the reefs through Iona Strait. We hear a famous account of this passage, smooth water, anchorage every night, beautiful scenery & splendid weather. I am quite impatient to get into a glowing hot climate; it

sounds very odd to hear a person in Latitude 12° wishing for warmth. But really it is here uncomfortably chilly & damp with an eternally cloudy sky. When we reach the Galapagos the sun will be vertically over our heads, & I suspect my wishes will be fulfilled to the uttermost. Living quietly on board the ship & eating good dinners, have made me twice as fat & happy as I have been for some months previously. I trust & believe that this month next year, we shall be very close to, if not in England. It is too delightful to think that I shall see the leaves fall & hear the Robin sing next Autumn at Shrewsbury. My feelings are those of a Schoolboy to the smallest point; I doubt whether ever boy longed for his holidays as much as I do to see you all again. I even at present, although nearly half the world is between me & home, begin to arrange what I shall do, where I shall go, during the first week. In truth I shall have a great deal to do for a long time after we return. My Geological notes are become very bulky, & before they can be of any use will require much overhauling & examination. But sufficient for the day is the evil thereof. We shall be in England next September & that is enough for me.

Two men of war have lately arrived from Rio, but they brought no letters for the *Beagle*, so that the Admiral is forwarding them on to Sydney. We all on board are looking forward to Sydney as to a little England; it really will be very interesting to see the colony which must be the Empress of the South. Captain King has a large farm, 200 miles in the interior. I shall certainly take horse & start; I am afraid however there are not Gauchos who understand the real art of travelling.

I have scarcely stirred out of the ship for the last fortnight. The country is in such a miserable state of misgovernment, that nothing can exceed it. The President is daily shooting & murdering anyone who disobeys his orders. One is that all property should be at the disposal of the state, & another that every man from 15 to 40 should enroll himself as ready to be his soldier. Yesterday several young men were shot for neglecting to give in their names. Is this not a precious state of things?

Goodbye till I again write from Sydney. Give my most affectionate love to my Father & to all at home.

My dear old Granny, your affectionate brother,
Charles Darwin.
 Give my love also to Nancy.

LETTER NO. 30
 [Not previously published]

[To Miss Caroline Darwin]

BAY OF ISLANDS. NEW ZEALAND.

December 27th,
 1835

My dear Caroline,

My last letter was written from the Galapagos, since which time I have had no opportunity for sending another. A Whaling Ship is now going direct to London, & I gladly take the chance of a fine rainy Sunday evening of telling you how we are getting on. You will see we have passed the Meridian of the Antipodes & are now on the right side of the world. For the last year I have been wishing to return, & have uttered my wishes in no gentle murmurs; but now feel inclined to keep up one steady deep growl from morning to night. I count & recount every stage in the journey homewards, & an hour lost is reckoned of more consequence than a week formerly.¹ There is no more Geology but plenty of sea-sickness; hitherto the pleasures & pains have balanced each other; of the latter there is yet an abundance, but the pleasures have all moved forwards & have reached Shrewsbury some eight months before I shall. If I can grumble in this style now that I am sitting,

¹ In an old atlas belonging to Darwin's grand-daughter, Mrs. Raverat, are to be seen the proofs of some of these counts and recounts. The atlas is dated 1823, and comprises, amongst other items, the "Chains of Mountains and other Geographical Features of all the Known Countries of the World." Australia is an empty white shape with nothing in the interior save the name New Holland. Various calculations of distances are written in Darwin's handwriting on the blank pages at the beginning, under his name. "2340 from Cocos to Isle of France. Isle of France to C. of Good Hope 2246." Then come the hoped-for dates of arrival at their ports of call; "Start from Gala[pagos] Sep. 1st; Leave Marquesas middle of October; . . . arrive at Sydney end of January; February at Sydney. (A spare month stowed away.)" The whole ship was eager about dates, so Wickham wrote his views in the atlas, signing with his initials, J. C. W. "Arrive at Cocos—April 1st. Isd. of France April 26th. Cape—June 1st. St. Helena June 25th—July 5th. Ascension—July 1st, J. C. W."

after a very comfortable dinner of fresh pork & potatoes, quietly in my cabin, think how amiable I must be when the Ship in a gloomy day is pitching her bows against a head Sea. Think & pity me. But everything is tolerable when I recollect that this day eight months I probably shall be sitting by your fireside.

After leaving Galapagos, that land of craters, we enjoyed the prospect, which some people are pleased to term sublime, of the boundless ocean for five and twenty entire days. At Tahiti we staid 10 days, & admired all the charms of this almost classical Island. The kind simple manners of the half civilized natives are in harmony with the wild & beautiful scenery. I made a little excursion of three days into the central mountains. At night we slept under a little house made by my companions from the leaves of the wild Banana. The woods cannot be compared to the forests of Brazil; but their kindred beauty was sufficient to awaken those most vivid impressions made in the early part of this voyage. I would not exchange the memory of the first six months, not for five times the length of anticipated pleasures. I hope & trust Charlotte will be enthusiastic about tropical scenery; how I shall enjoy hearing from her own lips all her travels. I do not clearly understand from your last letters, whether she has actually gone to Rio, or only intends doing so.

But I must return to Tahiti, which charming as it is, is stupid when I think about all of you. The Captain & all on board (whose opinions are worth anything), have come to a very decided conclusion on the high merit of the Missionaries. Ten days no doubt is a short time to observe any fact with accuracy, but I am sure we have seen that much good has been done, & scarcely anyone pretends that harm has ever been effected. It was a striking thing to behold my guides in the mountain before laying themselves down to sleep, fall on their knees & utter with apparent sincerity a prayer in their native tongue. In every respect we were delighted with Tahiti, & add ourselves as one more to the list of admirers of the Queen of the Islands.

Again we consumed three long weeks in crossing the sea to New Zealand, where we now shall stay 10 days. I am

disappointed in New Zealand, both in the country & in its inhabitants. After the Tahitians the natives appear savages. The Missionaries have done much in improving their moral character, & still more in teaching them the arts of civilization. It is something to boast of that Europeans may here amongst men who so lately were the most ferocious savages probably on the face of the earth, walk with as much safety as in England. We are quite indignant with Earle's book; beside extreme injustice it shows ingratitude. Those very Missionaries who are accused of coldness I know without doubt always treated him with far more civility than his open licentiousness could have given reason to expect. I walked to a country Mission 15 miles distant, & spent as merry & pleasant an evening with these *austere* men as ever I did in my life time.

I have written thus much about the Missionaries as I thought it would be a subject which would interest you.

I am looking forward with more pleasure to seeing Sydney than to any other part of the voyage; our stay there will be very short—only a fortnight; I hope however to be able to take a ride some way into the country. From Sydney we proceed to King George's Sound, & so on as formerly planned. Be sure not to forget to have a letter at Plymouth on or rather before the 1st of August.

Daylight is failing me, so I will wish you good bye; how strange it is to think that perhaps at this very second Nancy is making a vain effort to rouse you all from your slumbers on a cold frosty morning. How glad I shall be when I can say like that good old Quarter Master who, entering the Channel on a gloomy November morning, exclaimed "Ah here there are none of those d—d blueskies." I forgot to mention that by a string of extraordinary chances the day before finally leaving the Galapagos, I received your letter of March. I am almost afraid that at Sydney we shall be too soon for our instructions respecting letters. Give my most affectionate love to my Father, Erasmus, Marianne & all of you. Good bye my dear Caroline,

Yours,

C. Darwin.

I have written to Charlotte. I also enclose a letter for

Fanny, will you forward it? I do not myself know the present direction. I have also written to Sarah.

His interest in the Missionary question remained to the end of his life; with some reservations he believed their activities deserved support, and was a subscriber. In New Zealand his admiration of their efforts was strengthened and he and FitzRoy, who was a fanatical missionary himself, must often have discussed their problems. In June, 1836, they wrote together a pamphlet whilst still at sea and before reaching Cape Town, with their joint signatures, advocating individual and Government support for the missionaries in the Pacific. This Pamphlet was published in the "South African Christian Recorder", Vol. II, No. 4, September, 1836; a curious periodical to receive one of Darwin's first signed contributions. See later, Letter 34, p. 142, for other early publications.

LETTER NO. 31

[Not previously published]

[To Miss Susan Darwin]

SYDNEY.

January 28th, 1836

My dear Susan,

The day after tomorrow we shall sail from this place; but before I give any account of our proceedings, I will make an end with Business.—Will you tell my Father that I have drawn a bill for £100 of which Fifty went to pay this present and last year's mess money. The remaining fifty is for current expenses: or rather I grieve to say it was for such expenses; for all is nearly gone.—This is a most villainously dear place; and I stood in need of many articles. You will have received my letter some time ago, from New Zealand. Here we arrived on the 12th of this month.—On entering the harbour we were astounded with all the appearances of the outskirts of a great city: numerous Windmills—Forts—large stone white houses; superb Villas etc etc.—On coming to an anchor I was full of eager expectation; but a damp was soon thrown over the whole scene by the news there was not a single letter for the

Beagle.—None of you at home can imagine what a grief this is. There is no help for it: we did not formerly expect to have arrived here so soon, & so farewell letters.—The same fate will follow us to the C. of Good Hope; and probably when we reach England, I shall not have received a letter dated within the last 18 months. And now that I have told my pitiable story, I feel much inclined to sit down and have a good cry.

Two days after arriving here I started on a ride to Bathurst, a place about 130 [miles] in the interior.—My object was partly Geology, but chiefly to get an idea of the state of the colony, and see the country. Large towns all over the world are nearly similar, and it is only by such excursions that the characteristic features can be perceived. This is really a wonderful Colony; ancient Rome, in her Imperial grandeur, would not have been ashamed of such an offspring. When my Grandfather wrote the lines of "Hope's visit to Sydney Cove" on Mr. Wedgwood's medallion he prophesied most truly. Can a better proof of the extraordinary prosperity of this country be conceived, than the fact that $\frac{7}{8}$ ths of an acre of land in the town sold by auction for £12,000 sterling? There are men now living, who came out as convicts (and one of whom has since been flogged at the Cart's tail round the town) who are said to possess without doubt an income from 12 to 15,000 pounds per annum.—Yet with all this, I do not think this Colony ever can be like N. America: it never can be an agricultural country. The climate is so dry & the soil light, that the aspect even of the better parts is very miserable. The scenery is singular from its uniformity.—Everywhere open Forest land; the trees have all the same character of growth & their foliage is of one tint.—It is an admirable country to grow rich in; turn Sheep-herd & I believe with common care, you must grow wealthy. Formerly I had entertained Utopian ideas concerning it; but the state of society of the lower classes, from their convict origin, is so disgusting, that this and the sterile monotonous character of the scenery, have driven Utopia & Australia into opposite sides of the World.—In my return from my ride, I staid a night with Capt. King, who lives about 30 miles from Sydney.—With him, I called on some of his relations, a family of MacArthurs, who live in a beautiful very large country

house. When we called I suppose there were twenty people sitting down to luncheon; there was such a bevy of pretty lady like Australian girls, and so deliciously English-like the whole party looked, that one might have fancied oneself actually in England. From Sydney we go to Hobart Town, from thence to King George Sound and then adios to Australia. From Hobart town being superadded to the list of places I think we shall not reach England before September: But thank God the Captain is as home sick as I am, & I trust he will rather grow worse than better. He is busy in getting his account of the voyage in a forward state for publication. From those parts which I have seen of it, I think it will be well written, but to my taste is rather deficient in energy or vividness of description. I have been for the last 12 months on very cordial terms with him.—He is an extraordinary but noble character, unfortunately, however, affected with strong peculiarities of temper. Of this, no man is more aware than himself, as he shows by his attempts to conquer them. I often doubt what will be his end; under many circumstances I am sure it would be a brilliant one, under others I fear a very unhappy one. From K. George's Sound to Isle of France, C. of Good Hope, St. Helena, Ascension, & omitting the C. Verds on account of the unhealthy season, to the Azores & then England. To this last stage I hourly look forward with more and more intense delight; I try to drive into my stupid head Maxims of patience & common sense, but that head is too full of affection for all of you to allow such dull personages to enter. My best love to my Father.—God Bless you all—My dearest old Granny.

Your most affectionate brother,

Charles Darwin.

Tell my Father I really am afraid I shall be obliged to draw a small bill at Hobart. I know my Father will say that a hint from me on such [a] subject is as worthy of as much attention as if it was foretold by a sacred revelation. But I do not feel in truth oracular on the subject. I have been extravagant & bought two water-color sketches, one of the S. Cruz river & another in T. del Fuego, 3 guineas each, from Martens, who is established as an Artist at this place. I would not

have bought them if I could have guessed how expensive my ride to Bathurst turned out.

The "Beagle's" visit to Sydney took place only forty-eight years after Admiral Arthur Phillips had founded the colony; on that occasion some clay had been brought back to England of an unusually fine quality, from which Josiah Wedgwood the Potter and grandfather of Charles Darwin, had caused a medallion to be modelled, representing Hope, encouraging Art and Labour under the influence of Peace, presiding over the infant settlement. Erasmus Darwin, Charles's paternal grandfather, wrote the prophecy referred to, which is quoted in FitzRoy's "Voyage of the Adventure and Beagle," 1839, Vol. II, p. 621.

Where Sydney Cove her lucid bosom swells,
 Courts her young navies and the storm repels,
 High on a rock, amid the troubled air,
 Hope stood sublime, and wav'd her golden hair;
 Calm'd with her rosy smile the tossing deep,
 And with sweet accents charm'd the winds to sleep;
 To each wild plain, she stretch'd her snowy hand,
 High-waving wood, and sea-encircled strand.
 "Hear me", she cried, "ye rising realms record
 Time's opening scenes, and Truth's unerring word.—
 There shall broad streets their stately walls extend,
 The circus widen, and the crescent bend;
 There ray'd from cities o'er the cultured land,
 Shall bright canals, and solid roads expand.—
 There the proud arch, Colossus-like, bestride
 Yon glittering streams, and bound the chasing tide;
 Embellished villas crown the landscape scene,
 Farms wave with gold, and orchards blush between.—
 There shall tall spires, and dome-capt towers ascend,
 And piers and quays their massy structures blend;
 While with each breeze approaching vessels glide,
 And northern treasures dance on every tide!"
 Here ceased the nymph—tumultuous echoes roar,
 And Joy's loud voice was heard from shore to shore—
 Her graceful steps descending pressed the plain;
 And Peace, and Art, and Labour, join'd her train.

LETTER NO. 32

[Not previously published]

[To Miss Catherine Darwin]

HOBART TOWN,
VAN DIEMAN'S LAND.February 14th, ... 1836
[Postmark 7 July, 1836]

My dear Catherine,

I am determined to begin a letter to you, although puzzled, as you may see by the length of the date, to know what to write about. I presume you will have received, some few days before this, my letter from Sydney. We arrived here after a six days' passage, & have now been here 10. Tomorrow morning we sail for King Georges Sound,—1800 miles of most Stormy Sea.—Heaven protect & fortify my poor Stomach. All on board like this place better than Sydney—the uncultivated parts here have the same aspect as there; but from the climate being damper, the Gardens, full of luxuriant vegetables, & fine corn fields, delightfully resemble England.

To a person not particularly attached to any particular kind, (such as literary, scientific &c.) of society, & bringing out his family, it is a most admirable place of emigration. With care & a very small capital, he is sure soon to gain a competence, & may if he likes, die Wealthy.—No doubt in New S. Wales, a man will sooner be possessed of an income of thousands per annum. But I do not think he would be a gainer in comfort. There is a better class of Society. Here there are no Convicts driving in their carriages, & revelling in Wealth.—Really the system of emigration is excellent for poor Gentlemen. You would be astonished to know what pleasant society there is here. I dined yesterday at the Attorneys General, where, amongst a small party of his most intimate friends, he got up an excellent concert of first rate Italian Music. The house large, beautifully furnished; dinner most elegant, with *respectable!* (although of course all Convicts) Servants.—A short time before, they gave a fancy Ball, at which 113 people were present.—At another very pleasant house, where I dined, they told me, at their last dancing party, 96 was the number.—Is not this astonishing in so remote a part of the world?—

It is necessary to leave England, & see distant Colonies of

various nations, to know what wonderful people the English are.—It is rather an interesting feature in our Voyage, seeing so many of the distant English Colonies.—Falkland Island, (the lowest in the scale) 3 parts of Australia: Isd. of France, the Cape.—St. Helena, & Ascencion.—My reason tells me, I ought to enjoy all this; but I confess I never see a Merchant vessel start for England, without a most dangerous inclination to bolt. It is a most true & grievous fact, that the last four months appear to me long as the two previous years, at which rate I have yet to remain out four years longer. There never was a ship so full of home-sick heroes as the *Beagle*.—We ought all to be ashamed of ourselves. What is five years, compared to the Soldiers' & Civilians', whom I most heartily pity, life in India? If a person is obliged to leave friends & country, he had much better come out to these countries & turn farmer. He will not then return home on half pay, & with a pallid face.—Several of our Officers are seriously considering the all important subject, which sounds from one end of the Colony to the other, of Wool.

My Father will be glad to hear that my prophetic warning in my last letter has turned out false.—Not making any expedition, I have not required any money. Give my love to my dear Father. I often think of his kindness to me in allowing me to come this voyage—indeed, in what parts of my life can I think otherwise.

Good bye my dear Katty. I have nothing worth writing about, as you may see.—Thank Heaven it is an unquestioned fact that months weeks & days will pass away, although they may travel like most arrant Sluggards. If we all live, we shall meet in Autumn.

Your affectionate Brother,
Charles Darwin.

LETTER NO. 33
[Not previously published]

[To Miss Caroline Darwin]

PORT LEWIS, MAURITIUS.

My dear Caroline,

We arrived here this morning; as a ship sails for England

April 29th, 1836

[Postmark Sep. 5, 1836]

tomorrow I will not let escape the opportunity of writing. But as I am both tired & stupid, my letter will be equally dull. I wrote from Sydney & Hobart town; after leaving the latter place, we proceeded to King George's Sound. I did not feel much affection for any part of Australia; & certainly nothing could be better adapted than our last visit to put the finishing stroke to such feelings.

We then proceeded to the Keeling Islands. These are low lagoon Isls. about 500 miles from the coast of Sumatra. I am very glad we called there, as it has been our only opportunity of seeing one of those wonderful productions of the Coral polypi. The subject of coral formation has for the last half year been a point of particular interest to me. I hope to be able to put some of the facts in a more simple & connected point of view, than that in which they have hitherto been considered. The idea of a lagoon island, 30 miles in diameter being based on a submarine crater of equal dimensions, has always appeared to me a monstrous hypothesis.

From the Keeling Isles we came direct to this place. All which we have yet seen is very pleasing. The scenery cannot boast of the charms of Tahiti & still less of the grand luxuriance of Brazil; but yet it is a complete & very beautiful picture. But there is no country which has now any attractions for us, without it is seen right astern, & the more distant & indistinct the better. We are all utterly home-sick. I feel sure there is a wide difference between leaving one's home to reside for five years in some foreign country, & in wandering for the same time. There is nothing which I so much long for, as to see any spot & any object which I have seen before & can say I will see again. Our heads are giddy with such a constant whirl. The Captain continues to push along with a slack rein & an armed heel. Thank Heaven not an hour has lately been lost or will again be lost. It is probable, if we escape the heavy gales off the Cape, we may reach England 8 weeks after you receive this letter. Our course beyond the Cape & St. Helena is not certain; I think it will end in touching at Bahia on the coast of Brazil. With what different sensations I shall now view that splendid scene from formerly. Then I thought an hour of such existance would have been cheaply purchased.

with a year of ordinary life, but now one glimpse of my dear home would be better than the united kingdoms of all the glorious Tropics. Whilst we are at sea & the weather is fine, my time passes smoothly because I am very busy. My occupation consists in rearranging old geological notes: the rearranging generally consists in totally rewriting them. I am just now beginning to discover the difficulty of expressing one's ideas on paper. As long as it consists solely of description it is pretty easy; but where reasoning comes into play, to make a proper connection, a clearness & a moderate fluency, is to me as I have said, a difficulty of which I had no idea.

I am in high spirits about my Geology, & even aspire to the hope that my observations will be considered of some utility by real geologists. I see very clearly it will be necessary to live in London for a year, by which time with hard work the greater part, I trust, of my material will be exhausted. Will you ask Erasmus to put down my name for the Whyndam or any other club; if afterwards it should be advisable not to enter it there is no harm done. The Captain has a cousin in the Whyndam whom he thinks will be able to get me in. Tell Erasmus to turn [over] in his mind for some lodgings with good big rooms in some vulgar part of London. Now that I am planning about England, I really believe she is not at so hopeless a distance. Will you tell my Father I have drawn a bill of £30. The Captain is daily becoming a happier man; he now looks forward with cheerfulness to the work which is before him. He, like myself, is busy all day in writing, but instead of geology, it is the account of the voyage. I sometimes fear his "Book" will be rather diffuse, but in most other respects it certainly will be good. His style is very simple & excellent. He has proposed to me to join him in publishing the account; that is for him to have the disposal & arranging of my journal, & to mingle it with his own. Of course I have said I am perfectly willing, if he wants materials; or thinks the chit-chat details of my journal are any ways worth publishing. He has read over the part I have on board & likes it. I shall be anxious to hear your opinions, for it is a most dangerous task in these days, to publish accounts of parts of the world which have so frequently been visited. It is a rare piece of good fortune for

me, that of the many errant (in ships) Naturalists, there have been few, or rather no, Geologists. I shall enter the field unopposed. I assure you I look forward with no little anxiety to the time when Henslow, putting on a grave face, shall decide on the merits of my notes. If he shakes his head in a disapproving manner, I shall then know that I had better at once give up science, for science will have given up me. For I have worked with every grain of energy I possess.

But what a horridly egotistical letter I am writing; I am so tired that nothing short of the pleasant stimulus of vanity, & writing about one's own dear self would have sufficed. I have the excuse, if I write about myself, Heaven knows I think enough about all of you.

We shall leave this Isld. in 6 days time; if there is any opportunity I will write from the C. of Good Hope, & that letter possibly may be the last you will receive before you see me arrive, converted into an ancient brown-coloured Gentleman. The minute the ship drops her anchor in the mud of old England, I will start for Shrewsbury. I trust we shall find letters at the Cape, but I have many fears; the date of the last letter I received was 13 months ago. This is a grievous period to be entirely ignorant about all one cares most for. It is probable we shall arrive early in September; you must recollect the possibility of my not having received letters for 18 months, so retell me anything important. If I do not come by the 14th of September, write again to Plymouth post office. So that when I start for home I may travel with a certain mind.

God bless you all. May you be well & happy. Forgive such a letter; I am sure you would sooner have it than nothing. So once again farewell to you all. Give my most affectionate love to my Father & all.

My dearest Caroline,

Your affectionate brother,

Chas. Darwin.

Susan wrote in pencil on the back:

My dear Caroline, It is very odd these two letters following each other so quickly. This is a very nice one & I am glad it is come. Perhaps you will write to him before you leave P [illegible]. Tell

*Catty poor Mrs. Bradshaw died last Monday. I am very glad I saw her on Saturday. Papa is gone to the L [illegible] today. Ever yours
S. E. D. Friday.*

LETTER NO. 34

[Not published, except short extract]

[To Miss Catherine Darwin]

CAPE OF GOOD HOPE

June 3rd, 1836

My dear Catherine,

We arrived here the day before yesterday; the first part of our passage from Mauritius was very favourable, & the latter as execrably bad. We encountered a heavy gale of wind which strongly reminded us of the old days near Cape Horn. It is a lucky thing for me that the voyage is drawing to its close, for I positively suffer more from sea-sickness now than three years ago. All hands having been disappointed in letters at Sydney & Mauritius, made up their minds for a grand pile at this place. The mountain of letters, alas, has dwindled into a small packet of about a dozen: amongst them I had the good fortune of receiving yours of Jan. 1836! Nine months' letters are wandering over the wide ocean, which we shall not receive till some time after reaching England. But if you knew the glowing, unspeakable delight which I felt at being certain that my Father & all of you were well, only four months ago, you would not grudge the labor lost in keeping up the regular series of letters; & it has only happened by such order that I have received this last letter. When I wrote from Mauritius I begged that the Plymouth letter might contain a short abstract of the last 18 months; now it need only go back as far as January. Pray do not disappoint me [in] this; for otherwise I shall be uncomfortable on my journey instead of enjoying the sight of the most glorious & the most beautiful of countries. I believe I have at home a leathern Portmanteau, great-coat & cloth leggings; if so will you have them sent by the 1st of September directed to "Lieut. Sullivan, to the care of Mr. Elliot, Royal Hotel, Devonport (to be kept till H.M.S. *Beagle*

arrives).” We go from hence to St. Helena; between which place & England our stages are not yet determined.

The *Beagle* is now lying at Simons Bay, more than 20 miles from Cape Town, where I now am. This is a pretty & singular town; it lies at the foot of an enormous wall (the Table Mountain) which reaches to the clouds & makes a most imposing barrier. Cape Town is a great inn, on the great highway to the east; an extraordinary number of houses are occupied as boarding houses, in one of which I am now settled. The first day I got amongst a set of Nabobs who certainly, poor fellows, all together could not have produced a Liver as good as the hero in Beppo. They were heavy proserers. I was quite bewildered with Cawnpore & so many “poors”, & with rushing from Calcutta to Bombay, backwards & forwards. In despair I effected a most precipitate retreat; & deliver me in future from the Nabobs. Tomorrow morning I am going to call with Captain F R on the Sir J. Herschel. I have already seen the house which he has purchased; it is six miles from the town & in a most retired charming situation. I have heard so much about his eccentric but very aimiable manners, that I have a high curiosity to see the great Man. The day after tomorrow I hope to set out on a short ride of 3 or 4 days to get a few glimpses of African landscape, or rather I should say, African deserts. Having seen so much of that sort of country in Patagonia, Chili & Peru, I feel myself to a certain degree a connoisseur in a desert, & am very curious to see these. Every country has its peculiar character, & every country is well worth seeing. But Oh the country of countries; the nice undulating green fields & shady lanes.—Oh if you young ladies have been cutting down many of the trees (& I shall recollect every one) I never will forgive you. I am quite delighted at hearing that Erasmus is turned house-holder; I hope I shall be able to get lodgings at no great distance, & then London will be a very pleasant place. I often however think Cambridge would be better; I cannot make myself Cockney enough to give up thoughts of a quiet walk on an Autumnal morning in the real country.

I have been a good deal horrified by a sentence in your letter where you talk of “the little book with the extracts from

your letters". I can only suppose they refer to a few geological details. But I have always written to Henslow in the same careless manner as to you, & to print what has been written without care or accuracy is indeed playing with edge tools. But as the Spaniard says, "No hay remedio".

Farewell for the present & God bless you all. I have a strong suspicion that my Father will hear of me again before the time of sailing which will happen in 10 days time. Give my love to the young Miss Parker, for I hope I have a little niece instead of a fifth nephew.

My dear Catherine,

Your affectionate brother,

C. D.

N.B.—I find I am forced after all to draw a bill of £30 at once; it is not that I am at all sure I shall want the money here, but if on my return from the country my funds fail I shall not at the moment know what to do.

"The little book with the extracts" referred to was printed by Prof. Henslow for private distribution amongst Members of the Cambridge Philosophical Society in December, 1835. There are 31 pp. with geological and a few zoological extracts from the letters he had received during the years of the voyage from his former pupil. Extracts were again taken from this pamphlet and printed in the "Entomological Magazine", April, 1836, pp. 457-60.

LETTER NO. 35

[Not previously published]

[To Miss Caroline Darwin]

[APPROACHING ASCENCION]

July 18th. 1836.

My dear Caroline,

We are at this present moment driving onwards with a most glorious tradewind towards Ascencion. I am determined to pay the debt of your most excellent correspondence, by at least writing to you all, as often as I can. I will leave this letter at Ascencion to take its chance of being forwarded. Before attempting to say anything else, I must disburthen my mind

of the bad news that our expected arrival in England recedes as we travel onwards. The best judges in the Ship entertain little hopes of it, till the end of October. The next three months appear infinitely tedious, & long, & I daresay the last three weeks will be worse, as for the three closing days, they, by the same rule, ought to be intolerable. I feel inclined to write about nothing else, but to tell you over & over again, how I long to be quietly seated amongst you.—How beautiful Shropshire will look, if we can but cross the wide Atlantic, before the end of October. You cannot imagine how curious I am to behold some of the old views, & to compare former with new impressions. I am determined & feel sure, that the scenery of England is ten times more beautiful than any we have seen.—What reasonable person can wish for great ill proportioned mountains, two and three miles high? No, no; give me the Brythen or some such compact little hill.—And then as for your boundless plains & impenetrable forests, who would compare them with the green fields & oak woods of England?—People are pleased to talk of the ever smiling sky of the Tropics: must not this be precious nonsense? Who admires a lady's face who is always smiling? England is not one of your insipid beauties; she can cry, & frown, & smile, all by turns.—In short I am convinced it is a most ridiculous thing to go round the world, when by staying quietly, the world will go round with you.—But I will turn back to the past, for if I look forward, I lose my wits, & talk nonsense. The *Beagle* staid at St. Helena five days, during which time I lived in the clouds in the centre of the Isd.—It is a curious little world within itself; the habitable part is surrounded by a broad band of black desolate rocks, as if the wide barrier of the ocean was not sufficient to guard the precious spot. From my central position, I wandered on foot nearly over the whole Island; I enjoyed these rambles, more than I have done anything for a long time past. The structure of the Isd. is complicated & its geological history rather curious.—I have discovered a monstrous mistake, which has been handed from one book to the other, without examination. It has been said that sea shells are found on the surface of the land, at an elevation little short of 2,000 ft. & hence that this Isd. though possessing an entirely unique Flora, must have been raised,

within a late period, from beneath the ocean.—These shells turn out land shells! But what is very singular, they have ceased to exist, in a living state on the Isld.—I heard much of old General Dallas & his daughters.—People speak very well of him—(as a well intentioned old goose). He took much pains in improving the road & other public works, was most hospitable, magnificent, & popular.—The young ladies were the gayest of the gay.—Finally he was the last of the E. Indian Company's Governors, with an income more than quadruple the present.—Hence perhaps the lamentations at his departure.—From St. Helena I wrote to Erasmus a long & heavy letter all about myself, it was directed to the Wyndham Club.—I most earnestly hope Erasmus will not be wandering on the continent about the time of the *Beagle's* return; I am delighted he has taken a house, as he will more probably now be a fixture.—I shall really have so much to say, that I fear I shall annihilate some of my friends.—I shall put myself under your hands; & you must undertake the task of scolding, as in years long gone past, & of civilizing me.—Oh for the time, when we shall take a ride together on the Oswestry road.—My dear Caroline I do long to see you, & all the rest of you, & my dear Father.—God bless you all.

Your most affectionate brother,

Chas. Darwin.

P.S.—I have kept this flap open in case of receiving any letters tomorrow when we reach Ascencion.—

Written in pencil on the outer flap:

There is a ship in the offing & this must go.—There are letters, but the bundle has not been opened.

LETTER NO. 36

[Printed in *Life and Letters*, Vol. I, p. 265]

[To Miss Susan Darwin]

BAHIA, BRAZIL.

August 4th

My dear Susan,

I will just write a few lines to explain the cause of this letter being dated on the coast of S. America.—Some singular

disagreements in the Longitudes, made Capt. F R. anxious to complete the circle in the Southern hemisphere, & then retrace our steps by our first line to England.—This zig-zag manner of proceeding is very grievous; it has put the finishing stroke to my feelings. I loathe, I abhor the sea, & all ships which sail on it. But I yet believe we shall reach England in the latter half of October.—At Ascencion I received Catherine's letter of October & yours of November; the letter at the Cape was of a later date; but letters of all sorts are inestimable treasures, & I thank you both for them.

The desert Volcanic rocks & wild sea of Ascencion, as soon as I knew there was news from home, suddenly wore a pleasing aspect; & I set to work with a good will at my old work of Geology. You would be surprised to know how entirely the pleasure in arriving at a new place depends on letters.—We only staid four days at Ascencion & then made a very good passage to Bahia.—I little thought ever to have put my foot on a S. American coast again.—It has been almost painful to find how much good enthusiasm has been evaporated during the last four years. I can now walk soberly through a Brazilian forest; not but what it is exquisitely beautiful, but now instead of seeking for splendid contrasts, I compare the stately Mango trees with the Horse Chestnuts of England. Although this zigzag has lost us at least a fortnight, in some respect[s] I am glad of it.—I think I shall be able to carry away one vivid picture of inter-tropical scenery. We go from hence to the C. de Verds, that is if the winds & the Equatorial calms will allow us.—I have some faint hopes, that a steady foul wind might induce the Captain to proceed direct to the Azores.—For which most untoward event I heartily pray.

Both your letters were full of good news.—Especially the expressions which you tell me Prof. Sedgwick used about my collections. I confess they are deeply gratifying. I trust one part at least will turn out true, & that I shall act—as I now think,—that a man who dares to waste one hour of time, has not discovered the value of life. Prof. Sedgwick mentioning my name at all gives me hopes that he will assist me with his advice, of which in many geological questions, I stand much in need.—It is useless to tell you, from the shameful state of

this scribble, that I am writing against time; having been out all morning—& now there are some strangers on board to whom I must go down & talk civility.—Moreover as this letter goes by a foreign ship, it is doubtful whether it ever will arrive.—Farewell my very dear Susan & all of you. Goodbye.

C. Darwin.

On the envelope in his sister's hand is written "The last letter". But two more must be included in this collection. One to his uncle, the wise and silent Josiah, who had advocated the voyage with discriminating insistence, in the belief that Charles as a man of enlarged curiosity would profit by the experience; Charles on his return hastens to write and thank his "First Lord of the Admiralty".

The last letter I must also include, as it brings Charles back to the English scene once more, with news of the Captain, the Journal, and Erasmus; and a description of an April visit to the Zoo; a characteristic letter which has not found its way into any published collection heretofore.

LETTER NO. 37¹

[Printed in *More Letters of Charles Darwin*, Vol. I, p. 28]

[To Josiah Wedgwood]

[Oct. 5, 1836]

My dear Uncle,

The *Beagle* arrived at Falmouth on Sunday evening, and I reached home late last night. My head is quite confused with so much delight, but I cannot allow my sisters to tell you first how happy I am to see all my dear friends again. I am obliged to return in three or four days to London, where the *Beagle* will be paid off, and then I shall pay Shrewsbury a longer visit. I am most anxious once again to see Maer, and all its inhabitants, so that in the course of two or three weeks, I hope in person to thank you, as being my first Lord of the Admiralty. I am so very happy I hardly know what I am writing.

Believe me your most affectionate nephew—

Chas. Darwin.

Remember me most kindly to Aunt Bessy and all at dear Maer.

¹ This letter is not in the collection at Down House, but belongs to Lady Horace Darwin.

LETTER NO. 38

[Not previously published]

[To Susan]

Sunday evening

[April, 1839]

My dear Granny,

I suppose Miss Katherine is at Ch. so I will write to you. I have not however any particular news of any kind. I went to the Captain's yesterday evening to drink tea. It did one good to hear Mrs. Fitzroy talk about her baby; it was so beautiful & its little voice was such charming music. The Captain is going on very well, that is for a man who has the most consummate skill in looking at everything & everybody in a perverted manner. He is working very hard at his book, which I suppose will really be out in June.—I looked over a few pages of Captain King's Journal¹: I was absolutely forced against all love of truth to tell the Captain that I supposed it was very good, but in honest reality no pudding for little school-boys ever was so heavy. It abounds with Natural History of a very trashy nature. I trust the Captain's own volume will be better.

I have been riding very regularly for the last fortnight, & it has done me a wonderful deal of good. I have not been so thoroughly well since eating two dinners a day at Shrewsbury and increasing in weight in due proportion. Two days since when it was very warm I rode to the Zoological Society & by the greatest piece of good fortune it was the first time this year that the Rhinoceros was turned out—such a sight has seldom been seen as to behold the Rhinoceros kicking & rearing (though neither end reached any great height) out of joy. It galloped up & down its court surprisingly quickly, like a huge cow, & it was marvellous how suddenly it could stop & turn round at the end of each gallop. The Elephant was in the adjoining yard & was greatly annoyed at seeing the Rhinoceros so frisky; he came close to the palings & after looking very intently set off trotting himself, with his tail sticking out at one

¹ Capt. King commanded the first S. American surveying voyage 1826-30, and wrote Vol. I of the official account. FitzRoy wrote Vol. II, 1831-36, whilst Darwin's *Journal* was added as a third volume.

end & his trunk at the other, squeeling & braying like half a dozen broken trumpets. I saw also the Ourang-outang in great perfection. The keeper showed her an apple but would not give it her, whereupon she threw herself on her back, kicked & cried, precisely like a naughty child. She then looked very sulky & after two or three fits of passion the keeper said, "Jenny if you will stop bawling & be a good girl I will give you the apple." She certainly understood every word of this, & though like a child she had great work to stop whining, she at last succeeded & then got the apple, with which she jumped into an arm-chair & began eating it with the most contented countenance imaginable.—So much for Monkey, & now for Miss Martineau, who has been as frisky lately as the Rhinoceros. Erasmus has been with her noon, morning and night; if her character was not as secure as a mountain in the polar regions she certainly would loose it. Lyell called the other day & there was a beautiful rose on the table & she coolly showed it to him & said "Erasmus Darwin" gave me that. How very fortunate it is she is so very plain; otherwise I should be frightened. She is a wonderful woman: when Lyell called he found Rogers, Lord Jeffrys & Empson calling on her;—what a person she is thus to collect together all the geniuses. Old Rogers seems to [be] a warm admirer of hers. He says her laugh is so charming, it is "like tickling a child in a cradle". Was there ever such a simile—a pretty little baby indeed. She is very busy at present in making arrangements about her new novel. One bookseller has offered $\frac{2}{3}$ profits & no risk, but I suppose that is not enough. I saw a very nice & affectionate letter from Fanny H. to her, by which I should think Fanny was becoming more reconciled to the thoughts of the country life. Do not betray my audacious speeches about Cousin Harriet to Erasmus. I long to pay you all a visit, but when I shall be able I do not exactly know; not probably before June or July. I will bring down with me Whewell's puff about the Journal: which I wish was published & off my mind.

Love to my Father,

C. Darwin.

PART THREE

The Notebooks

INTRODUCTION

THE twenty-four small notebooks lie before me; those notebooks which Charles Darwin carried with him on his travels and which received the most immediate record of his impressions. In the scrawled and often illegible pages lie no finished theory and no polished phrase; but I have examined them in the belief that they may hold some clues as to how the impact of the changing scene influenced his mind and brought about the rapid development of power and tenacity of those years. Any documents annotating this sudden growth of purpose, amounting almost to a new personality, must be raised from the level of "worthless MSS" in which terms T. H. Huxley stigmatised much of the mass of descriptive writing brought back by Charles Darwin from the voyage because of his lack of training in Biology. It is because of the spontaneity of their contents, because he wrote for himself and no one else, because they are rough hewn and incomplete, that they can throw if not any new scientific light, at any rate some human light on the mind that was undergoing such an experience and such a discipline.

Inevitably the reader must now travel round the world a second time, with sometimes a repetition of the same incidents and here and there a phrase repeated from the letters. For this I make no apology, because the two accounts are so dissimilar in purpose that they become almost complementary one to another.

In the letters to his sisters, he seems surrounded by their presence as he writes; Caroline, Susan, Catherine and their quiet, easy life, brought a nostalgic longing to be home again, besides a recurrence of some of the diffidence of the younger son brought up by adoring but sometimes disapproving elder

sisters. There is always the eager longing to renew the personal bonds, increasing steadily as the years passed, until the urgency is combined with that other longing born of his newly found purpose in life—the urgency to work at the quantities of collected material and notes. In the note-books there is no audience, and no personal relationships are involved. Here are words struck red-hot from immediate experience; with no self-consciousness and no self-justification, except that profound one of proving the strength within and testing the power and integrity of the mind.

The note-books contain mainly geological notes, varying from about half to as much as nine-tenths of the entries in different books. Some were evidently intended at the outset to be either geological, or for “general obs.”. But their original purpose is never adhered to, and they become a medley in date and content. I am no qualified geologist to analyse the closely packed and half digested observations, and have only reproduced significant passages relevant to the trend of his thought and the process of his development. I should like to thank Dr. Kenneth Oakley of the Geological Survey, who has given me most valuable advice over the interpretation of some of the notes, and has helped me with his comments.

I must take the reader through the years of the voyage, but not necessarily note-book by note-book, because of a lack of chronology that exists in some of them. He did not complete one pocket book before starting on the next; a new part of the world suddenly appears at the reverse end, or even in the middle of a single book. The need for order, neatness and pigeon-holing was a nuisance to him, and the discipline of exactitude only grew from the urgency of the bigger problem that lay behind. So he would pour out his notes pell-mell, and his method has none of the love of precision of the systematist. Some love of detail he had; detail of artistic appreciation, and of the behaviouristic approach to bird and animal not common at that time. But usually his detail is in direct relation to the theory; notes of bird and beast and insect are connected with their geographical range; the angular dip of stratified rocks is part of the evidence of the elevation of continents; whilst the fossilised bones gave their eloquent evidence from their exact

position and relationship to living species. He reiterated the need for Professor Henslow and Mr. Clift, who received his specimens sent back to England, not to mix the labels, or all the value would be lost. Accuracy of observation was vital, but the truth behind was what mattered. Later he would not hesitate to rip the bindings off books of reference if it made them easier to handle; he had scant reverence for correct procedure in weighing or measuring as long as he got at the facts. His make-shift balance on an inland expedition was his flask, which could be varied by being full or empty, and the finer accuracy of bullets and pellets added.

Big rat weighs flask with water, without bottom, 2 bullets
4 pellets,

Flask without top or bottom, big scizzors—

His improvised measure of length was his handkerchief—

Length one handkerchief and half. Circumference handkerchief— $30\frac{1}{2}$ inches.¹

His delight in detail often showed itself in the notes, either in almost lyrical description of a rock, or more especially in observations on living creatures. Here is no mere docketing of the museum specimen, but a characterisation of the living being. It is as though he almost became the object he was watching. "Saw a cormorant catch a fish & let it go 8 times successively like a Cat does a Mouse or otter a fish." Or "Tranesia sits differently on twig: alights on summit of branches—does not use its tail so much. Song infinitely sweeter." He certainly delighted in bird-song and often noted the differences between closely allied species. "Carrancha very very beautiful, many in throngs on twigs, enliven Traversia. Most resemble but more powerful some of the reed warblers—harsh notes intermingled & some very high ones." "Long-legged Plover cry like little dog's hunting bark." "Black Tileus bubbling sound." "Thrush with note like English."

His son, Francis Darwin, notices the same point in his love

¹ But this may have been only after the loss of his tape measure, a loss he begged his sisters to make good. See Letter 16.

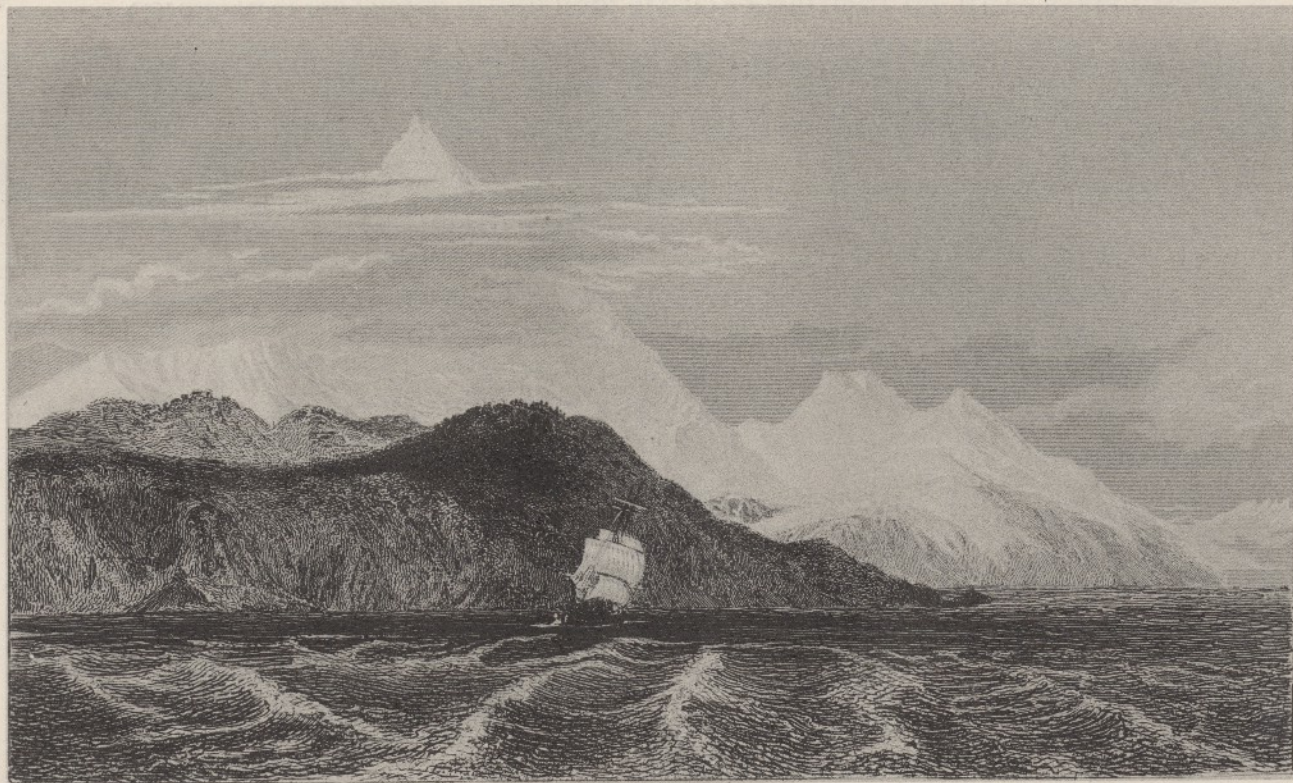
of flowers. "I think he sometimes fused together his admiration of the structure of a flower and of its intrinsic beauty; for instance in the case of the big pendulous pink and white flowers of *Dielytra*. In the same way he had an affection half artistic, half botanical, for the little blue *lobelia*. . . . I used to like to hear him admire the beauty of a flower; it was a kind of gratitude to the flower itself and a personal love for its delicate form and colour. I seem to remember him gently touching a flower he delighted in; it was the same simple admiration that a child might feel."¹

But his enthusiasm never stood between him and the sterner requisites of the collector and observer. When he prepared his Journal for publication as the third volume of FitzRoy's *Voyage of the Adventure and Beagle* in 1839, he gave advice to future collectors in the light of his own experience. As these passages throw light on his methods and the conditions he worked under, and are not to be found in the later editions, I give the most significant; he addressed his remarks to those about to undertake a similar expedition, to whom he offers "a few pieces of advice, some of which I observed with much advantage, but others, to my cost, neglected. 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. Keep a list with the date of the ships by which *every* box of specimens or even a letter, is transmitted to England; let the receiver do the same: it will afterwards save much anxiety. Put a number on every specimen, and every fragment of a specimen; and during the very same minute let it be entered in the catalogue, so that if hereafter its locality be doubted, the collector may say in good truth, 'Every specimen of mine was ticketed on the spot.' Anything which is folded up in paper, or put into a separate box, ought to have a number on the outside (with the exception perhaps of geological specimens) but more *especially* a duplicate number on the inside attached to the specimen itself. A series of small numbers should be printed from 0 to 5000; a stop must be added to those numbers which can be read upside down (as 699. or 86.). It is likewise convenient to have the different

¹ *Life and Letters*, Vol. I, p. 116.



Cordillera of the Andes, as seen from Mystery Plain, near the River Santa Cruz



Mount Sarmiento

thousands printed on differently coloured paper, so that when unpacking, a single glance tells the approximate number.

“Few, excepting those who have travelled in ships, know the extreme inconvenience of want of room; and on this much depends: but if it be practicable, keep three or four sets of bottles open at the same time, so that one may serve for crustacea, another for animals for dissection, another for minute specimens, another for fish, always putting the latter into the strongest spirit. Anyhow it is absolutely necessary to keep a couple of receiving bottles in which everything can at first be put, and afterwards transferred to the permanent bottles with *fresh spirits*. For he should *constantly* bear in mind as his second motto, that ‘It is better to send home a few things well preserved, than a multitude in a bad condition.’ As long as due steps are taken that the harvest may not be spoiled, let him not be disheartened, because he may for a long time be labouring by himself; let him work hard from morning to night, for every day and every hour is precious in a foreign clime; and then most assuredly his own satisfaction will one day well repay him.”

Of the twenty-four small note-books, fourteen deal with his inland travels, two are rough drafts of geological papers and odds and ends, also interesting jottings with no date, probably written on the slow voyage home; six, stitched together in threes, are catalogues of specimens sent home during the voyage. By comparison with the published Diary, I find some notable gaps; probably three or four note-books are lost, certainly those dealing with New Zealand, and the S.W. part of Australia.

They are real books for the pocket. The actual measurements vary from $6\frac{1}{2}'' \times 4''$ to $3\frac{3}{4}'' \times 3''$ in size. They are mostly red; a few black and dark green leather. All show wear and tear, and are furnished with metal clasp and pencil holder. The paper is excellent; and on the inside of the cover is a beautifully engraved little plate, surmounted by an engraved lion and unicorn—“Velvet Paper Memorandum Book, so prepared as effectually to secure the writing from erasure; with a Metallic Pencil the point of which is not liable to break. The point of

the pencil should be kept smoothly scraped flat and in writing it should be held in the manner of a common Pen."

Some have pages torn out—one has a cover torn off; some show stains from storms, but on the whole the writing—mostly with the Metallic Pencil, but sometimes in ink—is remarkably legible. They are labelled on the outside with a rough itinerary in Darwin's handwriting, written on a white label. The first pages are often filled with travellers' memoranda—necessaries to purchase in the town where arrangements for the horse-back expedition were to be made. Some read in a very modern light: "Dentist, mend watch, etc.", but a night-cap is to us an odder requisite.

Charles Darwin had much trouble with his style, and only reached his clarity of expression after much labour; "there seems to be a sort of fatality in my mind", he says, "leading me to put at first my statement or proposition in a wrong or awkward form". His children would laugh at him for his inversions and his sudden enthusiasms which they would liken to advertisement writing; but when, even in the jottings of these note-books, he describes a rock as "pellucid beautiful crystalline merlle";—or the twining lianas and creatures of the Brazilian forest—"Twiners entwining twiners—tresses like hair—beautiful lepidoptera—Silence—hosannah—Frog habits like toad—slow jumps—" it is a measure of the fervour of his enjoyment, the appreciation of the artist behind the intellectual approach.

The little note-books are shorthand notes—the skeleton structure for his memory to work on. Sometimes the very economy of words is vivid, and a few cases are here given, with their later elaborations.

In the little books "Ostriches tame, made sail many ostriches, flocks 20-30, beautiful on the brow of a hill"—is enough to print the scene on his memory. In the Diary this is further enlarged. "I saw several flocks of between 20 & 30. When seen on the brow of a hill against the clear sky they form a fine spectacle. Some of them are very tame; if after approaching close you suddenly gallop in pursuit, it is beautiful to see them, as a sailor would express it, 'up with their helm' and

make all sail, by expanding their wings right down the wind." Again in the Brazilian forest his delight and reverence find immediate vent:—"Silence well exemplifies, rippling of a brook. Lofty trees, white boles: the pleasure of eating my lunch on one of the rotten trees. So gloomy that only sheen of light enters the profound; tops of the trees enlumined:—cold damp feel"—

The Diary is more polished, but possibly less vivid. "Whilst seated on the trunk of a decaying tree amidst such scenes, one feels an inexpressible delight. The rippling of some little brook, the tap of a woodpecker, or scream of some more distant bird, by the distinctness with which it is heard, brings the conviction how still the rest of nature is."

A few more examples consisting of the original note and the enlargement from it in Diary or Journal, will be given in the actual text. Sometimes, when the notes are too elliptical, I have added the explanatory amplification from the Diary as a footnote.¹

With regard to type and symbols, square brackets indicate a word not in the text added by me: either obvious omissions, or to explain the meaning if there is ambiguity. Rounded brackets are brackets in the text. To help the reader the text of the note-books is indented to distinguish it from my interpolations. Over the punctuation I have allowed myself a freer hand. Dashes, stops and colons are practically all he used; I have made the notes as readable as was possible, strictly adhering to verbal accuracy and even spelling, but taking some liberties in the phrasing, in the hopes that I have caught the correct meaning. A query within square brackets indicates a doubtful reading owing to illegibility.

Chapter I

1832

THE first entry of the first Note-book was at Quail Island, a small "miserable desolate spot, not more than a mile in circumference", one of the Cape de Verds Islands, where Captain Fitz Roy was to fix his tents and observatory and take measurements for his survey; his instructions stressed the need to fix

¹ It should be emphasised that the distinction between the texts of *Diary* and *Journal* is fully explained on pp. 4 and 5.

the exact position of this island group. Here they remained twenty-three days, and the impression on Darwin's mind never grew dim, for he saw a volcanic island for the first time and brought all his reading to bear on what he saw. He knew what to look for, and found some new explanations possible, though the full solution of the riddle of the hard white rock so often mentioned, was not fully confirmed for three years, when his assurance was complete that it was the effect of lava flowing over the bed of the sea and baking the triturated recent shells and coral. He saw how upheaval of the whole mass, and subsequent subsidence round the craters which had since been in action, would explain the observed phenomena. Here shortly is the theory resulting from these scribbled notes; and the thought even then dawned on him for the first time (he was not quite 23 years of age) that he might perhaps write a book on the geology of the countries he visited—"That was a memorable hour to me", he wrote nearly fifty years later, "and how distinctly I can call to mind the low cliff of lava beneath which I rested, with the sun glaring hot, a few strange desert plants growing near." The early pages reflect his uncertainty at the novel and unexplained phenomena which met his inexperienced eyes, and he interjects "What confusion for the Geologist."

He describes the white layer:

White sand made up of shells upon which red carious rock, then prismatic feldspar. Between these and former ones hard white rock with yellow spots. Heap of white balls beneath white sand—

Same process now going on [on] shore: living Iron found in it I should think this coast one of short duration, Sand white from decomposition of Feldspar(?) In places impossible to tell whether it is Breccia,¹ of modern or older days—

Going for a hundred yards, more sunken lower beds of white sand become filled with large boulders of lower rocks: beneath this comes a line of another stratum: more soily and contains large and more numerous shells. A regular bed of oyster remains attached to this rock on which they grew.

¹ At the end will be found a Glossary of the geological terms used; also of the S. American Spanish words; and the English versions of those Latin specific names that I could run to earth.

. . . . Although in parts this old sea coast is 30 or 40 feet above present level of ocean yet in others the present breccia again covers it, owing to its having sunk again most likely, as it agrees with that which has been raised—

Flagstaff Hill doubly submarine,

Sand curiously furrowed like sea coast Agency of water.

So the notes continue: each day's excursion to new parts of the island bringing fresh observations and fresh light. A sudden query stressed with marginal scoring:—

Is the very centre of Island Augitic and highest Tableland???

has to be answered.

A brief line, "Wild cats, Kingfisher", is the only zoological note in the Cape de Verds; his mind was absorbed in the geological puzzle—a double scored "Shells action under Blow-pipe"?? is his reminder to test the action by experiment of the effect of the burning lava on the subaqueous shell layers of the ocean—the genesis of the white mortar-like rock so often mentioned.

There is a drawing of the famous Baobob Tree, but certainly not by Darwin's hand. Darwin was sadly handicapped by his inability to draw; the geological diagrams are the most he attempted, and the sketch of the tree is by a competent hand—probably FitzRoy's. The Diary describes how FitzRoy, Wickham and Darwin walked to measure it accurately, FitzRoy climbed the tree and let down a string; there are diagrams of angular measurements with the vertical height, and they returned as it grew dark after "our merry and pleasant walk".

On Feb. 20 they landed at the Island of Fernando Noronhas, and geology played second part—

Coast covered by numerous leaping crabs—no monocotyledonous plants—Ant [hills] nearly 3 feet high and thick, with a tube at the bottom. Lichens and Mosses—Terns and Noddy—on trees alight. Beautiful pink flowers on the top of mountain on trees.

The following reflection written on the passage to Bahia, is scribbled over many times; and the personal entries I notice are often so treated—whether to distinguish from the geological which are obliquely scored when used in the fuller account, or because of a distaste, I cannot say:—

Solitude on Board—enervating heat—comfort—had to look forward to pleasures in prospect—do not wish for cold—night delicious—sky not blue, sea calm.

Here his full meaning can only be arrived at by the amplification of the Diary (p. 38).

Excepting also in the midst of tropical scenery, my greatest share of pleasure is in anticipating a future time when I shall be able to look back on past events and the consciousness that this prospect is so distant never fails to be painful.

Under General Observations he noted:—

Small black ant putting everything to flight; spiders and blatta in great agitation—a brick stopped their course. Spider with regular web.

The *Beagle* reached Bahia on February 28th, 1832, and he beheld the glories of the Brazilian forests for the first time.

They sailed on down the coast to Rio, and in April he made preparations for a riding excursion to the Rio Macae. He never forgot the intensity of the impressions of the Brazilian scene, “the sublimity of the primeval forest, undefaced by the hand of man. . . . Sublime devotion the prevalent feeling”. He started on his excursion on April 8th, 1832.

Ap. 8.

Hills generally rounded, often bare;—flat alluvial valley between them. Village of Itho-caia 12 miles from Rio—Temp. in white sand 104° in shade—View at first leaving Rio sublime, picturesque, intense colours, blue, prevailing tint—large plantations of sugar rustling and coffee—Mimosa

Forest—natural veil, like, but more glorious than those in the engraving¹; gleams of sunshine, parasitical plants: bananas, large leaves—sultry—all still but large and brilliant butterflies; Much water: surprised to see Guinea fowls: our cavalcade very Quixotic: the banks most teeming with wood and beautiful flowers: village of Ith [acaia] regular like the Hottentots: the poor blacks thus perhaps try to persuade themselves that they are in the land of their Fathers—The rock from which old woman threw herself.² Temp. of room 80°—Our dinner eggs and rice our host saying we could have anything: about 4 o'clock, and arrived at our sleeping place about 9—Sand and swampy plains and thickets alternating—passed through by a dim moonlight—the cries of snipes: fire flies and a few noisy frogs and goat suckers.

[Ap.] 9.

Started about $\frac{1}{2}$ after six and passed over scorching plains—Cactuses and other succulent plants: on the decaying and stunted trees beautiful parasites—orchis with a delicious smell—glaring hot: therm in pocket 96°. Inland brackish lakes with numerous birds—white Egrets—Heron—cormorants—Lost our road.

The whole line of beach is composed of an extensive flat or a lake, between which and sea are large sand hills, on which the surf roars. (by night fine effect.) Fresh land is gaining. Sand emits a shrill sound. Manatiba—dined—Temp, shade 84°. Our senses were refreshed by food and a more extensive and prettier view: reflections very clear in the lake.

These Vendas consist of a house with a shed round it in which are tables—a courtyard in which the horses are turned out, and sleeping rooms in which reed mats are strewed.

After dinner passed through a wilderness of lagoons—some salt in which were Balani—others fresh in which I caught a small turritid Lymncea—but in this the sea periodically flows perhaps at the S W gales: is not this fact curious? would not such circumstances produce tertiary strata, beds

¹Diary, p. 50. "I was forcibly reminded of the two French engravings after the drawings of Maurice Rugendas and le Conte de Clavac."

²Ibid. This was the hiding place of some runaway slaves; all were re-taken excepting "the old woman who sooner than be again taken, dashed herself to pieces from the very summit".

of sand full of *Macra* easily cemented. Then we went through impenetrable forest—trees very tall. Stems white: wonderful beautiful flowering parasites: fire flies—[?] bird—large ant-hills. We have been nearly 10 hours on horseback.

Ap. 10.

Slept at Ingetado: after a merry and sleepless night started at 5 o'clock: the sky became red and the stars died away and then the planets—all promised well, but 15 miles before arriving at Addea de St Pedro nearly killed us together with waiting an hour for breakfast. The road lay on borders of lagoon—shore composed of an infinite [number of] shells—At $\frac{1}{2}$ after 12 started again; the road passed through sand with broken shells, although some miles from the sea, and the trees attested how long things have thus remained.

We then entered the forest; beds of quartz boulders;—after some miles came to Campos Novos—good venda—a pleasant change: very cool on the turf, only 74° .

Went out collecting, having arrived at 4 o'clock, and took a frog and several *Planorbis*, *Helix* and *Puccinea*. Saw more than an 100 buzzards in a flock.

Ap. 11.

Passed through several leagues of forest, very impervious trees not large. I here first began to feel feverish, shivering and sickness—much exhausted: could eat nothing at one o'clock which was the first time I got anything. Travelled till dusk miserably faint and troubled with faintness.

At night we slept 2 miles S of Manea. Felt very ill—in the course of the day I thought I should have dropt off the horse: horrors of illness in foreign country: during the morning C. Frio appearing from refraction like inverted tumblers. Gneiss dipping to the South (and then the North).

Ap. 12.

Started in the morning and doubted whether I could proceed. Cinnamon and Port wine cured me in a wonderful manner; passed through more swampy country and then entered a magnificent forest: sublime trees, lofty, well seen or contrasted in the cleared parts: palms, very thin stalks, beautiful in the forest; cabbage palms, edible, spannable—Arrived at the Hacienda of Socego—situated in a Forest.

Square—coffee, Manchoka [Mandioca], much game, number of horses, cattle, poultry and wild animals; patriarchal style of living. A long house with a roof of reeds—at one end gay furniture.

A long dining room and bed rooms, kitchen and large store houses, situated on a hillock. [Small diagram.]

On the other side of the square, sleeping rooms and round the hill houses of more than 100 blacks: children of these people stray into dining room till driven away. Daughter of our host Donna Maria, handsome and dignified, married to Mr. Lumb, a Scotchman and brother to our companion—on receiving a guest or the Signor a large bell is rung and cannon fired—on leaving the house a crowd of blacks come to be blessed by the white man. One morning before daylight I was admiring the stillness of the forest when it was broken by a Catholic morning [hymn] raised by all the Blacks; effect sublime. Our eating was sumptuous—forced to taste everything. This patriarchal style fascinating but destroyed by our host being a villain [erased] and enterprising character. Has cut excellent roads through the wood; saw-mill cutting up thick planks of Rose wood something like a large leaved acacia; dreadful the difficulty in procuring surgical aid: our host plenty of medicines.

Saw a canoe building 70 feet long and 40 [feet] more left of thick trunk.

I should think in this family the blacks were decidedly happy. The son-in-law coming only 2 days short journey found it necessary to bring 17 people with him. Staid at Socego the 13th.

[Ap.] 14.

On the 14th started at midday for Mr. Lennon's estate, after a beautiful ride stopped at a Facenda, within a league of our end. Blacks miserably worked, long after dark. Were received very hospitably by the only Brazilian that I have yet seen with a pleasant expression. Saw some beautiful birds: Toucans and bee eaters—All the rock is gneiss granite. Mica—dark colored large plates. I should think rain had not much degrading effects. Valley flat well seen in the cleared parts. . . .

[Ap.] 15.

Started early for Mr. Lennon's estate, it is the last cultivated piece till having passed over many miles of country. On our road saw some bamboos—disappointed—day before saw a Papyrus? and some small elegant tree ferns.

Had a man to cut a road for us with a sword. When we arrived heard a disagreeable and most violent quarrel between Mr. L [Lennon] and Cowper his agent. They talked of pistols; so bad a character that we were cautioned to recollect poison. Blacks in a bad state; wet cold evening—75°. Threatened to sell his child as a punishment—yet most certainly a very humane man.¹

I observe here and at Socega the clouds rest at a very low level, not more than often at 2 or 300 feet above this and scarcely any above the adjoining country.

Rio Macae is navigable the whole way and not from 5 or 6 leagues in length, and runs close by these places—at here the air when passing over the forest or the level of the house becomes converted into cloud: rain has fallen every day: a remarkable scarcity of rounded pebbles during all our course in the interior.

[Ap.] 16th.

Started early in the morning—proceeded to Socega—pleasant ride and much enjoyed the glorious woods. Bamboos 12 inches in circumference. Several sorts of tree ferns.

[Ap.] 17th.

Sosego. Twiners entwining twiners—tresses like hair—beautiful lepidoptera—Silence—hosannah—Frog habits like toad—slow jumps—iris copper-coloured, colour became faint. Snake, fresh water fish, edible; musky shell, stain fingers red. One fish from salt Lagoa de Boacia, 2 from brook; one do. pricks the fingers—

Manoel Joaquim da Figueda—

After clearing, coffee & Mandioka are planted, afterwards

¹ *Diary*, p. 55. "During Mr. Lennon's quarrel with his agent, he threatened to sell at the public auction an illegitimate mulatto child to whom Mr. Cowper was much attached; also he nearly put into execution taking all the women and children from their husbands and selling them separately at the market at Rio. Can two more flagrant and horrible instances be imagined? Against such facts how weak are the arguments of those who maintain that slavery is a tolerable evil?"

solely coffee. Brother of Manuel has 95,000 trees producing 2 lbs per tree (some produce 8 lbs.)

Rice on the swampy parts—some sugar cane, 3 bags of rice produce 320.

Teijoa beans are cultivated; one bag bringing sometimes 80 bags—Mandioka stems & leaves eaten by cattle. Roots are ground, a slave holding them against the wheel, the pulp is then prepared dry and baken, excellent eating. March is the great season for planting—The juice thus procured from the root is deadly poison, but the animals very fond of it—always dye. From this Tapioka is made.

[Ap.] 18th.

Mimosas exquisite foliage and ferns ditto—trees average 3-4 feet in circumference in the boles. A creeper circum. 1 ft 4—

Spent the whole morning in thus rambling in the forest—Sublime devotion the prevalent feeling. This day's delay was owing to Mr. Lennon going to visit his estate with Mr. Cooper.

[Ap.] 19th.

Left Socego and slept at Venda da Matto: took a most glorious walk on the beach—high and magnificent surf.

[Ap.] 20th.

Returned by the old route to Compos Novos—a tiresome ride all through a scorching and heavy sand; plain of rhododendrons, had some difficulty in making our horses swim, and in danger from a drunken man in canoe.

[Ap.] 21st.

Started by daylight arrived after a very long day almost without rest to Rio Comboata—miserable venda—passed through an interesting cultivated country: this is the interior road branching off at Paratia. Many of the fields from numbers of ants nests looked [like] Humboldts' mud volcanoes.

[Ap.] 22.

From our sleeping place to Fresqueria de Taboraa, torrents of rain during the whole day, destroying pleasure of a pleasant country. Breakfast at Madre de Dios, a nice village on road; beautiful passion flowers and many birds—soil

resulting from decomposing gneiss—generally reddish clay, producing sugar cane, little coffee—met several riding people and a few heavy carts dragged by 8 oxen, wheels almost a solid board. No houses in the whole country as good as a good farmer's house; no road as good as a bad turn-pike in its worst parts. At the Vendas seldom see a woman—not worth seeing. Distances most inaccurately known; not above a score of murders or crosses. In Heavens name in what are blacks better off than our English labourers? The National guardsman is often a wretched looking mulatto with a sword strapped to his side. Thermometer—cold— $62\frac{1}{2}^{\circ}$.

At Campos a supper of fowls and rice and biscuits and a bottle of good wine, and coffee in evening and morning with fish in the morning; Indian corn and grass; for our three selves and horses for 3 Mill Reys altogether; M.R.=2s. 6d.—

[Ap.] 23.

Home—a very pleasant day—Acacias—through a much more cultivated [?] and pleasant [country]. Some few pretty villages. Praia Grande; Plagued about our horses not having a passport.¹

[Ap.] 24.

Staid on Board. I found a day's rest so delightful. They had turned the Poop Cabin into eating room—change of officers—Riots in the town—

[Ap.] 25.

Took my things to Botofogo: shipwreck.²

[Ap.] 26.

Engaged in drying my things.

[Ap.] 27.

Friday. Worked [at] my interior (Bahia) collection.

Went to Mr. Astons—like Cambridge—Not the Ambassador.

[Ap.] 28.

Breakfasted on board. Met Captains Talbot and Hardy.

Ap. 29.

Called on the Admiral, dined there—pleasant evening—very

¹ "Owing to having lost our passport, we were plagued to prove that our horses were not stolen." *Diary*, p. 57.

² The boat was swamped by heavy seas & "before my affrighted eyes were floating books, instruments, & gun cases"; no wonder the little pocket books are stained. *Diary*, p. 58.

gentlemanly the officers—

Sunday quiet delightful day writing Journal at Botofogo.

Ap. 30.

Dined with Mr. Aston—worked at fresh water animals.

During May and June he lived at Botofogo and worked at his growing collections, but there are few notes in the little books—the collecting went on apace in the Brazilian forests. These scenes in the primeval tropical forests remained in his memory as one of the most moving and sublime experiences of the whole voyage.

Silence well exemplified;—rippling of a brook. Lofty trees, white boles: the pleasure of eating my lunch on one of the rotten trees—so gloomy that only shean of light enters the profound. Tops of the trees enlumined; cold camp feel.

They sailed for Monte Video, and sea-sickness was his lot for the passage of twenty-two days.

July 6.

Caught sight of Sugar Loaf.

July 7 & 8.

Very sick—not so bad—Cape pigeons—whales—I but little better—

July 14.

Fine night—Cumuli [clouds]—Fresh breeze—N—sky pale blue. [Diagram of halo] red diameter $1^{\circ}45'$ whole diameter about double. Clouds passing larger colour ring—indistinct.

Sunday 15th.

Fine day and prosperous breeze. 160 miles since noon of yesterday: grampus; uncertain weather; gale; top gallant yards. [first lowered].

16.

Much sea-sick. Flying fish—Porpoises.

They suffered from a true specimen of the Plata weather, and spent days endeavouring to beat up to Monte Video against adverse winds, only anchoring in the bay on July 26th. There are hardly any notes of the few days spent on shore in this first

visit; later he became familiar with the towns of Monte Video, Buenos Ayres and the rivers Uruguay and Parana. But FitzRoy wanted to press on to the southward, leaving no time to explore. The notes are brief, with a few memoranda of intended purchases.

Snake burrowing in the ground.

Barrell with spirits—Bottles—Insects and bottle—Pix axe
Buck shot.

M. Video. Spider. Tube in rock—long; $10\frac{1}{2}$ inches long, bag-shaped.¹ Salt streams and bed of muscle shells under town. Show recent origin.

Two months pass with no entries; perhaps a note-book is missing—and we next find ourselves further south at Bahia Blanca in the Argentine.

Sep. 22.

Entrance of creek, dark blue sandy clay much stratified dipping to NNW or N by W at about 6° . On the beach a succession of thin strata dipping at 15° to W by S—conglomerate quartz and jasper pebbles—with shells—vide specimens. On the coast about 12 feet high, and in the conglom. teeth and thigh bone. Proceeding to NW there is a horizontal bed of *earth* containing much fewer shells—but armadillo—this is horizontal but widens gradually, hence I think conglomerate with broken shells was deposited by the action of tides—*earth* quietly.

Is this above the clay which is seen a short time previously? Covered by diluvium and sand hillocks as earthy bank—thickened & cropped out in direction NNW, it probably overlies the clay.

Punta Alta was an important hunting ground, and these finds of Armadillo bones of extinct species, were clues of deepest interest to him; their significance lay in the change from the extinct to the living specimens, and in determining the exact origin of the strata in which they were found. Even

¹ Probably produced by lightning. See *Journal*, p. 60-61.

at this early period of the voyage he was noting the geological evidence on the mutability of species. Here was evolution at work.

Megatherium like Armadillo case, teeth:—Plants like salt places—Swifts in flocks; Curious habits of Lizard.

Rowlett about trousers—Sea eggs¹ 50 fathoms off the Strait of Magellan—

The end of this note-book has entries of names of books; de Azzara (don Felix) Essai sur l'Histoire Naturelle de Quadruped du Paraguay, Traduit sur le manuscrit par M. Ninea de St Mez Paris 1801—Probably his reading of the moment, or purchases.

In October the *Beagle* sailed north, once more making for the Rio Plata, and again bones were collected at Punta Alta. There was sounding and charting to do in the Bay; but not for long. The further exploration of the Plata country was to be in the following year—and soon they sailed south once more.

The scribbled notes on reaching Buenos Ayres are the traveller's rough memoranda for necessities whilst in reach of civilization; things to be bought; and three times he reminds himself of his need for a dentist.

Paper, Bramah pens, scizzors, watch key and glass, Dentist, watch mended—Note-books—spurs. Mr. G? to collect shells in Limestone. Museum open 2nd Sunday—Owe Mr. Rowlett one paper dollar—pay for boys bring me to the Inn—Chaffers one paper dollar. The very next door to Mr. Griffiths French dentist—Cigars—dentist. Animal without tail—Bookseller.

Always there were indications that he talked freely with those he met and gained every scrap of information possible; he had learnt some Spanish in preparation. Probably the "animal without tail" was some story picked up, to be investigated; often there are notes on mysterious bones up country, and travellers' tales needing investigation.

¹ Sea-eggs; a mariner's term for echinoids.

Mr. Flint an American Merchant has a tooth.

The water has power of turning small bones into large ones.

The weather was kind as they sailed to Buenos Ayres.

Nov. 1st.

Very calm delightful days—quietness seems to shorten the distance—always think of home—

[Nov.] 2nd.

Anchored before noon in the roads—we passed our friend the Guard ship, who this time knew better than to fire on us. Landed and were carried in carts on shore; went out riding and walked about this town.

[Nov.] 3rd.

Buenos Ayres large city: much regular streets (handsome Plaza, Viceroy's) *Quadras*¹ and square houses. Numbers of excellent shops; general appearance European, excepting a few *Gauchos*. Spanish ladies—beautiful dresses and walk; went out riding—band, roads, good horses; hedges *Agaves*, and fennel. Flat enclosed country, ditches—most uninteresting. Saw bullock killed. The feeling of being on shore very pleasant.

Fresh water shells in the rock above level, and some distance from the present river. Burnt for lime—*Ensenado*—Also on the coast opposite to Mr. Lumb's estancia living ones—
Is *M Video* built on granite or gneiss?

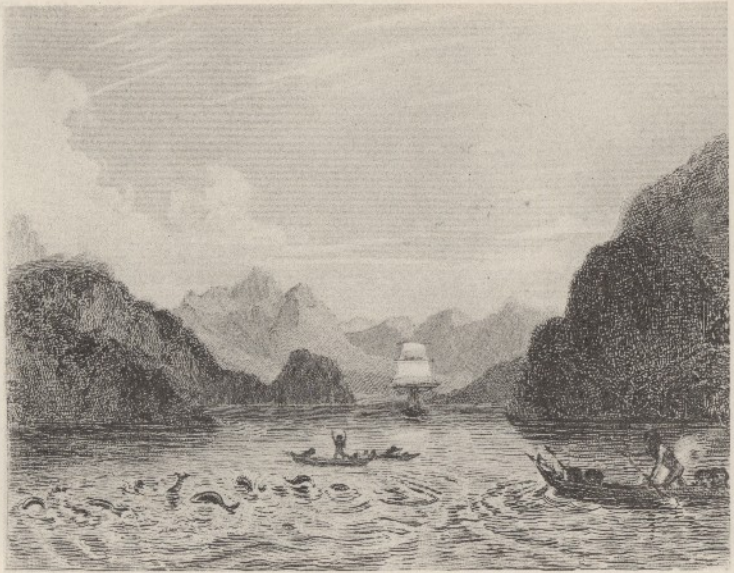
Then come the usual notes on the approach to shops and civilization. A joiner was needed for some of the preparation for the journey inland; and the urgent need for *Bramah* pens becomes a refrain.

Oakley, a Joiner with red hair, *M. Video*; can be heard of at an Hotel formerly kept by Browne. Casks; red cloth.

Viscache shit as dogs. *Bramah* pens, notebooks, watch mended, great teeth.

What is *M. Video* built on?

¹ All the houses are collected into solid squares called "*quadras*".



Beagle Channel

Casks—red cloth—Directions—parchment and paint—Custom House—Oakley's fossil—one scapula in true Tosca. Ask Henslow open pill-boxes. Washing clothes.

[Nov.] 2.

Capinchas dung smells very sweet

On Friday—gossamer web—Conjuror—Hammer

No jars or paper—washing.

[Nov.] 3.

Black duck—Covington¹ Trousers

Dinner Drawers and shirt.

Rio Parana waters very black—Rio Negro black, medicinal qualities, excellent drinking—waters pale (books say) of Uruguay in latitude 32°. It is said that Crocodiles occur and small water Turtles—Silicified wood—Lime said to be had from shells—

St Jago de Estero was quite overthrown by an earthquake not within memory of man.

Nov. 4.

Sunday. Convents, idolatry. Gay appearance. Museum, civil manners. Rode out in the evening along the beach.

Mendoza waggons.

[Nov.] 5th.

Went about 6 leagues into the Camp—& rode pack horses back again; open flat country very queer tall thistles. Number of small owls. Very like Cambridgeshire from Poplars & willows.

[Nov.] 6th.

Very busy in collecting information & specimens & shopping; —ladies—

[Nov.] 7th.

Expecting to go off wasted the day.

Dined with Mr. Gower, & met the Colonel Vernon. Great traveller, pleasant evening.

¹ Covington "Fiddler & boy to Poop Cabin" at the beginning of the voyage. Became Darwin's servant in the second year, skinning and shooting the birds & animals, so saving much of his time. See Letter 16.

Chapter 2

1833

AFTER an absence from England of almost one year, the *Beagle* reached the stormy shores of Tierra del Fuego and the Straits of Magellan, where so much of Captain FitzRoy's charting still had to be done. The intricate channels and the violence of the gales must have made this task particularly arduous in the days of the sailing vessel—all landing parties and explorations of the lesser channels had to be made in the whale boats and yawls;—how impossible to imagine the hardships and difficulties when today the motor launch slips in and out so easily. Darwin was eagerly awaiting this first sight of the southern limits of the continent about whose structure he had thought so much. Here he would see the southern extremity of the great mountain backbone of the Andes, and here, too, he would see for the first time the primitive native, the Fuegian Indian, already mentioned in letters. The entries in the notebooks are mainly on geological lines, and begin in November, 1832, at the entrance of Beagle Channel with descriptive notes:

All the Mountains and E N E of it rounded—slate—at the very southern entrance there is a large bed intervening of a greywacke, siliceous, sonorous, splintering finely grained scales of mica.

So it continues, with geological speculations based on distant views from the boat, and a closer examination whenever landing was possible. On January 19th, 1833, three whale-boats and the yawl left the *Beagle* with the dual purpose of surveying the Beagle Channel and of settling the native, Jemmy Button, and the Missionary Matthews, in a spot suitable for cultivation of the soil; Ponsonby Sound, Jemmy's own home, was selected. The yawl carried the outfit sent out by the Missionary Society with Matthews, and a more grotesque assortment of goods could hardly be imagined;—"wine glasses, butter-bolts, tea trays, soup turins, mahogany dressing case, fine white linen,

beaver hats, and an endless variety of similar things", which Darwin brands as showing "culpable folly and negligence", but which caused the sailors considerable merriment when it came to the unloading of the earthenware chamber pots. The story of Jemmy Button's presence on board must here be told—that queer native boy who figures in the *Beagle* story, and about whom we should so gladly know more. Captain FitzRoy had taken him on board when he had sailed in these waters on the earlier surveying voyage. During the expedition of 1826-1830 he had taken some natives as hostages, in the hopes of recovering a stolen and much-prized whale-boat; Jemmy Button he purchased for the price of one pearl button. When they settled down to life on board, and seemed contented to remain, he decided to bring them to England to educate them in "Christianity and the use of tools", with the ultimate intention of returning them to their own land that they might regenerate their compatriots and teach them the habits and religion they had acquired. His motive was to render those coasts less inhospitable to the shipwrecked sailors. Climate and contour, and also the tradition of enmity of the native for the shipwrecked sailor, dating from the fierce pioneers of exploration of the 16th and 17th centuries, combined to make the Horn and its stormswept channels a menace to the 19th century sailing ship. FitzRoy's scheme was bound to fail; a two years' training with the English Missionaries sat uneasily on those primitive shoulders. Jemmy with his dandified love of his polished boots and kid gloves still retained kind feelings towards English sailors to the end of his life and was again pursued by missionary zeal. But the two others, York Minster, so called from a supposed resemblance to the Minster of the rocky headland near which he was taken, and Fuegia Basket, the little girl of 9, so called from the basket-like canoe in which the sailors of the earlier voyage brought tidings of the lost whale-boat, both reverted to the customs of their race, stole all Jemmy's possessions, and decamped over the hills to their own alien tribe. Boat Memory, the fourth, had succumbed to small-pox in England. And so with the *Beagle's* approach to Jemmy Button's country, FitzRoy's mind was burdened with other matters besides the charting of involved coast-lines. His

visionary zeal was at work, and his fixed purpose to settle the missionary colony incidentally afforded a wonderful opportunity for Darwin to see primitive man in his own land.

Jan. 19.

Started, four boats, fair wind, pretty spectacle, scenery very interesting; trees and verdure to water's edge; not very luxuriant and new trees. Encampment tranquil—Cove and islands few inhabitants; Accident.¹

[Jan.] 20th.

Southern bank rounded hills, but between them and Channel get slate hills. Northern side same only crystalline serrated ridges soon begin to appear.

From 1st sleeping place to 2nd N E of Black Jaw on each side similar rounded cliffs of white diluvium about 60 feet high generally very similar on opposite sides—from observing almost island in centre (at 2nd sleeping place) it is evident these beds stretched across the channel—same colour on both sides (when above there were different rocks?); so many boulders as Goree Sound and whiter—and at 2nd sleeping [place] finer grained and signs of deposition: therefore deposited from more tranquil water. These cliffs remarkable in scenery: *covered with coarse grass*: southern slate mountain parallel, but no parallelism in sides of channel.

Long pull in boat—scenery same—astonishment and following of savages: wild appearance on hill: naked, long hair: (giving them many things: slings, dinner-tins); attempt to drive them away. Innocent, *naked*, most miserable—very wet.

[Jan.] 21st.

5 or 6 miles and close to 2nd sleeping place. At landing afraid of fighting with savages—women and children retreated. signs of great fire on side of hill. . . .

Serpentine pebble beach—

[Jan.] 22nd.

Last night comfortable and quiet—scenery begins to be beautiful, snow-covered mountains: hot day. 5 miles E of

¹ Cutfinger Cove on the charts; so called from an accident to one of the seamen, who almost severed two of his fingers from his hand whilst cutting wood.

Ponsonby Sound a large amphibolic formation—this amphibolic evidently protruded through and rests on slate: Country with rounded *paps*; desolate—few trees on N shores.

At this place serrated mountains come down to water's edge with chain of (slate?) islands at base; height of trees curiously regular, reaching nearly to the patches of snow.

[Jan.] 23rd.

Morning, entrance to Ponsonby Sound. . . . Last night, after quiet delightful pull through the channel—smooth water surrounded by peaked mountains between 2 and 300 feet high—the upper part of which are brilliant with snow and lower dark with green woods; found a snug cove—large fire—naked savages around it. Starlight—large fire—chorus of singers: Savages perspired. Tekeneka, J. Button's quiet people. After breakfast a large body came over the hill—they had run so fast that their noses were bleeding.

When we started to go [to] J. Button's place within Ponsonby Sound 12 canoes accompanied [us] and from the bright sun and hot day the scene resembled the drawing amongst the Pacific Isles. We out-sailed them and Jemmy guided us. None of Jemmy's immediate friends were there but doubtless the news will spread.

The evening spent in cutting wood and clearing ground for garden—Jemmy Button's 3 brothers and mother. J. can talk but little: not much affection on Jemmy's part; excellent spot; guanaco¹; everything favourable. 3 brothers came to meet Captain favourably: Jemmy recognising voice: extraordinary strength of voice.

[Jan.] 24th.

The hands busily employed in building a hut and going on with the garden: Savages are quiet. Sit in rows naked by the trench: will not [do] much work: watch everything: our washing and white skins surprise them most: canoes, manner of life—slings, spears, fishing; guanaco in winter.

Very wet day: uncomfortable walk up mountain to shoot Guanaco. Could not get near to them; large and numerous trees, mostly decayed. Summit a swampy dreary plain.

¹ The guanaco is the S. American lama, invaluable to the native from their meat, skin and thick hair.

[Jan.] 25th.

Many more Fuegians arrived in their canoes. Uncle and friends of Jemmy, very civil: painted white like millers. Sit quiet watching and begging for everything—never pass the trench.

[Jan.] 26th.

Arrival of women: about 120 people. Men sit watching women work.

9 inches of pure mould over old shells from wigwam—Temp. of salt water 55°. In shade 70°.

Uncongenial climate.

[Jan.] 27th.

Last night two men crawled near tent. Return from walk found every woman and child and canoe and nearly all men gone. Strangers arrived: watched from hill. Spears and spot of destination: change of manners: hurry all goods in tent and retreat to little beautiful cove. York etc. not frightened. Impossible to judge what was the matter: misfortune: extreme treachery of character: anecdote of Captain last voyage. Shark in cove.

[Jan.] 28th.

Spider green, with fly enveloped in very strong web woven on a bush. Bugs under bark.

Fringilla¹ in flocks.

Returned to settlement—all quiet. Jemmy's brother and Mother returned—sent away 2 bad men awful night for Matthews. Pretty scene—canoes after fishes.

Then follow the constantly reiterated geological questionings, with references to the specimens collected—the specimens he picked up when the small boats landed and he could get a closer look at the rocky shores. These he labelled carefully with numbers, letters, place and date and sent back to Prof. Henslow in England insisting that these labels must not be lost, everything depended on them. The geological formations in this tip of the great Continent were very puzzling.

¹ Finches. Latin names of species, which occur frequently in the notebooks, will not be the subject of further footnotes, but can be identified in the *Glossary* at the end.

Probably all serrated ridges are thus primitive, and that on N. shore they come near to water opposite Ponsonby Sound. Snow and wood joining, Rivulets—whale blowing. Exceptionally hot. Having put up tent (mica slate place) unfortunately a party of 7 Fuegians appeared: perhaps had never seen Europeans: no way of frightening them: only rubbed their heads when pistols were fired close to them and laughed at flourish of cutlass. Obligated to pack up from these fearless barbarians: fight like animals. Found in the dark a quiet nook. Kept watch till one o'clock—distant bark of dog. J. Button forgot language, not prejudices—[would] not eat land birds. Only the lower trees change colour in Autumn.

Here, as they entered the northern branch of Beagle Channel, the great granite blocks confirmed his conviction of the igneous formation of these mountains.

Jan. 29.

Great numbers of blocks of granite—small crystals—also Hornblende and mica rocks—Evidently the peaked summit of mountain (such forms I have observed within the serrated ridge) Channel above $1\frac{1}{2}$ miles wide, hills on both sides above 2,000 feet high—and the southern side the strata are evidently seen dipping to the SSW and formed of mica slate and sides very parallel. Scenery very retired—many glaciers, uninhabited, beryl blue, *most beautiful*, contrasted with snow. Glacier: cliff to sea about 40 feet, blue by transmitted and reflected light. Channel covered by small icebergs—miniature arctic ocean—

Dinner, great waves, boat etc, pack up, grand sight.

The story is told at greater length in the Diary: "one of these Glaciers placed us for a minute in most imminent peril. Whilst dining in a little bay . . . admiring the beautiful colours of its vertical and overhanging face, a large mass fell roaring into the water. Our boats were on the beach; we saw a great wave rushing onwards, and instantly it was evident how great was the chance of their being dashed into pieces. One of the seamen

just got hold of the boat as the curling breakers reached it: he was knocked over and over but not hurt, and fortunately our boat received no damage." FitzRoy tells how Darwin was amongst the first to run and reach the boats and save them from destruction which might well have meant the loss of the whole party, so far from their ship, and at the mercy of the unfriendly Fuegians. Darwin remains silent on his share in the adventure; nor does he mention that FitzRoy named the large expanse of water they entered on January 30th "Darwin Sound" "after my messmate who so willingly encountered the discomfort and risk of a long cruise in a small loaded boat".

Jan. 30.

Grand views during day—exceedingly jagged; snowy clouds, blue sky—scenery generally spoilt by one chain and low point of view. Vegetation like Mt. Edgcombe—miserable sleeping place—big stones, putrefying seaweed, and middle watch not all pleasure.

FitzRoy continued his charting of the islands to the westward until February 2nd, 1833, when they were 150 miles distant from the *Beagle*. Geology could only be pursued from the boats, except at the landings, and Darwin cannot have enjoyed the trip.

During heavy rain rather miserable—very wet, squally; true Tierra del¹ weather. Whale within pistol shot—enormous backs and tails—All country most desolate and quiet: never seen any European; fur seal.

Feb. 2.

Mt. Sarmiento: cold day: curious little green slate hill surrounded apparently on all sides by bare granite ones. . . .

[Feb.] 3rd.

Miserable weather, barren country—

[Feb.] 4th.

Could see a great many miles through the Channel both ways. nothing interrupted the view.—

¹ Tierra del Fuego is always referred to as Tierra del, or T del.

[Feb.] 5th.

Merely running over same ground; in the evening amusing bartering scene for fish—

[Feb.] 6th.

Disappointment with the Fuegians;—Matthews.

They returned to the settlement after a nine days' absence, and found that systematic plundering of both the Missionary Matthews and his protégés had taken place by hostile natives, and it was not thought safe to leave Matthews alone among them. So he rejoined the *Beagle*, and the button-booted and kid-gloved Fuegians were left to the mercies of their brethren. Darwin rightly commented that the excursion to England "will not be conducive to their happiness"—whilst FitzRoy with his high hopes must have been deeply saddened.

Is not Tierra del the Ultima Thule—not volcano—occurrence of garnet in mica slate—

In the evening followed by savages. Fired over them and frightened them away—found a quiet little cove on outside coast. Fire surrounded by trees.

Round Woolaston Island there was more surveying, interspersed with many thermometer and barometer readings.

[Feb.] 18th.

Southern ocean not phosphorescent—

Beech trees; lower down dwarf ones. Less snow on hills.

In the beginning of March, 1833, they reached the Falkland Islands.

The very first entries show that his mind was working on geographical distribution and species problems. The comparison of species from the mainland with the Falklands prepared the way to the much clearer cases of island differentiation to be noted in the Galapagos group of islands later. Here the scribbled jottings are scored through, and find little echo in Diary or published Journal. But the queries were impressed on his mind.

March 2.

Falkland—

Is not the closer connection of insects and plants [with the mainland equivalents] as well as this fact point out closer connection than Migration?

To what animals did the dung beetles in S. America belong?

Scarcity of Aphidians [?]

Vide Annales des Sciences for Rio Plata.

The peat not forming at present and but little of the bog plants of Tierra del F; no moss; perhaps decaying vegetables may slowly increase it. Beds varying from 10 to one foot thick.

Great scarcity in Tierra del of Corallines—supplanted by Fuci: Clytra prevailing genus.

Procure Trachaea of Upland Goose.

Tues. March 12.

Examine Balanus beneath high water mark. Horses fond of catching cattle—aberration of instinct. Snipes. Examine pit for peat. Specimens of do: Have there been any bones ever found etc or timber? Are there any reptiles? or Limestone?

[Mar.] 19th.

Ask Chaffers where gneiss came from.

Desolation Island said to be volcanic with hot springs. All the Shetland Isles with very hot springs and vesicular lava—It is clear that, in the crests, there has been in the mountain a *point* of upheaval—when strata have become mantle shaped instead of crests—

[Mar.] 20th.

Saw a cormorant catch a fish and let it go 8 times successively like a Cat does a Mouse or otter a fish; and extreme wildness of shags. Read Bougainville.

In 1784, from returns of Gov. Figueroa, buildings amounted to 34, population, including 28 convicts, 82 persons, and cattle of all kinds 7,774.

[Mar.] 22nd.

East basin, peat above 12 feet thick resting on clay, and now eaten by sea. Lower parts very compact, but not so good to burn as higher up; small bones are found in it like rats—argument for original inhabitants, from big bones must be

forming at present, but very slowly. *Fossils in slate. . . .*
 What has become of lime?

It will be interesting to observe difference of species and proportionate Numbers: what also appear characters of different habitations. Migrations of geese—Falkland Islands as connected with Rio Negro?—

[Mar.] 28th.

Emberiza in flocks.

Send watch to be mended

Enquire period of flooding of R. Negro and Plata. Is the cleavage of M. Video (an untroubled country) very generally vertical or what is the dip?

In April they sailed back to the S. American mainland and the wind "that omnipotent and overbearing master" caused a complete change of plan on FitzRoy's part; Darwin was landed at Maldonado at the entrance of the Rio Plata in April, where he had the opportunity for a closer examination of the country. On May 9th he set out with his two guide-companions, and a clear fortnight ahead of him before the *Beagle's* return to pick him up.

May 9.

Started in high spirits with troop of horses; companions, arms; describe Recon¹; near lime-kiln dinner, wild set of Gauchos.

White man run wild; astonished at Compass and Prometheus.

(Before heard of murder of traveller and lives lost in the river.)

Hospitable place for night.

The Gauchos dissolute proud expression yet civil; moustaches, long black hair; great spurs, pale faces. Tall men, look as if they would cut your throat and make a bow at same time.

Ostriches tame, made sail—

This ride had little interest, except novelty; the country is more stony, more hilly and possesses very few trees; every-

¹ Recon = South American saddle used by the Gauchos, or countrymen of the Argentine.

where, however, there is bright green turf between the rocks, which supports large flocks of cattle. Our road was mere track and quite unfrequented. I did not meet one single person—arrived at night at Minas. Small nice quiet town, the only one in the whole country except Maldonado. The Vendas miserably uncomfortable, as they have no rooms, and it is necessary to lounge all evening amongst drunken strangers.

[May] 11th.

Many ostriches, flocks from 20-30, beautiful on the brow of a hill.

They stayed in the house of Don Manuel Fuentes, a rich land-owner.

On first entering a house, after sitting for a short time, ask as a matter of course [for permission to pass the night]. Very rich number of cattle: horses: guests. House thoroughly uncomfortable—no furniture: no windows: only meat and savollas [pumpkins] and water for supper. Wretched room for sleeping in which a very rich man slept—

The people all look at me rather kindly, but with much pity and wonder; saw method of killing partridges.

[May] 13th.

— Furthest point North; country more level with more trees and rather different appearance—more undulating. Englishman last night—most hospitable; fresh horses. Our guide a curious old Paraguay man. Delight at meeting Countryman.

[May] 14th.

Returned. I am considered such a curiosity that I was sent to be shown to a sick woman.—At night curious drunken scene; knives drawn—evidently showing the usual manner of quarrelling. The instantaneous manner of striking and rushing out of the room.

[May] 15th.

Our former fine weather has left us; and we are confined from bad weather: very stupid work. (N.B.—enquire whether there was much wind this morning at M. Video and

weather much lightning the night before). Curious amusement of impromptu singing. General much politeness.
 [May] 17th.

To the South we crossed a broad mountain land or elevated tract of mountain entirely composed of blue slate, generally very siliceous, occasionally containing lime; often pure quartz; often much iron. Here very generally was that extreme sort of contorted cleavage in which every possible curve was present. Many resembling small Gothic windows, which it is difficult to imagine any force to have produced. —This day ride interesting; slept at a most hospitable house—beautiful boys.

This journey gave him further evidence on the earth-movements of the eastern side of the continent, and on the nature of the rocks involved. But as yet there was no certainty; a large query in the margin warns him to beware of certainty before sufficient proofs are obtained.

I have now no doubt that the whole country is transition formation; it is very remarkable observing something like a transition between a Breccia and Volcanic looking rocks with granite cores. This Breccia may be said to be formed in granite.

Geology prevailed for the rest of ride; specimens collected and labelled, ready for dispatch back to England.

[May] 19th.

Spent the day at Sebastien Pimentos' house; menial offices; view with numerous cattle and sheep, almost pretty with rising sun. Piles of stones on Las Animas—small. Said to belong to the old Indians, not so great as in N. Wales. Curious the universal desire of man to show he has frequented the highest points in his country; from sealed bottles of the traveller, to these little piles.

The next weeks he spent on shore at Maldonado, intent on preparing the collections to be sent home. Interspersed are

reminders of his needs at the shops. "My collection of the birds and quadrupeds of this place is becoming very perfect", he wrote in the Diary. "A few Reales has enlisted all the boys in the town in my service, and few days pass in which they do not bring me some curious creature." The notes tell us what books he took from his store for these peaceful weeks ("Humboldt *of course*"); some of the bird-notes were jotted down in field excursions, and show how song and posture were closely observed, long before birds, and especially bird-song, were subjects of common interest. The curiously Heath Robinson efforts at weighing also suggest field make-shifts; he had no better weighing-machine available than balancing his water flask, with or without bottom and water, the finer adjustments being bullets and pellets.

Azaras' book—Fleming Philosophy of Zoology and Penants, Quadrupeds. Paul Scrope on Volcanoes, Scoresby Arctic Regions. *Humboldt (of course)* Burchell's Travels.

The occurrence of Palm Trees worth noting and Maize.

Mention rattle-snakes—are not those rattle-snakes peculiar to N. America?

Days consolation in Travels—Playfair, Humbolt etc.

Short measure, Radiator, scalpel, Book on Chemistry. Mice-traps; wadding and small vasculums.

Palms: perhaps the earthy covering in the country is rather modern accounts for the paucity; undulating surface traversed in every direction by streams, beautiful climate—earth, no trees.

Paucity of trees common to all formations.

Examine some limestone pebbles at M. Video.

Female of white shrike with little grey on the back.

General scarcity of Coprophagous [beetles] exceptions.

Is not abundance of beetles in Horse dung an argument for original habitation of these animals?

Flycatcher with red wings—iris yellow—eyelid blackish; do: base of lower mandible especially yellow—Long billed *Certhia*, tongue shouldered slightly and bristles projecting but not recurved: moderately long-tail used.

Furnarius walks, Aperia trots.

Black Tileus bubbling noise—Connection between note of B B bird¹ and Furnarius.

Picus sits crossways on a branch like common bird. Fly-catcher red wings, noisy. Capincha, tame pig, rabbit.

Kingfisher hovers—

Long-tailed-shrike } sing.
red Icterus }

King fisher continually elevates its tail.

Thrush with note like English.

Rat with upper lip from below the two nostrils to bifurcation, the retrecissement of the upper lip 3-12 which gives the upper jaw a peculiarly lengthened appearance.

B B bird dust itself, active in the evening; tame.

Comadraga intestine full of the remains of insects, chiefly ants and some hemipterous insect.

Scolapus different coloured breast.

Comadraga grande weighs flask with water, without bottom and with $\frac{2}{3}$ of bullets.

Mouse (?) Gerbilla, weighs the turnscrew, has long hair and eyes brown; very large eyes: tail found injured: caught with cheese.

Alecturus, in stomach large Lycosa and Coleoptera; appear very curious in flight, first feather is very curiously excised. The white and grey shrike fly in circles and alight again, more so than the long-tailed one, which feeds more amongst the bushes.

Big rat weighs flask with water, without bottom 2 bullets, 4 pellets.

Ampullaria—length of time they live; buries itself in the sand by revolving motion—lying on its under surface and turning towards edge of shell it acts like a centre bit and gradually sinks very much lower.

Bird with long tail much on the ground, not in thickets.

Meanwhile the Captain's quixotic behaviour in the purchase

¹ The B B bird often referred to is the Bahia Blanca bird; also called Casarita. See Glossary.

of subsidiary craft to hasten the work of the survey,¹ served Darwin's purpose by affording him the opportunity of sailing to the mouth of the Rio Negro in one of the small schooners, with time to acquaint himself more thoroughly with the Rio Negro and the Rio de la Plata, whilst the *Beagle* was still occupied to the North.

So the pages of the little books take on the anticipatory note of the traveller about to explore new regions. By this time the picture of the country was beginning to take on a more coherent unity in his mind; he began to know what questions to ask of the new regions. He lists the necessaries to take with him and quotes some chance information picked up beforehand.

Tow, Paper, Essential Oil, Jars.

Buy knife, Prometheans, medicine, Calomel.

Pistol—balls—powder.

Letter to Commandante: map and note-books—

Soft paper, spare pencil, small hammer, Compass.

Stockings, gloves, handkerchiefs—wine flask? comb,
2 handkerchiefs, nightcap.

Passport, Poncho, saltpetre.

Almanack for Ellsgood for 1834.

River called Negro from the Caciche—

All the Indians in this neighbourhood died of small pox and sort of Plague in throat.

Indians: balls lasso and chusos and very few knives; and dress and paint the same—

This river Negro ends in Lake 3 or 4 leagues in circumference and the little river flows into it.

Laguna Launchen—He says about 10 leagues from Coast of Baldivia.

The Siera Imperial is 5 leagues; ships can see it 70 leagues distant. Upon being asked if climbed on it—"Ave Maria

¹ FitzRoy acted without Admiralty permission and purchased at his own cost during this voyage auxiliary vessels to the amounts of £1,680, £1,700, and £400. The Admiralty treated him with undisguised disapproval and the minutes became more censorious; "Inform Capt. FitzRoy that Lords highly disapprove of this proceeding, especially after the orders which he previously received on the subject." The survey was materially assisted—but FitzRoy was disheartened when finally refused all help.

Sanctissima Jesu, nobody but God could climb it: and if upon it, shake hands with Don Pedro who keeps the keys of Heavens."

Pine trees; no volcanoes. Of the Diamante, stream empties itself into N. Shore, very distant from Imperial.

The list of queries to be answered are written in ink, perhaps on board the little schooner sailing down the coast, whilst the plan for the inland expedition from the R. Negro right up to Bahia Blanca and possibly on again to Rio Plata, was taking shape in his mind. The queries were struck off in pencil as they were answered.

How far do the Cliffs extend?

How many young has Aperia?

What animals are there?

What is export of salt: are bones found beneath deep beds?

When do the Geese arrive? (End of Feb to Sept).

Fresh water fish.

Great bones in cliff?

Gum for cleaning teeth.

Springs of water? Section of wells?

Hard rock near town?

Talk about S. pelagic birds and R. Grande.

Does peat occur, Bones (No) Examine Diluvium & Pumice.

Mineral springs, Gypsum, Nitre.

Snow; earthquakes; Thunderstorms.

What fruits?

Grapes, peaches, Nectarines, Quinces, Apples—

Pumpkin, wheat, barley, Indian corn.

Water, musk melon—Cherries—

Sweet Potato, Cactus, different species.

not plentiful—Potatoes, Olives, Fig, Orange?

From the moment of arrival at the R. Negro, the stress was laid on the difference of the ornithological species; the geographical ranges of allied species was constantly in his mind.

Aug. 2.

Light contrary winds interrupted by a few gales.

[Aug.] 3rd.

Arrived off the mouth of R. Negro; pleasant evening in the comfortable schooner and slept at the Pilot's house.

[Aug.] 4th.

Walked to South Barranca, general appearance of cliff land and great valley.

[Aug.] 5th.

Rode to the town—pleasant ride; banks of river, very unpicturesque country. Indians attack a house.

Ornithology different. Only small *Icterus* not so very tame; some pigeons; different parrots; different partridge; BBB birds common. Rose starling, Finch with black; sparrow—

One day's shooting, many new birds—

Organic remains are merely obscure cavities, and one shell—

In the vegetable mould near to the river pumice pebbles which floated on water.

Several days were spent at the town of Patagones collecting geological information and preparing for the expedition. He made arrangements with a guide and a troop of horses: and Mr. Harris, owner of one of the schooners, accompanied him. The country was in a state of warfare against the Indians—a war of extermination. The Government of Buenos Ayres had sent an army out under General Rosas to destroy them, and Darwin's party had to get permission from the General to pass inland. No wonder the Indians responded with reprisals, and that these travels had the spice of danger. The camp was on Darwin's own route and his meeting with Rosas was of great use to him later in this troubled land. Rosas ruled as Dictator in Buenos Ayres for 17 years.

Aug. 6 & 7th.

The whole country round the town sandstone with waving cleavage and beds nearly horizontal. Houses built on and in it overlooking great flat valley about 8 or 9 miles across with projecting headlands on each side—

Flat rich ground on opposite banks with *lakes*: plain behind

town like Port Praya—all bushes with prickles; and desert between. River fine stream 4 times Severn.

Indians miserable race fed by Government. Like Fuegians; much more ingenious.

Aug. 8.

Went to the Salina, a great Salt Lake. The export of this one lake is at present and will be still more the main wealth of the Rio Negro (salt not very valuable). Our road lay along the Barrancas of the river. The banks at about 5 leagues are covered with willow trees and the diluvial lands being cultivated afford a pleasant prospect: all the good land of this country is diluvial producing corn every year from 10-18 fold; about 30 leagues; there is much fine timber.

On the road all rock sandstone which in places contains calcareous bed 4 or 5 inches thick—light, porous; perhaps much of the calcareous formation also a Tosca bed; inferior (or mortar) owes its origin to this; but I do not conceive there is sufficient for this purpose.

Much of the gravel is white-washed as at P Praya. It struck me that the cause of this calcareous matter was owing to the rock being stretched at the base of the Andes.

(Pumice stone conglomerate.)

The gravel likewise in places contains concretions varying from size of fist to the head (not rotted of course) of small crystallised Gypsum; it is worked for burning to white wash the walls.

The gravel bed must have been formed at bottom of sea (the interior shells show this); and tranquilly with some chemical action; these half concretionary masses of Mortar and nodules of Gypsum all show this.—

The whole plain with prickly bushes and near Salinas (far more salt than sea), sea plants, like those at B. Blanca.

Flamingoes; traces of worms bodies preserved.

Small rodentia, even in this and camp. Water about 3 feet deep filled by rain.

Salt in quantity is not perceptibly decreased by working; in other lakes forms crust at bottom under water as it cannot be redissolved. . . .

Aug. 9th.

Day wasted—one of the prices for undertaking any expedition; young male Indians in a schooner work well. Fine young men—dress—cleanliness—hair—person—etc.—very tall—brown Statues.

Aug. 10.

Bad day, so would not start—Several gaucho in company. Callandra—Long tailed Shrike, different habits. Much wilder, Tranesia sits differently on twig; alights on summit of branches—does not use its tail so much.

Song infinitely sweeter; Toro Toro or Taupes and Aperia different from Maldonado, latter smaller, tamer, appear more day feeders, frequent hedges and holes, have 2 young at a time; latter quite different more distinct louder, sonorous like distant cutting of small tree, more peculiar, more double and not three or 4 times repeated, only twice, said to have no tail (?) and blind (?). Inhabits same sites—more injurious than Talpe.¹

Bird runs like animal at bottom of hedge, does not easily fly not loud, singular, single.

Orange fruit, olives? yes.

Little bird with pointed tail inhabits Traversia—hops about bushes like Parus constantly uttering harsh shrill quickly reiterated chirp—

Long billed BBB inhabits do: quietly fly about and hopping very quickly on ground and picking at pieces of dung much like common BBB.

Carrancha Longtailed Shrike [erased] very very beautiful, many in throngs on twigs, enliven Traversia.

Most resemble but more powerful some of the reed warblers—harsh notes intermingled and some very high ones.

[Aug.] 10th.

Started, country same, rather less spiny trees.

Slept at about 11 leagues from the town in N $\frac{1}{2}$ E (true course).

Sleeping place; found cow; fire, stillness, dreary plain, comfortable night, like Gypsies, horses not around, describe general arrangement—

¹ Referring to the different habits of the Caveys. See Glossary.

Passed Walleechu tree—first one I saw, subsequently others—3 feet diameter, low much branched. Indian God—[Indians] shout when about 2 miles off;—surrounded by bones of horses; covered with strings instead of leaves and remains of Ponchos (thread pulled from) cigar smoke upward, spirits in hole,¹ yerba, food, etc, etc—Gauchos have seen all this—think horses will not be tired—All tribes know this God, men, women and children. Gauchos steal the offerings, 9 leagues from the Town: It is perhaps because a well known landmark and striking object in the plain and as being half way in a dangerous passage in Traversia.

In the Diary this picture is filled in:—

“About two leagues from this very curious tree [the Walleechu tree] we halted for the night, at this instant an unfortunate cow was spied by the lynx-eyed Gauchos. Off we set in chase and in a few minutes she was dragged in by the lazo and slaughtered. We here had the four necessities for life ‘an el campo,’—pasture for the horse, water (only a muddy puddle) meat and firewood. The Gauchos were in high spirits at finding all these luxuries, and we soon set to work at the poor cow. This was the first night I passed under the open sky with the gear of a Recado for a bed. There is high enjoyment in the independence of the gaucho’s life:—to be able at any moment to pull up your horse, and say, Here we pass the night. The death-like stillness of the plain, the dogs keeping watch, the gipsy-group of gauchos making their beds around the fire, has left in my mind a strongly marked picture of this first night which will not soon be forgotten.”

[Aug.] 11th.

(Monday). The next day much the same country destitute of almost every animal, there are fewer guanaco, deer and ostriches; most hares of any animals. Here only are Carranchos and small Vulture, no Lachuzaos; gravel and mortar. At Pozo Secundo (9 leagues from colony) a remarkable flat

¹ “The Indians pour both spirit and mattee into a hole & likewise smoke upwards, thinking thus to afford every possible gratification to Walleechu.”
Diary, p. 160.

plain at much lower elevation, is seen stretching for many miles, vegetation and appearance the same; but did not notice mortar, only gravel. It must be same, for at Pozo there was greyish blue sandstone and Tosca—Here also Salt Lakes and banks of a well with encrusting nitre. Slept night as before—Foxes howling—no mortar—

[Aug.] 12th.

About 3 leagues from R. Colorado—Plain very gradually lowers into plain with clover and Lachuza and no spiny bushes and green short turf called Pampas—I suspect must be Tosca plain of other side of the River—Character of coast the same—stretches to Unison Bay with flat Islands and mud banks—sinks soon onto (sea), diluvial plain;—parts are salt petre marshes with saline plants, then plain and line of sand low hillocks. It is curious how Salt petre occurs in diluvium plains. I am inclined to think the *Pampas* not diluvial although little above level of sea.

N.B.—Opposite Patagonia is *certain* diluvial plain; there are small Salinas worked and bare places with nitre: How is it to be explained that Salt should then occur? I can only imagine springs; for plain fertile ∴ salt not in—What is cause of low sand (stone) plain? Abrasion?

Lower saliferous plain is 50 or 60 feet lower. Pleasant ride:—Gauchos in a line, robes flowing, easy seat, spurs and swords clanking; change horses, three horses, anecdotes of riding. Indian white horse; laughing and talking, arrived at the river Sauce and reeds, about size of the Severn, 60 yards of water—mares swimming; $\frac{1}{4}$ mile square encampment for division of the army. Banditti—Examination necessary from General Rosas. Extraordinary man—nearly 300 thousand cattle—Perdrix and Scolopus most numerous bird in the dry plain—build on borders of lakes—(eggs white spotted with red) about 5 or 6 in small flocks—from 2 or 3 to 30 or 40.

[Aug.] 13th.

Wednesday. Nothing to do, miserable day, kill time, swampy plain, overflowed snow water in summer; only amusement watching Indian families, ornamented beads, long hair, beautiful children; all in pay riding about 400 great number.¹

¹ These were the Indian allies of General Rosas.

[Aug.] 14th.

All my days are wrong: certainly I started on Sunday.

It is clear the plains around here (including Salitras) have been lately formed in an estuary of sea; land is now flooded in summer; there are islands in swamps and sand dunes which yet remain—attesting former sea.

About 10 leagues in direct line from Roza: this river floods in December from snow:

Rio Negro from snow and rains.

General Rosas grave; intelligent, enthusiastic, laughing bad sign: anecdote of mad man.¹

Mendoza trade.

[Aug.] 15th.

4 leagues to first Posta—direction ENE—Course of river, diluvial beds; 2nd Posta (11 leagues) direct N by E: Gauchos think it 14 leagues from sea. In interior, 17 leagues, there is a rough plain—Salinas—Plain about 30 or 40 feet above colony, more fertile, more grasses, different plants and vegetation, different aspect and fewer spiny bushes—

Common Icterus, black Cuckoos; where there is water, Plover; (red finch, yellow bill) at 1st Posta. . . .

[Aug.] 16th.

3rd Posta to 4th: 7 leagues: plain at foot of escarpement same: places with numerous undulations look quite flat from great escarpement—

At (S) side near this 4th Posta the plain terminates abruptly with edge of Aluminous Limestone rock and covered with Medanos—now shifting. . . . The edge about 50 feet above the lowland into which salt water flows in gales—These Medanos do not stretch very far and terminate abruptly to the East (Road round them—white Ostriches.)

Both BB birds build in holes. Casara:—smelt deer at $\frac{1}{4}$ mile distance.

Last night comfortable little Ranchita—Black lieutenant; Indians march by in numbers; pleasant man and certainly by far best conducted—little ditch.²

¹ This mad buffoon, kept by General Rosas, told the story of how he had made repeated requests of the general. The final refusal was accompanied by laughter and an order to two soldiers to punish the offender severely.

² As a defence—a poor one if the Indians were to come.

Excellent Asado—

Long tailed shrike only comes in summer to R. Negro!

Whole ground soft with Taupas, never leave their holes.

The distance from 4th Posta to town about 3 leagues on a direct line but more than 6 on the road. Whole road through mud very wearisome; on North side, mortar plains with fragments of quartz from Sierra de Ventana. 5th Posta again mud swamps—Souzed in black mud; and Posta man murdered—Heard of cannon—Indians close: kept close to the mud to escape, left the road; believe friendly Indians—Land swamp with little evidence of sea lately being there, yet millions of a small Turbo in obscure lines; medianos in swamp—

Young ones sit on Capinchos back; weight of some animals of Maldonado is in this book—

[Aug.] 17th.

Sunday. Don Pablo thinks Sierra runs E & W, for 30 or 40 leagues and to the W *very large* Salina—day spent in killing time; no clean clothes, no books. I envied the very kittens playing on the mud floor—[Delay on account of rain.]

Pichey Mataco, Peluda¹ all inhabit same plain, first wonderfully abundant, buries itself with great celerity: has 2 or 3 young at one time. Molina does not go South of Tandil. Taupes different note here, single, repeated at equal times, or accelerating, very noisy in evening after sunset, quiet at night.

[Aug.] 18th.

Commandante lent me horses and soldier; nobody leaves the fort to hunt [alone?]; for with him two men killed, he wounded and horse balled; now are close, coast road safe; it was enough to make one watch deer running away fast as if frightened by some other object—Ship not arrived—picked up 2 fresh horses—yet so very bad—back [sore]; and thin, one left behind—after returning eat a Pichey breakfast, dinner; horses quite tired—not more than 25 miles and walking: slept in camp: Saltpetre: Taupas: Zorilla: in morning returned—horses miserable [Aug.] 19th—hardly able to crawl. I walked—another horse left behind; killed kid—no

¹ Local names for different species of Armadillo.

water, all salt. Suffered so much from hot day, could not walk; dreadful and inhuman riding such horses: delicious drink of fresh water; arrived at Pueblo after miserable ride.¹ The places where saltpetre are everywhere; water in Cart ruts. The places where it occurs are muddy, bare and look as if sea entered at high water. In mud walls the Camara makes its holes; not being aware how thin they are actually make hole quite through.

[Aug.] 20th.

Bought a good young horse for about £4 10; went out riding. The number of Bulimas (especially) on high plain, and other land shells very curious, every square inch has 3 or 4—I never saw such numbers. The whole surface for leagues was like unto the sea beach: specimens: all dead ones except one.

[Aug.] 21st.

So tired of doing nothing started to Punta Alta. On the road had alarm of Indians: coolness of the man's method; not at once galloping; crawling on his belly; women. Worked at cliffs & bones, beautiful evening; ship not arrived; very bad night excessive rain—so much of a Gaucho do not care about it; next morning also raining;

[Aug.] 22nd.

therefore started back. On road observed fresh track of Lion—commenced unsuccessful hunt. Dogs seem to know: not ambitious to see Lion: have no individual name, [i.e., the breed of dogs]; all cowards from the use of balls,² because so few pebbles: on return found Harris arrived night before, uneasy about ship; met on road Indians from this place supposed to have murdered the postmaster. The General's message about their heads: & division of army to follow the Rastro,³ if guilty to massacre them. Ostriches, males, certainly sit on eggs, easily distinguished, stray eggs first laid:

¹ "As a Gaucho cannot walk, I gave up my horse and took to my feet—At last I could walk no more, and was obliged to mount my horse, which was dreadful inhumanity, as his back was quite raw." *Diary*, p. 167.

² Two or three balls fastened to a thong of leather; these are whirled round the head of the rider and released so as to wind round the legs of the escaping animal.

³ Rastro = Track.

Many females, said I know not on what evidence to lay in one nest. About 50 eggs in the belly: analogy to African method—manner of laying.

Pages of the pocket book are here taken up with a close discussion of his altered views of the geology of Punta Alta. The big skeletons, the shells, the pumice were all being reconsidered.

My alteration of view of geological nature of P. Alta is owing to more extended knowledge of country; it is principally instructive in showing that the bones necessarily were not co-existent with present shells;¹ though old shells, they exist at Mt. Hermosa.—pebbles from the beds of which occur in the gravel. Therefore such bones if same as those at Mt. Hermosa must be anterior to present shells: How much so? Quien Sabe?

[Aug.] 23rd.

Ship seen over the horizon of mud banks.

[Aug.] 24th.

Sunday, rode to the Boca, but a N W wind was too strong to allow ship or boat to approach nearer.

[Aug.] 26th.

Monday. The boat with Mr. Chaffers in command having in vain tried to beat up, slept on the water and arrived this morning. I rode down to the Boca; returned, accompanied by them to Commandante; not thought safe for Sierra Ventana; arranged plans for B. Ayres, very civil; returned on board, waited for cow to be killed; started after dark for ship; fine moonlight, calm, ship moved, arrived on board $\frac{1}{2}$ after one o'clock.

[Aug.] 27th.

Whole day consumed in relating my adventures and all anecdotes about Indians to the Captain.

¹ But this view again altered. See *Journal*, p. 82, and *Geog. Obs.*, p. 324, 355. The geological reasoning must be followed in these works to understand the difficulties involved in the conflicting evidence. He finally concluded that the "giantic quadrupeds, more different from those of the present day than the oldest of the tertiary quadrupeds of Europe, lived whilst the sea was peopled with most of its present inhabitants."

[Aug.] 28th.

Very actively employed in arranging everything for Buenos Ayres; Most delightful the excitement and activity after the indolence of many days in the last fortnight spent in the Spanish Settlements.

The next days were spent in bone searching once more at Punta Alta, whilst waiting for his guide to start on the next and longer lap of the journey to Buenos Ayres, the Sierra Ventana and Tapalquen. The time was not lost;—the puzzle of the big bones at Punta Alta with further evidence, was almost solved.

Aug. 29th.

Thursday. After dinner in the yawl we started on joint expedition. Staid at night at Punta Alta in order for 24 hours of bone searching. Very successful with the bones, passed the night pleasantly.

[Aug.] 30th.

Friday. At noon proceeded in the yawl amidst the intricacies of the mud banks, arrived at Pilot's House, procured horses and got to Guardia [Fort] at 9 o'clock.

[Aug.] 31st.

Saturday. My Vaciano not having arrived, started to Punta Alta to superintend bone searching—quiet little retired spot, weather beautiful and nights; the very quietness almost sublime even amongst mud banks and gulls, sand hills and solitary vultures; saw here beautiful little Parus; tufted Partridge; Common plover, oriole, Cassicus, Field fare, rose starling very abundant—B. Blanca birds (long billed) all common—N.B. Avecossina was last year near Salitras—

Sept. 1st.

After wandering about with my gun and enjoying sunny day at noon started back for the town. Saltpetre forms a thin crust over those extensive lakes which were a few days ago [filled] with water; appears like snow and edges like drift. Is the blackish mud cause or effect in Salina at Patagonese sand fetid; ground I believe always low, first observed it on Pampas South of R. Colorado—Saltpetre seems to

effloresce on the surface; near town great body of horses, thought dust was great fire, very difficult to drive [the horses], if lion comes, or even fox, amongst them at night. Rat nearly as large as common grey English rat; hinder feet demi-palmated—lives on edge of brooks.

Commandante has often seen and heard of large *Paludo Scales* on cliffs—large gull often goes far inland for 50 miles—attends the slaughtering house; the cry the same as common English gull, when approaching rookery: gran bestia all nonsense;

The animal of which whole skeleton was lying in pieces of stone, tolerably in proper position and imbedded in sand. Is this piece of Tosca washed out of old cliff or modern reformation? examine matrix.

[Sep.] 2nd.

Monday. Spent in doing nothing—3 sorts of *Cassicus*. The sparrows around the solitary Estancias as little supply the cheerful place of domesticus as the *Cuorvos* [?] in gorged flocks do rooks.

[Sep.] 3rd.

Tuesday. Harris and Rowlett started to the Boca to be picked up by the yawl which has been surveying the head of bay; will pick up bones at Punta Alta, return on board and next day the ship sails.

(I have since heard ship did not sail)

[Sep.] 4th.

Wednesday. Cruel ennui—found books exquisite delight—time gallops: Spanish edition, Barcelona, of the Queen's Trial¹ and Spanish story book: nobody knows pleasure of reading till a few days of such indolence.

Field fare chase and catch in the air large Coleoptera.

N.B. Dung of horse and cattle with very deep holes beneath (fine earth) like *Geotropes*; I have one specimen under horse dung another from cow; omni-stercivorous.²

When lying on the plain Carranchos come and soaring over you settle at about 50 yards distance watching you with an

¹ A Spanish edition of the trial of Queen Caroline.

² Perhaps Darwin's only attempt at coining a new scientific term on a classical basis; =eating all sorts of dung.

evil eye. The black fragment of bone at Punta Alta like M. Hermosa; Balanus from Whale and pieces of whale bone. If the bones of skeleton are encrusted with marine animals in those parts now covered the matrix is not probably Tosca and animal diluvial?

The Zorilla¹ so conscious of its power to injure, wanders about the open plain in day time, does not attempt to escape, dogs will not attack it except when much encouraged; froth violently and running from nose and efforts at sickness; often smelt on fine evenings.

Be— [?] change homes every year. Lievre have 2 young ones in hole made by themselves.

[Sep.] 5th.

Thursday. Cannon fired to celebrate a victory obtained over Indians in very rough mountains—between R. Colorado and R. Negro. 113 Indians in all, all taken, 48 men killed, 2 Caciques; one escaped with good horse; one prisoner is not sure if useful traitor that he will be killed; all women above 25 or 26 murdered; excellent authority; man would not allow it was bad but necessary because they breed so.

Riders have come from the General to send party to small Salinas as a party of 30 or 40 (50)—Indians are there, only a few leagues from the road—It was not Bernanto's Indians who killed the Posta, but some strangers, whose track leads to the Pampas.

Long legged Plover have very pointed oval eggs, olive brown with dark brown patches at obtuse end.

Think the distance between Colorado and R. Negro only 12 or 14 leagues, horse travels easily on a trot with no fresh water.

Lakes: mountain very rough—half as high as Ventana.

Only one Christian slightly wounded—Indian when taken almost bit thumb clean off: suffering his eye to be nearly pushed out. Sham dead with knife under skin [cloak]. It was prisoner Cacique who told of the three other Caciques being at the little Salina with only few men each.

They recovered many Bahia Blanca horses—Don Pablo' [s] amongst others, when they took the Indians. Partly dis-

¹ The Skunk, who ejects an evil-smelling fluid,

covered from dust of horses—Peons want to take horses—do not attack Indians.

Large Maldonado partridge is at B. Blanca—I do not know for the other.

The Indians at the small Salinas which are to be attacked have on average 3 or 4 horses each. Some more some less: all horses private property; divide soon after robbery.

Cacique with white horse, battle fought near Churichil, some of his people gave information—respecting large [force] in mountains N W of Churichil and North of Colorado amongst mountains $\frac{1}{2}$ as high as Ventana, could see Cordilleras like Ventana from Medanos. Upon attacking them (and other Indians) they disperse in every direction and stop neither for women or children because know it is death: Christian's zoo: when dispersed fire carbines once, then and always trust more sword or spear: if cannot come up use the balls, which stops horse: my informer chased one man who cried out, "Companero no mato me"; [do not kill me] at same time could see him disengaging balls to dash his brains out; sabred him and cut his throat with knife; there were two pretty white captive girls from Salta could not speak but Indian: other captives with Gen. Pacheka:—N.B. Indians of Salta small, no horses, slings and bows and arrows.

Four men run away separately, one killed, 3 others taken, turned out to be Indian chascas: they were on the point of their Council, great mares' feast—Fandariga, and next morning all ready to start; the two first were asked (the three being put into a line) to give information about errand etc.; refused—shot one after the other; the third being asked, said as others 'No Se'; and adding 'Fire, I know how to die'. Noble patriots; not so prisoner Cacique. His information will be important as relating to grand reunion. Chascas were coming on to these Indians at small Salinas.

(Cacique gave information of their being there, hence present expedition). The Chascas were young men under 30, 6 feet high and white; very fine men, had come from Cordillera, good way to North; immense communications from thence to Salinas at B. Blanca.

Grand Point of reunion supposes 6 or 700 there now, will

be in Spring about 1500: present system kill wanderers, drive to centre for great attack. Indians treat Christians just same as treated, all with beards killed: great consternation will be at Cordilleras—

Women taken at 20 years old never content. Tehuelches very tall, informer talks of them in strongest terms looking up to ceiling—Generally one foot more than me.

Sep. 6th.

Friday. Drunk from Mattee and smoking, from indolence and anxiety about starting: constant reports about Indians made important by firing gun: air hazy, thought gale was coming on—they say fire far in the Camp: now so dry.

[Sep.] 7th.

Saturday. Saw piece of opaque cream-coloured flint; remains of arrow head, had barbs: not Chusa, twice as large as Te del Fuego: often found at Churicoel: Indian Antiquarian:—before horses and balls changed manners. *No horse* Indians have arrows: do not fight with all, only Chilemans and Araucarians.

When Cacique with white horse escaped, between 20 or 30 killed: saw in Pulperia a boy Emperio sent by Bernardino (resident friendly tribe) as pledge for some spirits for a dance: yet these friendly Indians it is not considered proper for one or two to go by themselves:—has son Christian Innocente [?] educated by General Rosas—

Avestruz Petise:¹ frequent sea-side—South of Colorado—feathers same structure and body and head and neck similar, legs rather shorter, covered with feathers to claws, has sort of fleshy 4th toe without claw—eggs a trifle smaller. Head with scattered hairs, cannot fly—good information.

My prospects are now better—gracias a Dio, start in the morning.

[Sep.] 8th.

Sunday. Started. 1st Posta, about 4 points west of Sierra: Layer of friendly Indians: 4 leagues high camp, with diluvial sandy earth covering sloping vallies—new sort [of]

¹ This is the Gaucho name for the species of ostrich, named by Gould in describing the new species, *Struthio Darwinii*. The problem of geographical range and specific differences gave rise to the discussion in the later note-book, p. 263.

grass, no spiny bushes. First saw ridge behind ridge of Sierra. Only one point of view. Near Posta good salt Salina in depression, small: and Salitras in depressions but far above level of sea.

I have formerly guessed at height of plain: was told first could see Sierra Ventana 2 leagues N of Colorado—with Indian, put hand to head and grunted in same manner as near Wallechhu. What for? [See P. 159 Diary.]

Salitra at last Posta above diluvium with bits of mortar.

Plain I should think 200 feet above level of river; river deep, rapid—12 leagues to Boca, and 6 to Sierra.

R. Sauce about 20 feet across deep banks with many f[resh] w[ater] shells. Much [of] Sauce impassable except in two places and mouth: good against Indians. Met on the road great troops of cattle and horses, many lost, 15 soldiers; a short time ago officers came with 506 horses—all lost except 6: afterwards other troops—soon perceived by bare heads and long streaming hair they were Indians going to Salinas for Salt—eat salt like sugar. Curious difference with Gaucho, habits so similar.¹ Near the Sauce Posta, turnips, doubtless like Colorado, different I think from European, root longer, more stringy and acrid: Variegated thistle.

Plenty of Lievres—I was here told by B. Ayres man that they only use Biscatcha holes: is it not that these parts where Biscatcha are plentiful, they then do not make holes: hence different account.

Was told that in Sierra Tandeel, in 3 months 100 lions were killed, from being destructive to calves; they kill colts or small calves by turning back and breaking necks. Good information. When I arrived at S. Posta, procured horses and started for Sierra, had difficulty in finding water because streams bury themselves and not even wood enough for Asado and therefore half spoiled—hard to find any place so barren, on road hunted and killed beautiful fox and armadilloes: immense numbers of deer: few Guanaco: plain level with longish brown withered grass; vallies rich, valley of Sauce 1 mile broad, with Turnips, and fertile: Sierra rising from plain without any trees or gentle rising (or very little).

¹ The Gauchos go for weeks without any salt.

Has strange solitary appearance and deserves the name of Hurtado:¹ The plain abuts against and amongst the hills—— Night at Sierra very cold, first wet with dew, then frozen stiff.

Water in Caldera about 1 quart. [Frozen solid].

[Sep.] 9th.

Monday. In morning started early and proved Mackintosh by carrying water to summit;² reached summit of highest part of back—difficulty of ascent from immense numbers of steep abrupt vallies—general character of Sierra; sides steep; when on top was obliged to descend near Camp to horse pass; saw horses, thought they were Indians—having thus lost much time, started again and with immense labour and cramp from new muscles being brought into action, arrived at a point nearly as high as summit about one hour's walk from it, not good to proceed, view hazy, day clear, could not see sea; ascent unfortunate, might have come to foot on horseback——(Biscatchas good to eat; meat white) Returned tired and rather disappointed, having traversed so much—nothing to see except pure quartz: yet scene novel, and little fear like salt;³ made fire fearlessly.

Hurricane night: much mattee and smoking good for Cramp: very much fighting on Sierra, Chascas ran on top and fought with big stones: To the West Sierra with one road and water at top, Indians drive horses up and Christians although more than a thousand, could not touch them: on Sierra white shrike and woodpecker.

[Sep.] 10th.

Tuesday. Riding slowly and looking for rocks, returned to Posta at Sauce, scudded before wind.

R. Sauce travels to the North of Ventana into the Interior; has floods in middle of summer and floods now from rain. I was to have waited for an officer: letter from General Rosas; but good opportunity with Post Master, so started.

¹ Or separated.

² This "Cape of the Indian Rubber cloth," had a pouch in one corner for carrying water.

³ Fear of Indians.

[Sep.] 11th.

Wednesday. Distance of Sauce Posta to 3rd Posta 15 leagues—but said to be 13 in direct line.

Rather stupid ride, crossed a rivulet half way R. del Indro. Gauchos talent of observation; on one side of steep hill showed me his home distant about 30 miles: in 1 and $\frac{1}{2}$ miles from bank, with immense horizon, again showed me. By Kater only differed in 3° in the direction in which he said—it might be little more—arrived at 3rd Posta.

[Sep.] 12th.

Thursday. I waited here for the officer: and rode to the Sierra South W of the Posta. Saw beautiful Oriole.

Description of Post: miserable shed open at both ends: of straw: about 50 horses and sometimes a cow; game, thistles for wood; 15 leagues from one, and now (after murder) 30 from other; only amusement smoking and mattee: barren looking long withered grass camp.

Partridge in evening like frogs. Few Vultures watching for them to be killed too [the Gauchos by the Indians].

Much appearance danger: (like salted meat).

Dog bark—jump up: Pteru-pteru cry, when playing at cards by firelight—heads inclined, horrible looking men: Game at balls—distance 35 yards—but [succeeded] about one in 4 or 5 times. Could throw them between 50 and 60 [yards]. Carranchas do not run like cuervos, eggs in cliff, cry like Spanish G & N; at Sauce saw other sort; legs and bill blue, feathers light brown except crown of head and eye darker.

[Sep.] 13th.

Friday. Bird called Chusco lays in sparrows nest: ostrich 4 or 5 in one nest—run against wind as well as deer. ostriches lie amongst straw; noise of ostriches.

Belly of Pechey [armadillo] with various Coleoptera and Larvae.

Foxes in immense numbers: Lions never roar, even when taken—catch deer by day; saw young Viscatcha half eaten, live amongst straw and in holes: immense number of Aphodia (V specimen) but not about horse dung, although plentiful.

Went out hunting: no sport: pleasant gallop: 2 sorts of Partridge.

[Sep.] 14th.

Saturday. Leaving long chain of low hills stretching out of sight to the NW; and mortar formation at foot: swamps, then flat plain, like sea; could not guess formation; slept in camp at sunset, having started at $\frac{1}{2}$ after 12 o'clock.

[Sep.] 15th.

First saw great cranes, Carranchas, and Plover, and Plover eggs (late, mem.) latter sham death like Peewit.

Whole road with many swamps and good long grass; arrived at middle day at 5th Posta, having passed 4th where men were killed. From this 5th to 3rd Posta said to be 30 leagues—perhaps 20. From 5th Posta mean bearing of many fires made in our track between this and sleeping place was 208. Even in this road dry islands in swamp hard mortar; Cranes carry bundles of Rushes.

Man who was killed at Posta had 18 wounds—

Fish in shallow water—

Long legged Plover cry like little dog's hunting bark—

numerous not inelegant eggs like Plover; many snakes with black patches in damp swamp; 2 yellow lines and tail red; also specimens.

21 men in this Posta: hunting, 7 deer, 3 ostriches, 40 eggs; Partridges and Peecheys [Armadillo]. Slept in open air.

[Sep.] 16th.

Monday. Road to 6th Posta black peaty plain with long grass; swamp heavy riding. Near Posta mortar island—Posta near lake enlivened by many black-necked swans and beautiful ducks and cranes.

To 6th Posta road rather better, like Cottenham Fen; large flocks graceful soaring flight of Glossy Ibis. . . .

Last night remarkable hail storm (Deer, 20 hides) already found dead, and about 15 ostriches; saw hides and flesh of ostriches; man who told me had his head lapped up from blow; Carranchas also killed; Ducks; eat Partridge with black mark on back; [hailstones] as big as apples; broke Corral; few Hares.

6th to 7th Posta, 10 leagues (short ones).

Camp very fine black mould.

Gauchos seek white pieces [of hard rock] for striking fire.

I have now for some days eat nothing but meat and drunk mattee; long gallop in dark, eat Lions meat, very like a calf, thought with horror they were eating young calf not born—very curious Table-land of Tapalken—Informer says Barrancas 30 or 40 feet high—

[Sep.] 17th.

Tuesday. From fertile camp 7th to 8th 8 Leagues, by the side of Rio Tapalken—pass it two or three times—considerable stream. At town of Tapalken bought biscuit: curious plain covered with horses and Toldos: always 2 chinas [Indian women] on horseback: wife of old Cacique not more than 11: Pulperas [or Shops]

Black headed gull breed in Fens: Ostriches lay eggs in middle of day: black and white Fly-catcher and long tailed bird; at banks of river pure Mortar (like Hermoso concretions, with Manganese and called Tosca) causes many small rapids: it lies in horizontal beds; above palest Tosca.

8th to 9th Posta all to East of River; country and Fens.

There are not here Hare or Peecheys, more owing to country than Latitude, for Peecheys occur to N.W.

Some of R — [?] monks are now officers—Indians with sheep—families of men at Colorado, families beautiful.

9th Posta 6 leagues East of R. Tapalken.

[Sep.] 18th.

Wednesday. 9th to 10th Posta 8 leagues, great turn to East; swamp and camp; 3 rivers enter into Laguna with Barrancas and Peecheys.

10th to 11th Posta—8 leagues galloped in $2^{\circ} 50'$; flock of golden Cassicus, little mortar—11th Posta first Estancia, some white Salitras. Camp moderately good—Passed Indians and Chinas—like English goods; going to trade with Yergas¹ to Monte.

No Peecheys

11th to 12th, 3 Leagues

¹“The women rode the horses with goods; these are of hides & articles woven by hand of wool, such as clothes or yergas & garters.” *Diary*, p. 181.

12 to 13, 6 leagues

Much water, crossed Salado about 40 yards wide, very deep, crossed in Canoes: the banks mortar and whitish clay: arrived at dark at 13th Posta.

General Rosa's estancia—very large long building, fortified; 900 faragos maize, immense herds. 74 square leagues; 200 Peons formerly safe from Indians: furniture almost outside Estancia; yet best of all.

[Sep.] 19th.

Thursday. 13th to 14th Posta 4 leagues, started early, camp level with clover and thistles in great beds and Viscatche's holes—camp like B. Ayres: and Fennel near the Guardia: arrived at Guardia 9 o'clock

Nice scattered small town with many quinces and peaches in blossom. [erased] Passed by great Lake and other near town: with cliff about 4 feet reddish Tosca with vertical stalactites of mortar.

I found plates [of Megatherium] on beach evidently near proper place, as Tosca shows also many of the bone fragments of rolled bones not worth bringing.

14th to 15th 6 leagues. First saw Acanthus, very few tufts.

15th to 16th 5 leagues, 16th to 17th 6 leagues.

much rain, many Estancia, marked by Ombu tree on horizon—and cattle.

[Sep.] 20th.

Friday. Slept at house of half madman—said No at first from robbers¹: repeated everything I said.

Much Acanthus. 15 to 16, 5 leagues. 16 to 17 do: Fine camp.

Approach to B. Ayres: very fertile—Olive, Agave hedges, willows in leaf and Pantanas.

[Sep.] 21st.

Saturday. Various Business. Cusco places eggs on other birds nests.

Mouths of rivers between Monte Hermoso and Cape Corrientes: distances from either—each place. Do they *open* with the sea or are mouths closed generally by sand banks—how

¹ "Upon reading my Passport and finding that I was a Naturalista his respect and civility were as strong as his suspicions had been before. What a Naturalista is neither he nor his countrymen had any idea." *Diary*, p. 183.

wide—how deep—ever entered by boats or vessels?
Marks—approach?

He rested at Buenos Ayres in the house of Mr. Lumb, a friendly merchant, where he rejoiced in the comforts of an English home for five days. The next ride to Santa Fé on the Parana, was memorable on account of the vast numbers of fossil bones he observed. This made a deep impression and led him to revolutionary views of the kind of country and vegetation that could support such vast numbers of such huge animals.

He had intended to continue his journey across the Province of Entre Rios to rejoin the *Beagle* at Monte Video. But at Santa Fé, as will be told, he became unwell with fever, and so took a boat down the Parana and finally reached the ship on October 4th.

As usual the days in a town were fully occupied in shopping and preparations; and on September 27th he started on the trek of nearly 300 miles from Buenos Ayres to Santa Fé.

Bread, sugar, Yerba, 2 packets cigars.

Tailor—shooting Jacket mended and trousers—Big bag—Lindsay, Calle Piedad.

Big bottles—Large Clasp Knife.

Bees wax, Rosin, corks for jars.

Market—fish—Repair lock—Paper for plants.

Bottles small with large mouths.

Woollen stockings—mice and rat traps—Black silk handkerchief

Pills Druggist—Museum see petrification—Snuff box

Mackintosh—washing bills.

Seeds of grass. Katers compass.

Indigo—gunpowder and shot—Gun—Snuff.

Formation of Corrientes—if possible obtain them.

3 leagues up—shells in cliff.

Water not fresh above 50 miles—Island Marineras.

Lagune de los Pato about 50 miles from Mouth

Said in the country when no Capincha, fear of Jaguars not occur—of Plata—

Biscatches drag things to holes.

[Sep.] 27th.

Friday. Passed Capella Moron & slept about 3 leagues from Luxan.

Great bed, 6 leagues, of young thistles—

Biscatchas, like rats, tame, infinitely more numerous than to South—no geology—except on surface—

[Sep.] 28th.

Saturday. Passed Luxan on river by bridge—nice church and Cabilda, from thence to Areca, smaller town—Country generally flat, yet there are great inequalities, for from some places very large horizons are in view.

Nearly whole country thistles and clover: miniature forest clumps—rise green out of the very desert.

Few birds: whole country estancia; distant one from other.

Passed R. Arracife on barrells—and slept, rather unwell, yet paid for 31 leagues.

Biscatchas drag bones and thistle stalks to their holes.

In evening first saw Parana at distance—woody island.

Many of the brooks in whole journey paved with bones of horses and oxes.

San Nicholas on river: larger schooner; vessels: many islands with bush: barranca 30 or 40 feet high, perpendicular.

Many sorts of Indian figs, chief change in vegetation.

[Sep.] 30th.

For future Pistol in hand; not leave Guide.

Monday. Both Bahia Blanca birds; sparrow, small pidgeon and scizzor bill, stay whole year, build in marshes; all this near St. Nicholas.

New trees, Mimosa, more flowers.

Rozario nice town, hospitable man, found pistol stolen.

I do not *much* like the inhabitants, civil d-d rogues—

The views of river 3 or 4 miles across very different from anything I have seen, from number and linear shape of islands not like lake—Barrancas most picturesque.

1st October.

Tuesday. Our sleeping place I think had very bad people.

Started by moonlight—

Found two large stragglng deposits of immense bones of Mastodon—very rotten—perpendicular cliffs heard of many

other bones: when it is considered that these are only sections of an immense plain, how very numerous these animals must have been.

Cormorants at Parana and many beautiful new birds. I think sea birds enter the Camp more readily from its openness:

Scizzor bills eat fish; no mud banks: Sit on grass camp as on mud banks: BB bird at Cordova.

Biscatcha place dung, bone etc on flat above entrance of holes: are abundant where no thistles.

[Oct.] 2nd.

Wednesday. Unwell in the night, today feverish and very weak from great heat. Everything shows the great change in small change of Latitude—dress and complexion of men—Oranges and immense ombus; beautiful birds and flowers reminded me of Brazil.

—Lawn scenery—Indians, saw a dead one on road and Estancia desolated.

Lopez other day killed 48 Indians.

Corunda prettiest village I have seen from many Ombu and oranges. Saw simple top fashion of spinning—on arrival very much exhausted at Sante Fé: Obtained an empty room and bed and made ourselves tolerably comfortable.

[Oct.] 3rd.

Thursday. Very unwell in bed. Santa Fé kept in very good order, large, straggling, every house with garden. Town looks green and clean.

[Oct.] 4th.

Friday. Unwell in bed.

[Oct.] 5th.

Saturday. Crossed over to the Bajad—passage of about 4 hours, winding about the various Riachos, generally as broad as the Severn and much deeper and more rapid, gave me great idea of size of river. At last crossed, blowing fresh, the main stream; saw several large vessels, one which had drawn 17 feet of water had entered.

Barrancas high, 70 or 80 feet at least, continually falling (muddy water). Covered with luxuriant vegetation, pic-

turesque; with humming Birds. Town very straggling, but rapidly increasing from fine position of Province; half a league from the Port on account of Paraguay Indians formerly.

[Oct.] 6th.

Sunday. Much better; rode to the bottom of Cliff. . . .

[Oct.] 7th.

Walked to the Barranca, found myself much tired. . . .

Found black *Epeira* amongst bushes in society of some hundreds (all same size \therefore same age) main threads very strong common to many vertical webs, each web one or two feet from the other: spider black with ruby marks in side of back.

Saw a largish (running Spider) shoot several times very long lines from tail, these by slight air not perceptible on rising current were carried upwards and outwards (glittering in the sun) till at last spider loosed its hold, sailed out of sight, the long lines curling in the air.

Clearly two sorts of *Megatherium*—contemporaneous with Mastodon: case of taller, two or three inches thick.

[Oct.] 8th.

Tuesday. Thirty thousand inhabitants of Entre Rios and 6 in the Bajade 1825.

Because of the attack of fever, and thinking the *Beagle* would sail from Buenos Ayres earlier than she actually did, he decided to return by the river. The one-masted vessel of 100 tons or Balandra, had a timorous and indolent master, and the return was delayed. But there were important bones in the river cliffs.

[Oct.] 9th.

Wednesday. Delayed by bad winds, very timorous navigator—weather most oppressively hot; at 8 o'clock at night outside house with many fire flies—Pleasant idle time, extreme hospitality: one of few men I would trust.

[Oct.] 10th.

Thursday. Blowing a gale of wind from the South: most unwillingly delayed another day:

At noon went to see some of a *Paludas* case in a Barranca of red Tosca— The shell formed a well between 4 and 5 feet across, entire, but soft, no bones except a lump: the bones were said to be less than full grown cow. *Very many* bones in various parts of Barranca chiefly small, excepting one large piece of shoulder blade: unquestionably this bed is above the Limestone. In one place found tooth of horse in red compact Tosca & well buried; its being a Horse only doubt of real position. After long examination, I came to conclusion that the Tosca might have been washed down & rehardened; but not very probable; the Barranca being inclined precluded the final certainty of the question.

How wonderful number of bones. Great bone was not well covered. Yet *I think* belongs to Tosca.

The House rat of Maldonado is *very* common here in out-houses: crawls much in hedge.

[Oct.] 11th.

Friday. Indolence of the Master, did not start: great misfortune to me: in evening went out shooting, procured specimens.

Observed bird called Casaro, a house marten

How well is BBB called Casarita.

Certhia here; yellow breasted Sylvia do: Callandra.

[Oct.] 12th.

Saturday. Started *gracios à dios*. $\frac{1}{2}$ gale of wind in our teeth; beat amongst the low islands, at last fastened the bark to the trees of one. I started for a scramble.

Two sorts of trees commonest, willow covered with creepers and other plants, swamps covered in floods, muddy sand; fresh and indubitable sign of Tiger.

[Oct.] 13th.

Saturday. Meat bad, fine fish, 4 sorts, rain and gale whole day—in bed because cannot sit up.

At Bajada, red *Sturnus*; and common oriole, black and white fly catcher—the man informs me that a South wind here *always* clears weather as S W at B. Ayres. Current changes, hence wind does not result from impetus but suction.

[Oct.] 14th.

Monday. Ten thousand curses—wind yet S E and dirty weather. Many kingfishers especially Maldonado one: and cormorants:

Rather better weather so that I could fish and in boat pull about to creeks: all pleasure in wandering about the Islands is destroyed by fear of tigras—in this journey main conversation 'rastros de tigre' as before 'rastros de la Indios.' met a Peon running at great rate—attack people in vessels.

[Oct.] 15th.

Tuesday. After some delays—so very cautious—we started; passed Punta Gorden, with its Indian colony.

We came to anchor (from foolish fear of bad weather) in a narrow Riacho. I took the boat and proceeded up it for about a mile—willows and creepers and winding deep slow stream. The cry of birds, and fire flies.

Saw to my delight Scizzor bill just at night (perhaps at Laguna at Maldonado in day because extraordinary number of fish) flying in that wild rapid manner as at Bahia Blanca and *ploughing* the water amongst jumping fry.

Maldonado kingfisher builds nest in trees—

Slept on deck on account of Muskitoes and heat²

Earlier in the voyage a river expedition from Rio de Janeiro in which Darwin did not take part, had led to illness of all the eight who went, three of whom died. Darwin commented on the frequency of such occurrences, and sought in vain for any explanation. FitzRoy gave an emphatic warning against sleeping in the vicinity of rivers in hot climates; neither would look upon the Mosquito as a suspicious intermediary. Perhaps Darwin's fever on this expedition was some earlier malarial infection?

Straight-backed fish, silver band, back indistinct greenish brown—dorsal fin pale dirty orange—tail fin central part

¹ Rastro = Track.

² "I exposed my hand for five minutes, it was black with them. I do not think there could have been less than 50, all busy with sucking. At night I slept on deck, the greater coolness allowing the head and face to be covered up with comfort." *Diary*, p. 189.

black, above and below this bright red and orange.

Hump back: fins pale orange, tail with central [part] black, bluish black spot behind branchiæ, silver band:—back colour do:—

Salmon, bluish above, gradually shading down on sides, fin tipped with fine red especially tail but with thick central band—Salmon grows 2 or 3 feet long—sharp belly.

The wind not being *quite* fair, came to anchor.

Thousands of muskitoes—difficult to sleep.

[Oct.] 17th.

Thursday. Fish with low eyes, upper part of body—those fins with faint tint of yellow, but stronger on head with dorsal clouds of black, tip of tail do: beneath snow white; sometimes bigger, usual size, pupil black, fins white, not very common. Little Indian boy our passenger value one ounce [?]

Caranchas muy picaros, steel eggs.

[Oct.] 19th.

Saturday. Ennui—yellow breasted bird at Maldonado sings well.

[Oct.] 20th.

Sunday. Changed vessels—with many wild peaches and oranges on each side and some large gallinaceous birds; hailed a canoe—and proceeded to Punta de St. Fernando—There first heard of great revolution; could not take boat; went all evening from one great man to other great man and at last got permission in the morning to go to General Rolor's camp.

[Oct.] 21st.

Monday. Arrived very early at the Camp: horrible looking set of men.—Rolor traitor.

The Indian war caused him great inconvenience in approaching Buenos Ayres, as the city was blockaded. The soldiers were a greater danger than the Indians, and Darwin could only get his servant into the town by bribing a man to smuggle him through the guards; and only got in himself by showing the sentinel an old Passport.

Some shops must still have been open, for more purchases were planned.

Nov. 2nd.

Cigars, bladders, big bottles—spirit—

With difficulty got on board packet [to Monte Video] heavy musketry—general utter profligacy [of] character [of] absolute Government; History of Revolution.

At night foul winds, many passengers, women and children, all sick.

[Nov.] 3rd.

Foul winds; intelligent German.

[Nov.] 4th.

Arrived on board [the *Beagle*.]

[Nov.] 5th.

Took up residence on shore.

Darwin found that there would be a further postponement in sailing round the Horn. He therefore determined to set forth with only the inevitable "Spanish delay", and use the unexpected month to ride to the R. Uruguay and its tributary the R. Negro. Capt. FitzRoy had accumulated much extra information with his auxiliary schooners, and he needed time to tabulate all the new knowledge in the charts. Again Darwin owed much to FitzRoy's zeal as a cartographer.

The geological puzzles of this journey were great—an unexpectedly placed bed of mussel-shells—"Is not this important?" The line of mortar-like rock recurs—"How is it this formation is better seen near the hills? . . . very curious finding this formation here"—"Punta Gorda, very satisfactory seeing Tosca beneath solid rock." Many specimens were collected, and the picture of upheaval and land formation became more complete.

Nov. 14th.

Started in the afternoon and arrived at Canalones—

—Canalones nice town—atroacious murder—

grand *green* undulation, country does not *appear flat to me*—

Owl killing snake—General reason of day feeding; woodpecker nest in hole—

[Nov.] 16th.

Stayed all day in,—fine old hospitable Portugeese; stomach disordered; and river of Rozario swollen—nice Estancia.

[Nov.] 17th.

Crossed Rozario, deep and rapid—no boat yesterday—
Postman with 2 letters for principal towns—breakfasted
village of Colla—country more uneven—arrived at Colonia
at $\frac{1}{2}$ after one; delivered my letters. Head of Police received
me in his house: son agreed to go [to] his Estancia on
following day, so I staid.

Town pretty looking from irregularities, few vessels, ruined
church much injured by Brazilian wars—general injury to
country from same cause, making so many Officers: good
sign general and extreme interest in representatives [for the
election of President]—heard person say that representatives
of Colonia were not men of business, but could all sign their
names. Town on a point, harbour made with Islands
(anecdote about French scurvy little Captain). Church very
curious ruin 8 years ago 11 killed not much powder, very
massive walls—so completely shattered—

In one of the streets, fragments of the great Oyster; was told
a Frenchman was making a mine and that Government
stopped him; said to be entire and forming a bed!! Are the
fragments of the real St. Jose [formation] or washed in a
heap by some former rush of water—decidedly only occur in
this one spot about 15 feet above high river—not washed
certainly by present river or they would be more universally
abundant. Eyes shut think I was in Patagonia—

Very good corall and garden. 3,000 cattle, 600 sheep, 800
mares, 180 broken horses, Harbor. Has been offered £2,000,
wants £2,500 (or perhaps less.) How very cheap. Cattle
driven twice a day to centre spot and then by the union of
Trupillas counted. Trupillas recognized by curiously marked
animals.

[Nov.] 19th.

Las Vacas straggling wretched town—on Riacho [narrow
arm of river] with many small vessels. much delay and
trouble—

No Biscatchas

Cuervos seen in flocks

[Nov.] 20th.

House 108 years old. Old woman of 90 years old positiv ely

states that very early in her life no trees—no trees—except one orange tree. Lime kiln fairly covered up by diluvial bank so as not even to be guessed at. Trees growing on this—Time of revolution—Lime left—but in some kilns for 18 years quick in middle yet, bursts out in flames, constant occurrence—superstitious fears;—vegetation above.

3,500 small green parrots killed in one field of corn near Colonia—Jaguar went out hunting, cut trees on each side with claws sharpening. Plagued by Foxes barking: never return to dead body:

Gato pajaro inhabits Banda Oriental.

One man lassoed 22 mares *on foot* in Corals, tied their front legs, killed and skinned and staked them. Other man will bet, stand at mouth of Corral and throw every animal by lassoing legs as he leaves. Other man will skin 50 mares in one day—good work to skin and stake 16.

After our pleasant ride to Punta Gorda in the evening started for Capella Nueva Mercedes—only rode a few leagues, through Corinda like wood and arrived at *very* large Estancia immense land owner; the nephew of owner and a Captain, was resident there—After asking me if I really knew that a hole underfoot would come out [other] side—*tall thin* people in the land where there is 6 months of night (ball all you catch)¹ etc expressing great surprise at being able to go by land to N. America.

“Answer me one question truly—are not the ladies of B Ayres more beautiful than any others” “Charmingly so”

“One other question—do ladies in any part of world wear bigger combs?” I assured them not—They were transported and exclaimed “Look there, a man who has seen half the world says it is so—we only thought it to be the case.”

Waters of Uruguay very black: rapid current—

In riding disturb male ostrich from nest—sometimes very savage—chace men on horseback—caught by men laying down covered with a Poncho

Paludas—Nest of small Parrot.

¹ On finding out that the English did not catch their animals with a lasso, he assumed that the bolas or balls were always used.

[Nov.] 21st.

Started very early and rode quietly whole day with hired horses—No Biscatchas. Passed through immense beds of thistles; cattle lost—roads closed up: generally as high as horses' back, often as high as man's head. As the Geology here resembles that of Buenos, we have the variegated thistle: both sorts almost invariably congregate—variegated worst from height. Very uncomfortable riding—obliged to make great turnings—

R. Negro fine river, with fine blue water and well wooded pretty valley—poor straggling town—Curious pebbles from coast of Uruguay.

[Nov.] 24th.

Started for Pedro Flaca; went wrong road, travelled through very long grass (uninhabited) above horses back like oats. View of Rio Negro from Cliff very pretty, river 2 Severn¹ current very rapid, banks well bushed, winding rocky cliffs. Decidedly the most picturesque view for the last four months. Horses tired—left Peon behind—excessive heat—Pontanas late at night.

[Nov.] 25th.

Rode to dig out bones of giant²; found in place washed down and covered with sand and clay. When first discovered were in dry banks, now under water, bones scattered, broken, lying close together about 20 yards distant bed of Tosca. In evening saw Domidor [horse-breaker] mount two colts—tame—describe process—excessive fright—horse died yesterday.

Nov. 26th.

Started went round by a house to see large head and bones washed out of Barranca and found after a flood—animal of Tosca and diluvial age.

very bad night—wet through—extraordinary thunder.

Bones from the Sazandes [?] will not have paper in the box. Paludas with a tail very heavy and solid, fragment 17 inches long, circumference (longest) 11" at end before Vertebra with attachments to the case—extraordinary weapon.

¹ Twice the width of Severn, his usual river gauge.

² Presumably a tale picked up from the local inhabitants.

Chapter 3

1834

THE BEAGLE set sail for the South to pick up the coastal survey at Port St. Julien; and there were high hopes on board that in a few more months they would have finished with the charting of that interminable eastern coast and the hated southern latitudes, and would sail round the Horn to meet the dreaded gales for the last time, to enjoy the more genial climate of the western coast and the relaxation of the towns. To Darwin in addition it meant the prospect of at last seeing the volcanic phenomena of the great mountain range at close quarters.

Jan. 9.

Arrived Port St. Julien. Went on shore with Captain—
Came in at night.

[Jan.] 10.

Up harbour. Mud banks—late at night.

Country rather better appearance—

Mud in St. Julien—constant rolling of pebbles.

Gecko being kept for some days, colour uniform grey—

Compare with Blow pipe *Mytilus* with blue and shells from Barranca.

[Jan.] 16th.

Oysters high up. Circumference of Winter's Bark 4' 6".

[Jan.] 17th.

Cliff of Barranca 60 or 70 feet high; after gravel time for deposit of mud from a stream. On surface many *Mytili* with blue colour & fragments of Oysters.

They sailed again to the Falkland Islands, and species differentiation from geographical isolation again held his attention. There is a note "Read Falkland Geology".

Why knowing that Patagonia has been elevated in some 1500 feet horizontally above sea (and probably 300 feet below) why not Tierra del Fuego? Cleavage-stratification entirely distinct.

No dung beetles Falkland Islands. Rabbit dung, Black rabbit.

Bird—Penguin—3 pounds. Rabbit—magellanicus.

Henslow—importance of preserving labels.

Jackass Penguin depressa: perpetually rolls head side to side; as if he looks only out [of] anterior angle of eye; and noise exactly like Jackass;—at sea—one deep note. Crazy, very quick, help of wings, head stretched out—very brave diver. Quietly moving wings very rapidly: fishing out at sea; cunning.

Habits and geographical limits of brown Vulture.

Rats & mice & Foxes on small islands of Georgia?

Black rabbits breed—are not found excepting where there are grey ones:—there are white ones etc etc—

Henslow; cross.—means Rabbit [erased] Insects [written above]

16th March.

Hail & wind—geese—cattle—country; keep warm: bone burn¹—Geld bull—snow & hail—Snipes—geese—Hawks nest & cry.

Horses very expensive 100 ps each—out of 29, 10 arrived safe, and 4 more alive. Balls and cord. No wild horses here—only cattle.

Where there are black rabbits—there are others;—yellow legged hawks—females.

Foxes have holes—generally silent excepting when in pairs.

Hawks remain here whole year, most in Winter.

Carrancha kills partridge—let go again—

Experimentize with pods of Kelp, Nitre, rapidly drying, Small hawks—iris long—yellow—legs bright yellow. Skin above blue, beak do: (Male) Feeding on Carrion! Blue leg Vulture, male—

Super-abundance of inarticulate Corallines.

Kelp corallines, Depth at which Kelp grows. Limits on both sides of coast—all Southern Islands?

10 to 15 fathoms Kelp grows generally.

¹ "The Gauchos soon found what to my surprise made nearly as hot a fire as coals. It was the bones of a bullock, lately killed but all the flesh picked off by vultures." *Diary*, p. 219.

Pods of Kelp experimentize about the nitre.

Barnacles very common—30 to 50 fathoms coast of Patagonia.

Birds, Petrels—Puffins—where build?

Hares—Viscachas at Coquimbo—Molina.

Silgaro—white tuft—T. del. Finch builds in bushes. Red back shore finch builds in bushes.

No snakes.

On an inland expedition geology again takes precedence, and a graphic phrase brings the desolate scene to life. His rough and ready similes for size are characteristic—always familiar objects, never by measurements. Stones or pebbles are the “size of walnut or apple—to a man’s fist”; or “as big as an egg”, “two fists”. But here in the Falklands he had to find something larger and more monumental.

Wonderful scene of violence. Vegetation modern;—fragments as big as Churches: valleys on each side a mile wide.

Back they went to the mainland, to the mouth of the River Santa Cruz. The zig-zag course of the *Beagle*, with the rapid changes from island to mainland and back again kept Darwin’s thoughts on the questions of geographical distribution and species.

Falkland lark here—Double barred Kelp bird here—

I do not think true B. Blanca bird comes further South than R. Negro.

Black and brown bird—St. Julian Finch—no further North than St. Julians: rises and utters a peculiar noise—

When doing this flight peculiar, soaring.

Condor—

East range of Kelp—Kelp bird not present, when Kelp absent.

Great numbers of Bathengas and Aperia and Pumas.

Short billed Snipe: Little Hawk female—T. del. Finch male—St. Julian’s Finch male. Southern limit of Lievres between Port Desire and St. Julian.

At the mouth of the Santa Cruz the *Beagle* was laid ashore to repair several feet of the false copper keel ripped off after striking a rock near Port Desire. This was a long and difficult operation, and the Captain made use of the time to explore the course of the river towards the mountain range, a party on the earlier voyage having only accomplished some thirty miles. Darwin was delighted at this opportunity for a closer study of the country inland. Even on this second occasion they failed to reach Lake Argentino, then unknown, which connects with the other great Andean lakes, Viedma and San Martin, and which was only discovered thirty-nine years later. The party had to haul the three boats they took with them, tied end to end, against the current for the whole distance of 245 miles by the course of the river, though only 140 miles in a direct line from the estuary of the Santa Cruz. This they did by means of a long whale-line fitted to collars, pulling in shifts of $\frac{1}{2}$ hour each. Officers and men all shared the work alike, Darwin of course, playing his part. At night also sleeping arrangements and food were alike for all. To Darwin it was more than the "pleasant party", it afforded valuable proof of the sea's action in these river valleys.

18th April.

Started pleasant sail to nearly above tidal influence.

Armadillo, Caught mouse, pleasant party. Cheerful running water. Few guanaco or duck. No fish or animals on fertile ground. Horse's head and Callandra. Flocks of *Sturnus Ruber*.

Series of plains—2 elevations, old valley of river.

Boat hook.

Here, at the furthest point of the earlier expedition, the boathook had been lost. It was now found and returned to the *Beagle* after lying in Patagonia six or seven years.

Day has been splendidly fine, but country terribly uninteresting.

No living beings—insects, fish etc. etc.—Same plants.

Same bushes growing on same formed land.

(Effect of earthquake in Chili on river courses)

[Apr.] 21st.

Fish light greenish brown above and small black transverse irregular bars. *Belly* snow-white, numerous, same size; in inlet. Fringilla, common sparrow—No condors, but Car-rancha.

Red-nosed mouse;—Long-tailed creeper.

Of the 5 Plains, perhaps 2 highest best marked.

[Apr.] 23rd.

Guanaco when wounded always comes to water.

∴ when ill. Pebbles being white-washed in low plains look not like rivers?

My great puzzle how a river could form so perfect a plain as 2nd and cemented even in its highest parts; draining of Sea???

How was valley at Port Desire formed before elevation? Sea??

Saw an ostrich about $\frac{2}{3}$ size of common, and much darker coloured—exceedingly active and wild.

Condor is present solely where mural escarpment.

Legs pale, lump on head. Dark Kelp bird.

Boat injured, bad days work.

Most interesting geology. Distant hills.

Shot condor! length 3ft 8ins; Tip to tip 8 feet.

Iris scarlet red; pairs with young ones. Female. Magnificent bird. good days tracking.

I continue very uncertain concerning their origin. [the series of plains].

These step-like terraces were a great puzzle; they were supposed to be entirely of river origin, but Darwin saw discordant evidence, and formed a new theory of their formation through successive retreats of the sea channel during successive pauses in the elevation of the land.

Immense herd of Guanaco—1000! Horses cannot hunt, for gravel.

Guanaco sleep tail in centre, in same places on different nights; then dung and dust in saucer shaped cavities.

. Saw a regular eyrie of 20 or 30 condors and young ones with the old. Saw distant snowy mountains.

. I confess I do not understand the system of plains in this valley—

Lions scratch ground—killed 2 guanacoës. Condors eat one—Cordilleras full in view.

Perhaps plains and opening at head of river might be explained by a Strait, at very first elevation, water in mountains cut it through—in the Channels, and so on till elevation stopped the passage and river commenced.

Heap of guanaco dung 8 ft. in diameter.

I see a gap in the mountains.

Little hawk hovers, kestrel.

May 4.

New Alpine plants—Cordillera in view all day.

Old basin of sea: Old Straits.

At the furthest point Darwin walked 8 miles to see all he could of this untrodden ground. They were only about 60 miles from the nearest Pacific inlet, and it is sad that the shortage of supplies forced a retreat before they reached the lake and the highest hills. The lava cap to the plains was here very apparent, and slowly the explanation of the valley being on the site of an old Strait came as an answer to many of the puzzling questions. On May 5th they started on the homeward journey, shooting down stream at 10 miles an hour, reaching the mouth of the river on the 8th to find the *Beagle* "fresh painted & as gay as a Frigate".

[May] 12th.

Went to sea. Ship repaired, false keel, masts up. Good stock of provisions, 10 guanacoës bagged, took some long walks; killed a lion and curious wild cat and 2 foxes and condors. Bad blowing weather, sea-sick as usual and miserable; very extraordinary change in weather, frost one inch thick, sleet, clouds, gales. Hunting for L'aigle rock.

They sailed southwards and reached the cold and stormy

shores round Cape Horn. But this time all knew they were making for new scenes and the more temperate climate of the Western shores of S. America.

Little mouse (Mole). Young T del Finch less brilliant: head less blue, back less green, belly more dirty orange.

Red throat and red tailed creeper—both males?

Great part of coast degrading. Proof shape of Continent where hard rock is present, hence small elevations would leave no signs behind.

June 2.

Adventure [one of the auxiliary craft] arrived, splendid day; Sarmiento appeared—theory of views¹—savages—skirmish—Bravery—Slings arrows—guanaco—

June 8.

Bad day for all but sailors—curious scenery constant dirty driving clouds, peeps of rugged snowy crags, blue glaciers, rainbows, squalls, outline against the lurid sky—man has no claim no authority here—how insignificant does Wigwam look.

The Fuegian does not look like the Lord of all he surveys—Sarmiento [erased] man [erased] The inaccessible mountains and wider power of nature despise control seem to say here we are the sovereign.²

June 9.

Solemn stillness of peaks gradually unveiled; saw whole height 7/8ths snow and Niagara of ice.

Failed in getting anchorage.

¹ "I have not ceased to wonder, in the scenery of Tierra del Fuego, at the apparent little elevation of mountains really very high. I believe it is owing to a cause which one would be last to suspect; it is the sea washing their base, and the whole mountain being in view. I recollect in Ponsonby Sound, after having seen a mountain down the Beagle Channel I had another view of it across many ridges, one behind the other. This immediately made one aware of its distance, and with its distance it was curious how its apparent height rose." *Diary*, p. 228.

² Evidently this was one of the sentences that refused to get into shape. The final form in the *Diary* of this altered passage runs:—

"At the base of the lofty and almost perpendicular sides of our little cove, there was one deserted wigwam, and it alone reminded us that man sometimes wandered amongst these desolate regions, imagination could scarcely paint a scene where he seemed to have less claim or less authority; the inanimate works of nature here alone reign with overpowering force."

This was again altered slightly in the *Journal* of 1845.

There was a sense of relief when they passed the rigours of the gales of Cape Horn, but either a note-book is missing, or the prevailing sea-sickness lessened the output of notes. The next picture we get is at Valparaiso, where all hands were delighted with the inhabitants and climate of the town. They were much struck with the "great superiority of the English residents over other towns of S. America". Darwin could discuss geology with his new friends, and was asked to his surprise what he thought of Lyell's *Principles of Geology*. With his mind running on these problems, and with FitzRoy as a not very open-minded companion, this was joy indeed. It must be remembered that Lyell's *Principles of Geology* was published in three volumes in 1830-3; the first he had taken with him and it influenced him deeply. The second reached him in Monte Video in November, 1832.

On the way up the West coast, his thoughts were more and more turning to the actual scenes of volcanic eruption and earth-movement.

Earthquakes—times—nature of undulation, effects on buildings: waves, cracks, springs, mineral springs, effects on neighbouring volcanoes.

Rise in ground at same time as Valparaiso—

Postman, where lives etc—mines? slate? granite? Limestone?

Apple trees, Cave, Lice.

Valparaiso—Fort which could not anciently be seen.

Arrived at Valparaiso he immediately planned to climb the Andes, and examine some of the many mines with which Chili is drilled. His geological imagination was stretched to the uttermost; he comments on the interest and pleasure in viewing this mountain scenery, "connected with reflection how formed". His admiration of the grander aspects of these vast upheavals increased with his anxiety to understand their origin. He is always reflecting on their formation, each pebble told its tale, but the sublimity of the whole scene could still move him profoundly. He became convinced that "the hills and plains have all been formed by water", but all his hypotheses

did not find confirmatory support, and a note "but I could not prove it" is a baffled confession.

He started on his first ride up the Cordilleras on August 14th, and the geological discussions, pages of which I must omit, outweigh all other topics.

[Aug.] 15th.

The Tapacolas are very numerous and active, their cry incessant and varying—run quickly from bush to bush.

The course of the River a remarkable scene of violence from the water—but apparently only rolling over stones—when snows melt; a plain of shingle—The Rat is very tame and abundant; lives chiefly in hedges curling its tail.

[Aug.] 16th.

Gauchos, not like true men—can walk and climb; are not gentlemen—do not look as if born on a horse—eat bread and potatoes, enormous stirrups; spurs with many rowels, diameter length of this page; [about 4"]—Have not chilipa; worsted boots—untidy lasso, no bolas—¹

Setting sun, ruby's points against red—sun—black valleys; Fire amongst Bamboos—little harbour very pretty—most comfortable evening. Oh for the Camp.

[Aug.] 17th.

Condors sleep in cliffs.

Large Julus emits yellow fluid which smells like mustard.

Night Jar emits shrill plaintive cry.

Our resting place called Aqua del guanaco.

[Aug.] 19th.

Saw large Kingfisher—long-billed Farranicus[?] a black Icterus with orange head.

[Aug.] 21st.

Lions more savage—kill men.

Little tufted bird—nest deep simple full of feathers.

Tapacola well adapted tail erect, hops, very fast, large one most ridiculous.

I can hear of 3 volcanoes in these parts in front of Juapa;

¹ The Guasso or Huasso of Chili corresponds to the Gaucho of the Pampas, but Darwin compares him unfavourably with the Gaucho of the wider open spaces. He comments on the greater civilization and aristocracy of wealth in Chili having ruined his independence and sense of equality.

Patos where there is a pass, Aconcagua—another at Bunsters Mine. Another other side near Mendoza.

The mist well represented the sea in the basin and showed probability [that sea had once covered it].

It is said Lion if he covers his prey returns, if not, not. in one Hacienda in one year killed 800 young cows.

Ancient Indian building in mountains.

Biscatche shrill repeated noise—stony place, connected with habit of collecting sticks and stones.

[Aug.] 23rd.

M. J. Murray has given notice to R. Soc. respecting luminous property of glow-worms—same result as me.

[Aug.] 26th.

[After fall of snow] Most magnificently splendid the view of the mountains.

Slept at very small Rancho—people much, much more different; grades of life—servant not eat with me—pay everywhere—

Man very humble about his country¹

[Aug.] 27th.

View very striking, large lake—forest of Acacias—green turf—isolated hills and magnificent Cordilleras with various lines of clouds beneath summits. Plain of land more beautiful than sea.

The next weeks were spent in the vicinity of Santiago.

Sep.

Nice Hacienda sleeping place—Signoritas attempt at conversation—astonishment at Clergyman marrying; ∴ not same God because clergy marry—² Sisters names not Saints.

Tapacola and Turco build deep straight hole in ground. Black Icterus talks in bushes—yellow spot. Icterus in reeds—Thrush talks—a little nest lined with mud; when in

¹ "Some see with two eyes, and some with one, but for his part he did not think that Chili saw with any."

² "The absurdity of a Bishop having a wife particularly struck them; they scarcely knew whether to be most amused or horrified at such an atrocity." *Diary*, p. 244.

holes, nest not covered; nest of Black Furnarius great long prickly nest—Little pointed tail creeper.

Callandra best singer—plain round nest—only one time of year.

Goosander in river, back white, belly brown, breast black, top of head black, beneath white—bill—cry varies; quick, very active in the rapids.

Unpleasant passing river, could hardly tell whether horse moved or not.

Have seen but few Condors—yet this morning 20 together soaring about. Man said at once probably a Lion: if “il Vaccaco” see the Condors alight (Audubon’s theory) and suddenly all fly up, they know the Lion is watching the animal which it has *covered* with branches and is watching. A lion once hunted never covers up his prey, but eats it and retires to a distance. Escape like fox by Artifice of returning close to former track—Single dog—a breed—will kill one. If up tree—with lazo or stones—Makes noise when hungry—killed a woman and child lately.

In 1822 spring stopped for one year returned little by little but never so much water or so hot, known by feathers coming from a fowl—same summer and winter.¹

—The great Southern plain which extends, appears perfectly horizontal with few islands to give an idea of its extent; the distant Cordillera only showed their snowy parts, as over the sea—

Scenery very interesting—had often wondered how Tierra del F would appear if elevated; no shells: Mem: East St. of Magellan: exact identity between here and South of C. 3 Montes—

[Sep.] 18th.

Lizard basking on stones in sun—above blackish tail, half of body brilliant blue scales—anterior greenish—colors shade down till some individuals are simply brownish black with transverse black bars and the foremost scale in head colored. *White breasted creeper of Chiloe.*

¹ It was the custom to scald a fowl before plucking. In the second period the water was not sufficiently hot to perform this operation. “Their thermometer was an odd one.”

The Fungi on the Roble or oak tree—footstalk longer, shape more irregular, color paler—Caps inside much darker color, fewer of them: in young state large cavity occasionally eaten, grow to large size—3 or 4 times any of my specimens [From Tierra del Fuego]. Robles reminded me of English oak from picturesque manner of growth.

[Sep.] 21st.

Very unwell—stopped at kind Chilotan schoolmaster.

[Sep.] 23rd.

Most hospitable house, unwell yet.

Barnacles above high water mark.

Tufted bird nest end of August.

Black [?] young end of September. Wren middle of October.

From September 21st, 1834, until the beginning of November Darwin had a serious illness, about which very little is known. In letter No. 23 to Caroline he attributes it to drinking Chichi, the sour, weak, new-made wine of the country. He was taken ill whilst riding on his excursions around Santiago, as we have seen. Mr. Corfield at Valparaiso looked after him like a true friend and nursed him back to health, whilst FitzRoy delayed the sailing of the *Beagle* until November 10th. Notwithstanding his weakness and the fever, in the early days of his illness he was able to think and write on the absorbing evidence of the elevation of the land in recent times. The handwriting gets wild and straggling, but the notes continue and the evidence accumulates.

Contest of opinion—in mountains believe torrents can do any thing—in present state rivers do little—The action of sea continuing during its depression in these valleys owing to great extent of beach. Certain action tides and streams and exposure to West swell. Rivers subsequently modify plain. It is said that the sea 70 years ago reached Dr. S(?) House. 17 years ago up to cellar of Mr. Alison's House.

Again the *Beagle* sailed southward to continue the Chiloe survey. But a cloud had descended on the Captain. He was obliged from financial strain to discharge the *Adventure*, the

tender from whose help he had hoped for such great results in completing the charts of the West Coast. He bitterly resented the treatment at the hands of the Admiralty and his depression must have been felt on board; whilst Darwin was hardly over his convalescence.

Nov. 24.

“Huapi” means islands—yet now nearly all peninsulas—proof of rise.

Big drops of rain expect a ship at S Carlos. Reason??

[Nov.] 26th.

[Indians] One man exactly like York Minster others rather handsomer—more color, like Pampas—manners *pleasant* dress etc etc like Spaniard—very poor—

They talked their Indian language and very little Spanish. Inhabitants of Castro expect earthquake when *no* eruption during 1 to 3 years.

Puente Obscuro beautiful: little cove several houses, almost all grandchildren—badly off for ground, but too idle to clear more—only breed—

Small crustacean, purple clouds of infinite numbers pursued by flocks of Port Famine Petrels.

[Nov.] 28th.

Chimanga torments swing swang the Carrancha. Met many $\frac{1}{2}$ blood Indian families, when picking up Marisco singularly like Fuegians.

T. del Fuego Petrel in a flock of hundreds of thousands flying in straight irregular number[less] lines, occasionally uttering odd cry—

[Nov.] 30th.

Chuca 3 distinct noises I know—nest?

At last I found in the yellow sandstone a great trunk (structure beautifully clear) throwing off branches: main stem much thicker than my body and standing out from weathering 2 feet—central parts generally black and vascular and structure not visible. It is curious chemical action—such a sandstone in sea—holding such silex in solution: vessels transparent quartz: This observation most important as proof of general facts of petrified wood; for here the in-

habitants firmly believe the process is now going on—
The great Lucas—makes when approached or molested a
loud noise, which almost frightens a person. Inhabits T.
Firma.

Dec. 3.

[Drawing of animal] under side:—

Throat and breast, cheeks rich chestnut brown and with
snow white marks; thighs blackish with do: legs yellowish
with do: upper side:—

Pale rust colour with posterior part of body and thighs and
anterior marks bright green—iris rust colour, pupil jet
black—jumps—dark forest—point on nose.

Dec. 4th.

P. Famine Petrel very irregular in its migration; suddenly
appears and disappears in countless numbers in certain
parts of the Island.

Sea snail—body when partly crawling oval, post extrem:
truncate and scooped out with large Branch: aperture always
open; not convex; when quite contracted a cone; above
bluish black with white projecting points and pale halo—
edge with alternate spaces of narrow white and blue, the
latter colour being fimbriated, beneath white excepting
mouth. Tentacles short terminal black eye, beneath which
a bifurcate membrane: high up on rocks, near top of high
water, crawling on confervæ, nearly dry.

Killed rare fox with hammer¹.

San Pedro—leafless trees—enormous trees of winter bark
and Laurus Sassafras—delightful smell—T. del Birch,
Alerce, red cedar. Canes—walk—my feet above ground.
Chucao builds its nest in low bushes near the ground, erects
its tail like Tapacolo—but comes near to a man if he is
quiet.

Viviparous lizard. Frog with pointed nose.

¹ Two of the boat's crew landed to take a round of angles.

"A fox (of Chiloe, a rare animal) sat on the point and was so absorbed in
watching their manœuvres that he allowed me to walk behind him and actually
kill him with my geological hammer." *Diary*, p. 256.

Chapter 4

1835

THE BEGINNING of the new year is scantily annotated. The *Beagle* was charting the Chonos Archipelago, and FitzRoy depressed and Darwin suffering from sea-sickness in the many days spent at sea. Perhaps a note-book is missing. In Feb. he went in the *Yawl* up to Valdivia and made a further excursion.

Stopped on road, found old man who made spirit wine, cyder and treacle from apples. Olives sometimes bear fruit—and grapes.

After travelling some hours through forest (tormented by innumerable flea bites—pigs, dogs & cats—) began to open a little and become park scenery, more level.

The curious fact of plains banishing trees—view of plains very pretty.

The Concepcion note-book is missing, but the following memoranda refers to his stay in this town and to his purchases and preparations.

Letter paper—Chaffers

Keg of spirit—Captain

Tin; mattee—saddle for mule—provisions, cigaritos. Mr.

Crofts clock stopped 17° — 15° to 12 o'clock mean time &

St. Jago nearly at same time [This refers to the eruption.]

Tura[?] a dulce made in Concepcion 2 dollars worth

Mr. Green—localities of shells—

Letters home—Henslow—women—Journal—

arrange specimens—Insects—Microscope—Compass for

Padre—Books—Jacket—letters to home—Candles—Choco-

late—Cigars—Passport, Covington Instructions—Hat clean

—Date of old Sea-wall—Bracers—Tooth brush—stirrups—

letter-paper—medicine. Don Pedro Abadia fossil shells—

Blue beads etc for Indians.

Stags horn, Museum—Razors—Sweet smelling oil—Night-

caps—stockings—black ribbon—pill boxes.

D'orbigny, excellent memoir.

We go straight back again to Valparaiso, where the real expedition that meant so much to Darwin was accomplished, across the heart of the Cordilleras to Mendoza. He took 10 mules and a Madrina, or "mare with a little bell round her neck; she is a sort of step-mother to the whole group". He also took his former companion of the earlier and less important expeditions.

March 18.

Method of travelling luxurious—pretty valley, trees loaded with peaches bending and breaking with the weight—grapes, nectarines and large apples.

Scenery grand, almost faces [of steep bare rock] stratified, colour purple, no wild forms, cloudless sky, a remarkable scene, if not very beautiful. Still resplendent clear, cloudless sky (some little Puna)¹ very little vegetation, no birds or insects. . . . Condor. 2 large white eggs. No nest; lay in November or December and whole year before can fly—are called Condors with Black ruff white Huitre.—

Peaks of snow, glaciers, cloudy night, mercy of elements. Picturesque party of travellers from Mendoza. Condor. Cold wind. Puna,² Scenery, colors, form, size; profound, despise—Beautiful sun rise showing peaks already bright with sun—Sulphuretted hydrogen—Potatoes not boiled—pot did not chuse—No thunder, no danger. . . .

I can give no impression of the pages of geological argument that follow; diagrams, changes of view, anxious doubts—"until following the sections I was quite at a loss"—all show his fervour to satisfy himself on the formation of the Andes, which represent such vast upheavals of the crust. The final results must be studied in his geological works; very briefly he became convinced that the two ridges which here form the chain of the Andes, are of very different origin. The westernmost ridge of over 13,000 feet where the road crossed it, is more than a thousand feet lower than the main or Portillo ridge, but Darwin became more and more convinced that it

¹ Puna = The short breathing from the rarified air of the high altitudes.

² Short breathing due to the rarified atmosphere.

was of much older origin, formed by submarine volcanoes and subsequently raised by a series of elevations to its present great height. The stages of elevation are marked by the terraces so often commented on, composed of accumulated detritus from the mountains washed by the sea around the shores of the sea-channels, now valleys thousands of feet above sea level. The higher range, he argues, is of more recent origin. The "grand bare pinnacles" are of red potash-granite, and on their lower slopes lies a bed several thousand feet in thickness of a conglomerate partly composed of pebbles derived from the lower range. Again the elevation will have happened in stages: remembering this and also bearing in mind the appearance of the sea-dissected land of Tierra del Fuego with its channels and sea-inlets, he saw an explanation for the fact that the higher ridge had been breached at the heads of the valleys draining the intermediate tract between the two ranges.

But these few lines give an inadequate idea of the careful reasoning and thoughtful conclusions of the little note-books, and the long pondering on the laborious excursions of the next week—clambering over the rocks hammer in hand and with shortened breath from the great altitudes, riding in the icy winds and sleeping on the bare earth.

I feel no doubt that the whole Portillo range has been elevated subsequently to the Limestone one having been partially elevated into dry land.

Red snow. Seen on both of the highest ridges—little spores twice or thrice diameter, above limit of perpetual snow, appeared like bits of brown dirt scattered over snow—partly optical deception, seen through the globule of ice, appeared of all sizes, to about 1-8 of inch. When picked up appear to disappear—Examined in lens, are groups of 20 to 40 little circular balls—through both lens appear like eggs of small molluscous animal. Crushed, stain fingers and paper, by hoof of mules and where thawed. Thought it dust of Breccia and Porphy, although remembering Miers. Color where mules have trod beautiful rose with slight touch of brick red. Examine paper. At great height same Condor, common sparrow and grey bird. Very high a flock of plover—also

black *Furnarius*; P. Julian Finch—many plants, bushes the same.

[Mar.] 21st

We left our friends the workers of Gypsum and continued up the flat valley—curious deception—seeing a flat valley with inclination towards one, appeared inclined opposite direction—flocks of Condors. Ascent at first range of Peuquenues, zigzag very steep [every] few yards mule breathe: admirable mules: wild party, long string, crys, appear so diminutive—no vegetation to compare with. Passed over much perpetual snow; red snow; curious peaks, dead horse beyond Portillo upside down—Puna, strange ideas about: all the water here has Puna. Tightness of head and chest; like *running* on frosty morning after warm room:—running fifty yards, [breathing] *deep* and difficult—no other sensation; imagination much to do with it. Fossil shells, forget: people die of it? graves—Resplendently clear—piles of Talus, bright coloured rock,—magnificent wild forms (view from the 1st ridge) something inexpressibly grand: would not speak: despise taste of those: like thunder storms: splendid contrast of colours—snow—profound valleys.¹ No insects and few birds—Condor—little pretty plants—many torrents—excessively cold winds. Slept at night at the foot of the first pass, where little vegetation appears—headache, bad fire—pot all night boiling. Peons conversing—

“The cursed pot does not choose to boil potatoes” amusing conclusion—Cloudy night after excessively cold evening:—mercy of elements—no thunder no danger on awakening the Arriero.

Saw Tupungata, immense body of perpetual snow—never shall forget the grandeur of the view from first pass.

Hilly intermediate country just within limits of vegetation—nearly all the guanaco have gone.

Cloud disappeared, showed us the peaks already bright in the sun appeared in gaps in mist of stupendous height: smell of sulph Hydrogen said only to be perceived in the morning. Began ascent of Portillo; wild red granite peaks. Fine view

¹ “I felt glad I was by myself, it was like watching a thunderstorm or hearing in the full orchestra a chorus of the Messiah.” *Diary*, p. 293.

of the crater of Tupungato and the escarpements of last ridge—perpetual snow. Frozen spiculæ fell thick—all mist. Portillo narrow. Descended to vegetation, good protection beneath big stones. Clouds disappeared, severe frost—moon and stars excessively bright.

Several parties' anxious enquiries about snow.

[Mar.] 23rd.

Descended ravine, much steeper and shorter than ascent. Grand plain-like sea of white clouds beneath, brilliant where we were; hid the equally level Pampas, entered the clouds, the region of bushes. In mist whole day (Los Avenales).

[Mar.] 24th.

Vegetation spiny bushes, many flowers like Patagonia: Blue and orange finch, long tailed Tit: tufted do: red tailed Fu— [?]

Guanaco dung in heaps; just the same in appearance: very many mice: Biscatche on a peak: very different aspect, more bushy tail, tinge of red on breast.

Viviparous (Autumn) Lizard—centre of back, scales black edged narrowly with dirty yellow, this band broadest in centre: on each side of this ash-coloured space; side-scales blackish brown, rather more broadly edged with yellow—Belly pale ash colour legs and head do. with few black spots—killed by blow of hammer. Young one protruded—soon died. Snake, sandy plain. Chagrino, color primrose yellow with broad jet black bands which contain bright scarlet red square marks; belly black except beyond tail where rings of black and scarlet are continued all round—Scarlet brightest near head—young one—

White tailed Callandra: white tail humming bird, little parrot. Did not start till midday, ascended volcanic beds;—view of Pampas: dark blue from Eastern sun striking line of glittering water lost in immense distance: very level to the South, considerable undulations to the North, passed Guardia, heard of much rain! day before, the clouds which formed bed beneath our feet.

[Mar.] 25th.

Sunrise intersected by dead straight line—in a parallelogram figure on rising.

Spider: habitation in centre web, from which strong lines go in all directions, *segments* of regular vertical network being attached to them. Very numerous Los Avenales.

Can see Pampas from Portillo——

[Mar.] 26th.

Tufted Partridge, ostrich, Biscatche, Peechey; Hare has not passed.

Long wearisome ride, scarcely met a person.

Near Luxan noticed as I thought heavy smoke, turned out to be locusts—clouds quite impervious [to light] ragged reddish brown, all flying north: many scattered outlyers lying on ground; in their advanced guards, sky like mezzotint engraving—main body about 20 feet above ground—perhaps 10 miles an hour—with light breeze from South—perhaps 2,000 or 3000 feet high. Noise that of strong breeze through rigging of ship. Where a cloud had alighted, far more than leaves on the trees—field tinged with their color—people, sticks and shouts: had been coming for many days past, but curiously had never crossed the river till this day. Poplars stripped of their leaves—from Traversia effect not explicable; avoid being struck; after the clouds had once alighted they appeared then to fly E and W or any way—distant red cloud so like heavy smoke that we disputed for some time—common pest: the greater number appeared resting than eating. Crossed river, entered Luxan (N.B. the clouds of locust gradually thickened and thinned) refreshing rows of Poplars and willows and artificial brooks—very small village—at night good to experience everything once—Chindass, the giant bugs of the Pampas; horribly disgusting to feel numerous creatures nearly an inch long and black and soft crawling in all parts of your person—gorged with your blood.

[Mar.] 27th.

Luxan to Mendoza 5 leagues quite level—like Chili beautifully cultivated, square mud walls—houses with roofs of do: immense orchards of figs, peaches, vines, olives; celebrated with fruit. Inhabitants sad drunken raggedmuffins—Pampas costume, 2/3 Indians, and reckless manners, but not the elegance of further East—All horsemen—Village nearly all the way.

At Luxan immense water Melon for $\frac{1}{2}$ penny price;
half a wheel barrow full of peaches for $2\frac{1}{2}$ d.

[Mar.] 28th.

Mendoza—nothing can be added to Heads description; people say themselves it is a good place to live in but not to prosper—Alameda pretty, very straight; Cordilleras tame; scenery no comparison with St. Jago, very quiet. Governor polite old man—everyone polite in these countries: the commonest peons looking at an old black woman with large goitre touched his hat respectfully, evidently as an apology for looking at her.

[Mar.] 29th.

(No Blue sparrow—Aperia—)

Very fine grapes—excessive heat and dust of plain: goitres—Locusts never go North of Mendoza.

Extraordinary colors after sunset. In the plains Ostriches, Torodon, Pichey, Paludo.

April 4th.

Started early—gale of wind, fine barren valley, only one resinous bush, not so lofty or so wild as by Portillo road. Bad passes, could walk backwards—was told to carry thick worsted stockings, if mule stumbles probable death, no chance.¹ I had to unload at P. Las Vacas. £5 expense, repair pass.

No pasture for poor mules—Rode for half day to the Puente, saw humming bird, a Lion, long billed F? Redbreasted Creeper, Bushes at least 1000 ft above Bridge; ascended mountain without very much Puna—2-3000 ft, tame ride—yesterday several groups of Indian huts, look as if great party had migrated and been obliged to stop for some time in most barren spots; doors very low—3 ft—huddled together, square;—passed 2 Casuchas—Mules pass rivers best with riders. Remarkable electricity in high regions; shirts; sheets, leather straps [Sent out sparks] dryness, lips; head of hammer. Absence of vegetation and dark color of sky, transparency of air; three great features owing [to] height; coloring of mountains of Andes; cloudless, airy, everlasting look.

¹ "I have been quite surprised at the degree of exaggeration concerning the danger and difficulty." *Diary*, p. 300.

[Ap.] 9th.

All this time to Valparaiso not quite well, saw nothing, enjoyed nothing.

[Ap.] 10th.

From Colina to St. Jago pleasant city.

[Ap.] 15th.

Started for Valparaiso. Dead mens' heads on poles.

Frozia[?] remarks that Llama and Guanaco dung in heaps, useful for fuel for Indians.

Biscatche bones etc round holes, foot of Pampas—Close to mountains Biscatchas, Ostrich, Peecheys in Uspallata.

I heard all four kinds of Armadillo near Mendoza.

Covington 8 dollars

Wild Potatoe Seed.

After a short stay at his good friend Mr. Corfield's house, busied with further preparations, he set out on the last and longest of all his S. American expeditions—Valparaiso to Copiapò, a distance of 420 maritime miles. The geological detective story is at its height, and the clues now to be found gave him a sense of security in the explanation. Those who wish to understand the tangle of evidence, must read Chap. XV of the *Naturalist's Voyage*, or his *Geological Observations*—there is set out the logical reasoning on the collected evidence which led Darwin to the revolutionary views on the prolonged subsidence of parts of the continent in early Tertiary epochs, followed by slow elevation through later Tertiary and Recent times with interruptions of periods of rest and even again of local subsidence; there the reader will find fully set out his views on the connection of earthquakes with the elevatory movements, and on the association of repeated volcanic activity with the main axes of elevation. He saw how these slow acting processes, combined with erosion, had formed the South American continent as it is today; and he realised the vast time-scale which was implied.

Throughout the pages of the note-books there is the closest scrutiny of significant facts, the clearest recognition of unsolved problems, accompanied by an imaginative faculty on a grand scale. His whole being was moved profoundly by the magnitude

and magnificence of the problem, and this emotional response is reflected in the entries between the strictly scientific passages. His admiration of the scene, whether on a vast scale as in the Andes, or in the detail of some biological adaptation had to find its release in an attempt to answer the question: How has this happened? Undoubtedly the habit of these years when he pondered continually on the geological riddles, involving such vast eras of time, framed his mind aright for consideration of the biological problem of species with which geological facts are so interwoven. Fossil marine shells, fossilised bones and teeth of mammals, petrified trees—all these were clues in the great detective story; and all led the way for a direct re-consideration of species problems as viewed by one brought up on the creationist assumption.

But now we return to Valparaiso, to Mr. Corfield's house, and are glad to think that his kind friend had seen to it that on the rocky traverse he was to be well shod.

April.

Corfield's strong boots, Trousers, Shooting jacket.

Brown paper, old box, pix-axe, Bread, Sugar, Cigars, Jar with spirits, Fish hooks, (cart and canoe) yerba.

The investigation of Guano on Coast of Peru (Arica) interesting (Dung).

Set of Port Saws, 2 Tenon Saws; Jointers.

[Ap.] 27th.

Started from Valparaiso: farewell look—smokeless—(perfumed) red, bare hills. Ugly people as most Chilenos. . . .

[Ap.] 30th.

Passed Chili cauquen—perhaps most beautiful view I have seen in Chili—Cordilleras—winter covering—

Close before Conchelic two plains, most district, lower one 50 or 80 ft above sea—also a lower one a little above sea.

The 50-80 one covered by *immense* quantity of large [?], Venus and Donax. It puts question beyond doubt—if there had been any: [of sea formation of terraces]

Much drier here than in Valparaiso—hardly expect any rain till end of May. All think *Beagle* smuggler; complained of want of confidence.

May 4.

Governor of Illapel formerly [?] extraordinary arbitrary character—honest people—honesty distributed in districts. Staid at Illapel whole day rest animals.

[May] 5th.

Bivouaced at cottage making a screen with horse-rugs and purchasing fire-wood and provisions—Cloudy, gloomy, windy day leaves falling, winter—Oh the difference with England!

Mine centre—Cordilleras road. Miners, front [apron] coloured base—small scarlet cap—extraordinary wide trowsers & officer's broad parti-coloured belt. Party all on horse-back—four men carried body for about 200 yards as hard as they could run, four on horseback darted in front, change in second, very quick travelling, uncouth shouts—Such a funeral. Remarkably brown men, the Miners. Like sailors in extravagance.

Then comes a sort of creed of the findings of this journey.

I am certain of age of P. Breccia and of Tertiary—I am certain gypseous [formation] is conformable (seen in range of Transverse mountains to S of Basin).

I feel little doubt gypseous by degrees passes into lower beds of Tertiary. I strongly suspect that Gypseous corresponds to highest beds of Andes—Consequence is evident—that here there has been no interruption in deposition;—there there has been.

Staid whole day—interesting Geology, and dined in little Rancho mining hut—good dinner, pumpkin and beans,—pepper, grease, onions, mashed Pumpkin. Remarkably brown color of the Miners (and often curious expression of eyes?) Very hot, the sun, although now winter—

Stupid day—barren like turnpike road. Wheatfields in valley curiously stony.

Coast line now bordering plain etc.

[May] 11th.

These strata completely puzzled me—

[May] 12th.

Staid all day. Young $\frac{1}{2}$ Chilian & English look as former & consider himself such.

[May] 14th.

Noise of Miners expelling breath, articulating Ay-y, ending in fife whistle—revolting although voluntary. Anecdote of Joaquin when a boy, holiday to see Englishman, heresy & contamination sticking to him.

[May] 18th

Earthquake, screams of women, great roar, little motion—called severe—appalled the men.

[May] 24th.

Stayed whole day at Hacienda of Gualliguaca. Signorita not 17—mere child, mother of two children and will soon add another young one to the family of Salzera. Very pretty, dressed like lady—home second rate farm house—walked up valley—first rate *Chilian* scenery, like scenes of Alps in the Annuals.

At Coquimbo there were a few days to rest and reflect; and to replenish stores. Then on to pick up the *Beagle* at Copiapò. The volume of Milton was not to be forgotten.

Sponge; olla; Blacking, Milton, clothes washed, shoes, blacking, write letters.

Owe Capt F.R. 6.5 reales 2.6 marianes.

20 Reales in Quillota for spurs.

3 pesos in Coquimbo.

He set out on June 1st, 1835, and there was a brief return to birds and notes on scenery, after the almost complete geological obsession of the earlier part of the expedition.

June 1st.

The road with a tinge of green, just sufficient to remind one of the freshness of turf and budding flowers in the Spring—Travelling in this country produced a constant longing after such scenes, a feeling like a prisoner would have.

Many P. St. Julian Finch and Dinca [?]-Tineo and saw Tapacola—

[June] 4th & 6th.

Magnificent spectacle of clouds—horizon perfectly true.

Rode down to the Port, miserable rocky desert little hole—

Contradança, map and atlas—the most learned Limerian lady.

*Kiss of Londres*¹

Carranche—Tauca, Loyca, Chingola, Furnaria, little grey bird of mountains—Blue finch with white bit in tail—no Chingola—white tailed Callandra.

Hear of Fossil wood on other side of Cordilleras

Patagonia a garden compared to these plains—Many *absolutely* barren—yet dormant seeds—wait for wet year.

Many donkeys eat wood, nothing for poor horses.

Contrast of splendid weather and utterly useless (weather)

The geological notes predominate once more; frequent diagrams help out the observations and condensed reasoning. The hammer and specimen boxes were in constant use. The specimens reached the reference number of 169, showing an absorption of interest in the new ground covered; 169 geological specimens can have been no light load to transport all those miles. He reached Copiapò on June 23rd, but in three days was off again into the barren Cordillera behind the town, so utterly desert that they were obliged to carry straw and barley for the animals, and where the water was so putrid, he could not drink the tea.

Destroy immense quantities of poultry. Molina's account of Boldness true; bark exactly like a dog when chased, so that I did not know²; a very heavy animal. I suspect the young Carranca *Raucaria* is brown all over. Beechey says Humming-birds stay all winter in N. California.

On the high ground he saw remains of Indian houses in

¹ In the *Diary of the Beagle*, Darwin explains that this Blue-stocking Limerian lady, seeing a coloured Atlas lying on the piano, cried "Esta es Contradança!" But the *Kiss of Londres* had no explanation unfortunately.

² Refers to Culpen or large Fox.

places now rendered completely uninhabitable by dryness, and heard of many others in all the length of the long chain of mountains. He immediately related this to the whole problem of slow change of climate and elevation, and found another clue in these facts to the problems in his mind.

June 26th.

Started from Copiapò valley for Despoblado (silver spurs for burial).

T. del Finch; 3 sorts of Caracara.

Singular aspect of tranquility—all owing to extreme dryness. Slept at Aqua Amarga—putrid, could not drink tea. Very severe frost, road very desert—bring wood there, days journey on donkeys.

He rejoined the *Beagle*, and sailed Northwards via Iquiqui to Callao, the port for Lima.

July 19.

At night outside Callao, short steady passage.

[July] 20th.

Swept in. Miserable Callao, Soldiers, green country, cold, drizzle. Callao flat roofs, Heaps of corn, fruit, splendid Castle.

Remarkable coincidence in overthrow [?] of Juan Fernandez and Concepcion in the years 35 & 51 each time great wave; parallel case to wave on coast of Lisbon and Madeira.

There follow notes showing his growing interest in coral formations, a subject to engross him in the last year of the voyage. The depths to which dead coral rock extends formed a major puzzle to geologists since living reef-building coral is restricted to shallow water, and his hypotheses, based on the elevation and subsidence of vast tracts of the earth's surface, followed logically on his American observations. He concluded that with the elevation in S. America, the floor of the Pacific had undergone subsidence. He could not agree with Lyell's view that atolls all represented coral-encrusted rims of volcanic craters barely submerged. By applying his new know-

ledge on land movements he understood how coral growth might keep pace with slow subsidence, and so form first a barrier reef and then an atoll as submergence of the volcanic cone became complete. Indeed, the whole theory was thought out in a deductive spirit whilst he was still on the West coast of America, before he had seen the coral reefs and coral isles of the Pacific.

On the voyage up the coast he used to sink a line with lead attached, for sounding and sampling the ocean bottom. But details are missing owing to pages torn out.

The *Beagle* arrived at Callao, the port for Lima, on July 19th.

July 19th.

Isl^d of Fronton & Lorenzo said to be united,
Foxes and mice and rats; passage said to be much smaller.
Smelling properties discussed of Carrion Crows, Hawks.
Magazine of Natural History.

Reached Lima Wednesday morning by coaching road, uninteresting, not like Tropical country. Many ruined houses owing to long state of Anarchy. Passed gate, wretched, filthy; tropical smell, ill-paved. Splendid looking town from number of Churches, painted like stone, cane as an upper storey.

But everything exceeded by ladies, like mermaids; could not keep eyes away from them;—remarkably mongrel population.¹

Condors flight, close wing—remarkable motion of head and body—Anarchical State—black flag—Robbers, Vive La Patria off with your jacket—few carriages—mistletoe tree on various other kinds. 3/4 plants in flower.

¹ In the *Diary* he becomes eloquent over the "Tapada" which all travellers to Lima discuss. "The close elastic gown fits the figure closely and obliges the ladies to walk with small steps, which they do very elegantly, and display very white silk stockings and very pretty feet. They wear a black silk veil which is fixed round the waist behind and brought over the head and held by the hands before the face, allowing only one eye to remain uncovered. But then that one is so black and brilliant and has such powers of motion and expression, that its effect is very powerful. Altogether the ladies are so metamorphised, that I at first felt as much surprised as if I had been introduced amongst a number of nice round mermaids, or any other such beautiful animal. And certainly they are better worth looking at than all the churches and buildings in Lima." *Diary*, p. 332.

Coral rapidly growing in the Low Isls.

Strong Earthquakes useful to Geologists—can believe any amount of violence has taken place—earth's surface or crust. Mad dogs Copiapò.

On the Atlantic side my proofs of recent rise become more abundant at the very point where on the other side they fail.

Collect all the data concerning recent rise of Continent.

The argument of alternate bands of boulders prevents ideas of boulders being carried on plains of Patagonia by any violent motion excepting by one beneath the sea.

Probably these last odds and ends of notes were written on the voyage up the coast to Callao.

In Lima Darwin wrote in his Diary that his occupation had been writing up geological notes about Chili. "If the time had not been robbed either from England or the Pacifick it would have been pleasant; the consciousness of this gave a longing to proceed." The growing restlessness I think was not only his increasing longing to be home, but also the increasing urgency to get to work on his vast accumulation of notes and specimens. The material was there, and home meant, besides the return to the familiar faces, the longed-for opportunity to sift out all the evidence and not only get the facts sorted in his mind, but far more difficult for him—get the whole set forth as a cogent whole. From now on there is a certain sense of haste; the intensity of anticipation is past, and though the Pacific and Coral Islands still lured him on, the real lure of the last year lay in thoughts of England.

Nevertheless the weeks from the middle of September until the middle of October, 1835, were some of the most vital of the whole voyage for Darwin. The *Beagle* called to survey the Galapagos Archipelago, and Darwin's thoughts turned away from Geology for the time. Here a new series of facts on the species question became apparent, and his recurring thoughts on geographical distribution of forms of life, with the isolation of island groups, began to take shape.

Though a revolution was taking place in his views on the immutability of species, such was his caution and determination

to obtain all available evidence that hardly a sign of such an upheaval of beliefs found its way into print—even ten years later in Murray's first popular edition of the *Journal of Researches* in 1845. Probably there was some deference to FitzRoy's emphatically creationist opinions in this delay; but mostly the need in his own mind to marshall all the facts in logical sequence. In 1845 he still refers to "Centres of Creation", and "aboriginal creations". I have found in one of the Ornithological Note-books (not one of the small note-books of the present volume) a most significant passage on the Galapagos birds, placing beyond doubt the date when these ideas crystallised, but it did not find its way into the *Diary*, nor into the Zoology of the voyage (Part 3, Birds, 1841). I quote it here; later he found the differences in the beaks of *Geospiza* were also related to the different islands. His collected material was used to confirm his growing convictions.

"Thenca (*Mimus Thenca*) These birds are closely allied in appearance to the Thenca of Chile. They are lively, inquisitive, active, run fast, frequent houses to pick the meat of the tortoise which is hung up,—sing tolerably well,—are said to build a simple open nest,—are very tame, a character in common with other birds. I imagined, however, its note or cry was rather different from the Thenca of Chile—? Are very abundant over the whole Island; are chiefly tempted up into the high and damp parts by the houses and cleared ground.

I have specimens from four of the larger Islands; the specimens from Chatham and Albemarle Isd. appear to be the same, but the other two are different. In each Isd. each kind is exclusively found; habits of all are indistinguishable.

When I recollect the fact, that from the form of the body, shape of scales and general size, the Spaniards can at once pronounce from which Isd. any tortoise may have been brought:—when I see these Islands in sight of each other and possessed of but a scanty stock of animals, tenanted by these birds but slightly differing in structure and filling the same place in Nature, I must suspect they are only varieties. The only fact of a similar kind of which I am aware is the constant asserted difference between the wolf-like Fox of East and West Falkland Isds.—If there is the slightest foundation for these remarks, the

Zoology of Archipelagoes will be well worth examining; for such facts would undermine the stability of species."¹

It is astonishing when we consider that more than twenty years were to elapse before this "undermining" of the stability of species was sufficiently documented to be given to the world in the *Origin of Species*.

There is disappointingly little in the Galapagos pocket-books of interest.

Sep. Saturday [Sep. 17?].

Left our anchorage & stood out to outside of Island; did not anchor.

Sunday.

Continued to beat to windward; high side of island rather greener, waterfalls of water! Came to an anchor in harbor where whaler was.

Eel dead, reddish purple form with pale or whitish brown spots. Eyes blue.

The Thenca very tame & curious in these Islands. I certainly recognise S. America in Ornithology:—would a botanist. $\frac{3}{4}$ of plants in flower.

Age of freshest Lava not great; Pumice grey on beach.

I now understand St. Jago Lava—50 years in the sea would remove the Crater and upper surface of Lava.

Chinking plates of "iron Lava".

Dry sand—Lizards—Black mud—parasites.

Feast—Robinson Crusoe.

View of craters like in Scrope.

Monday.

A boat being sent to some distance, landed me & servant 6 miles from the ship where we slept. I immediately started to examine a black volcanic district deserving name of craterized. Met an immense Turpin, took little notice of me. They well match the rugged Lava. Eating a Prickly Pear which is well-known to contain much liquid. Craterized

¹ Letter to Nature, Sep. 7, 1935.

district Lavas of two ages, one rugged, little cemented bits; has been well compared to most boisterous frozen ocean, but with wide cracks; other apparently has had the outer crust weathered and more solid rock now remains—prismatic, very uneven. But cracks filled up & covered with low trees. . . .

Monday, Oct. 12th.

Walked up to the Houses—slept there, eating Tortoise meat. By the way, delicious in soup. Followed down the ravine with water; soon dries, very green and pleasant.

Extraordinary number of Turpin.

10 gulps in minute—noise during cohabitation certain and length of time—eggs covered by sand and soil—from 4 to 5 in number—require a long time before they are hatched. Quickness of travelling certain. Now said come every three days for water. Eat Cactus in the dry Island.

Yellow Iguana—intestine full of Guyavitas and some large leaves—eggs in a hole.

Caracara habits—like Carrancha round slaughter house—kill chickens—run like a cock—Thenca eat bits of meat.

[Oct.] 13th. Tuesday.

Whaler gave us water—extraordinary kindness of Yankeys. Wandering about Bird collecting.

[Oct.] 14th.

Iguana—shakes head vertically; sea one no.

Dozes, hind legs stretched out: walks very slowly, sleeping close eyes. Eats much cactus—Mr. Bynoe saw one walking from two others carrying it [the cactus] in mouth—eats very deliberately without chewing. Small Finch pecking from same piece often alights on back.

Iguana drags tail, motion slow, appearance stupid from low facial L [angle]; very fond of cactus run away like dog from one another with pieces—Excavate burrow (shallow) first on one side and then on other—two or three times. Throw dirt with one arm and kick it out with well adapted hind leg—then other side.

They reached Tahiti on November 15th, 1835, and the Galapagos facts were added to the rest. How they were pon-

dered over on the long weeks at sea that were to follow we can well imagine. Some of the old delight in the Tahitian scenery is again apparent in the Tahiti pocket-book, but not the exultation of the earlier years.

Nov. 18th.

Travelled up valle ; at first beautiful view over Cocoa-nut trees, and *fine* men. Take no clothes or food. Higher up, valley very profound—most dangerous pass—ropes—Kotzebue.

Then one with poles, ropes; dogs and baggage.

Wonderful view; Cordilleras nothing at all like it—ascended a fern-slope—excessively steep—middle of day—vertical sun—steaming hot—cascades in all parts, enormous precipices—columnar—covered with Lilies, Bananas and trees.

After ascending fern hill threw myself in shade of thick trees surrounded by sugar—Bananas—Food is abundant—Yam—Taro, Sweet root like sugar, size of log, and forest of shady Bananas. Different tribes—Rivers—fish and Prawns—catch them diving gracefully, amphibious.

This track so wonderful only famine & murders [with line round it] arm could have induced people to have discovered them—men speak little English—breakfast—make fires rubbing [sticks]—

Gauchos uses stick like Carpenters tool—really most fearful road 7,000 feet—mountains split by mere crevices to the very base. Valley three sources, we took south one.

Ava not drunk—spirits—men tell me not to tell Missionary¹ Bivouac—cool stream where we bathed—buried in peaks—house of Banana—profusion of fruit—green leaves, thatch dry bed; 20-25 ft. high, shade as dark as noon. After supper—baked in stones, fine vegetables—walked up a little way in Banana grove by valley, heard another cataract of 200 ft. Evening sublime—Ava [the intoxicating drink made from Piper methysticum], brook shaded by knotted deadly Ava: acrid poisonous, stimulating taste. Eat small bit, fear Missionary.

¹ "Unwittingly I was the means of my companions breaking one of their own laws and resolutions. I took with me a flask of spirits, which they could not resolve to refuse, but as often as they drank a little, they put their fingers before their mouths & uttered the word 'Missionary.'" *Diary*, p. 353.

Say prayers and grace, no compulsion.

Valley without breath of wind—unbroken Banana leaf—much rain during night.

[Nov.] 19th.

Returned by other road . . . only one place where rope was required.

Knife's edge, enormous precipices on each hand, men very strong, tattooed—recall picture of S. American forest—flowers round head, in the gloom of Bananas. Caught some fine Eel.

Enormous appetite at breakfast—mass of Bananas!! Fatiguing travelling so far—poising each step with greatest care.

[Nov.] 22nd.

Sunday—went down to Papiete in boat—Tahitian service—not much attention—appearance respectable—good singing, not euphonious sound—good Missionaries; never can believe what is heard.

Darwin had been reading all the controversial accounts of the effect of the missionaries on the Island;—Ellis' Polynesian Researches; Beechey; and Kotzebue. Probably there had been great argument in the *Beagle's* Mess-room on the subject, with FitzRoy as an extreme advocate of missionary activities. Darwin kept an open mind on the subject, and evidently found some of the current reports on the repressive severity of the missionaries quite untrue—"never can believe what is heard". In the *Diary* he says:—"I will not pretend to offer any opinion on this subject against men who have resided as many years as I have days in the Island."

Chapter 5

1836 AND AFTER

THERE IS no note-book for New Zealand; and on January 12th, 1836, they arrived at Port Jackson, Australia. The convict population was much on his mind, and he left the Australian shores without regret.

Jan. 16.

Too much Woodland, some fine trees, all peculiar, the vertical leaves singular effect.

Pretty birds, magnificent parrots—Party of black men, beautiful precision in throwing darts. Speak English, merry fellows . . . painted white like Fuegians. Not nearly so degraded a set as I expected; all clothed.

Black men see marks of Opossum's feet [their] chief food;—no home.

Mr. Browne, very sensible Scotchman, bad account of men, not reformation, or punishment; not happy but do not quarrel excepting when drunk, quite impossible to reform

80 convicts—no women—miserable although from scene ought to be happy.

Sheep-down—whole country one aspect; white coccoatoos, and crows—wild dogs tamed, copulate freely.

Cause of great precipice?

Jan. 23.

I do not perceive any difference in manners at the Inns from England.

[Jan.] 24th.

Ill in bed.

[Jan.] 25th.

Quiet driving rain: all still, dripping from eaves.

undulating woodland—horror of [being] lost in this mist—great contrast with former weather—Perhaps good for me¹

[Jan.] 27th.

Jobs. Comfort—nice girl—rain for three weeks [they said] greater elevation at the coast has thrown drainage into the interior.

The remaining note-book shows an increasing anxiety for home; his mind seems no longer intent on describing the immediate scene. In Mauritius some discussion of coral formation is a precursor of what was to occupy him so much.

April 1st.

Reef *very seldom* attached to shore. Frequently in bites—

¹ "It was a day for tedious reflection."

[diagram] I do not understand this. Corals very different out and inside reef. Perhaps whole reef elevated? Miserable quarrels between French and English. Hindoo convicts, most extraordinary white beards, black as negros, plenty of intellect. Prosperity of English Government, roads—contrast to Bourbon.

Then comes the last of the traveller's notes for purchases on arrival at some town, which town I cannot say, perhaps Cape Town. The item, "Spelling Dictionary", shows that he meant to use the leisure of the homeward voyage for writing up his notes, with the help of the often mentioned Bramah pens.

12 of the little Quires from the Captain—
 Drug—Tobacco—B Soap
 Dollars changed
 Inkstand, pencils, Blotting paper.
 Bramah pens, common do.
 German books—Spelling Dict.
 Taylor—bootmaker.
 Dentist
 Peppermint—Hops
 Carb. of soda—Laudanum—Lozenges
 $\frac{1}{2}$ oz. Tict Jem. Muriaticæ
 Lavender water & Truss
 Second Penknife.
 Tooth brushes—Pill boxes—Bramah pens.

Tuesday, May 31.

Arrived in evening Simon's Town, 2 or 3 white houses scattered along beach, backed by very barren wall of rocks. Wednesday morning, afternoon took gig for Capetown; pleasant drive, succulent plants, heaths, rather nice about Whyneberg, oaks, Scotch firs, shady lanes, white houses as from town dropped in Country, but always close to road. Nice houses; country naturally very barren, great flat with solitary houses as on the Pampas, separating mountains from inland mountains.
 Arrived after dark.

June 2nd.

Wandered and rode about town—lodging houses, Churches, Streets with trees, squares, parade, backed by the really very splendid wall and the well-known Table Mountain. Waggon most extraordinary feature, 18 bullocks, like a field of cattle, all caught; 6 and 8 in hand horses and mules—Quite English town—about 15,000 in town.

June 4th.

Started on a short ride of four days; first to the Paarl, sandy flat, and hills with thin pasture, many small flowers Orchis like *M. Video*. Solitary white houses, like in Pampas, more tidy. Evening arrived at sort of boarding house.

Ascended splendid round granite hills behind village—row of all tidy white houses, gardens, avenues of small oaks, and many vineyards; general colour brownish green, no trees, pretty well watered. Table Mountain very level over flat. Western mountain reddish and grey, not fine forms, 3-4000 ft. Extraordinary fissures and *boulders* of granite—caverns beneath.

Sunday, [June] 5th.

Across pass of French Hoeck, considerable work. Grumble at the toll bar. The Dutch hospitable but not like the English. Emancipation not popular to any people, but will answer.

Valley something like Wales—wild valley, white quartz, green grass, no trees—solitary. Comfortable, Mr. Holm's house. Toll bar.

[June] 6th.

I saw the E & W ranges South of Caledon; the mountains in the curved road to Palmiet river is a perfect chaos;—country very desolate, solitary, mountainous, few animals, farm houses in valleys, no trees, wild deer, large white vultures like Condors.

When we arrived in evening at Mr. Gadney's found party of five men, Boers, runaway rascals, spirited fellows. Long guns, leathern breeches, poor horses. Gray, rocky, tame mountains, most monotonous ride.

[June] 7th.

Sir Lowry Cole's Pass, fine cut, hot wind, gale from N.

In Cape Town he became acquainted with Sir J. Herschel, and talked geology to Dr. S. Smith who accompanied him on some geological walks.

The next port of call was St. Helena.

[June] 8th.

Arrived in morning—rock wall round Island. Volcanic . . . harbourless, thinly stratified. Fortresses mingled with rocks. Small town, little flat valley, not magnificent forts.

Walked up Ladder Hill—curious. Walked to high Knoll Castle, or Telegraph: very picturesque at a distance, like old Welsh castle, wonderful contrast, decomposed, humid rocks, green vegetation, from rocks of coast. Fine scenery, fir grows, pretty because not confined. Every patch of ground cultivated, little white houses placed in most marvellous positions, deep valleys, and naked pinnacles. All talk English—very poor the poor appear.

Saturday, [June] 9th.

Obtained lodgings in country in centre of Isd. stone's throw of Nap[oleon]'s grave. No romance, cottage and road close by, and bombast and nonsense—Sublime and ridiculous. Mist and wretched cold—nice cottage.

Sunday.

Things improved—hired guide, 55 years old. Feet like iron, Mulatto so many times crossed that [he] has not disagreeable look. Quiet very civil old man, was slave, has £40 to pay for freedom: How is this? Walked to Flagstaff above race [?] course, elevated plain. Passed long wood, cultivated fields, rather, but not very bleak.

Gentleman's houses; hovel where he [Napoleon] really lived and died very poor. I took shelter during heavy rain—walls scored with names of seamen and Merchant Captains. It appeared degradation—like profaning old Castle.

Green plain, short thin grass, few Syngenesia trees. Great red and white hills called Flagstaff and great black barn. Even Govt. path blockaded. Such wild little spots, old picket houses—wild arid villages.

Monday.

Walk down to Prosperous Bay, passed Guard House and

fort—2 soldiers—2 *invalids*; at old Telegraph House—appears to me absurd, wonderfully protected and guarded. Returned across very pretty valley, fir woods, yellow flowering gorze, willow trees and little brooks; cottages and small white houses and green rocky hills.

There follows a small diagram illustrating a curious fact about the action of the wind to a man on the edge of a cliff; a fact he must have demonstrated to his own children. I remember my Father taking us to the edge of a Yorkshire cliff, when a strong off-sea wind was blowing, and making us notice that it was calm and windless at the verge. But put a hand over the edge of the cliff, and the full force of the gale was felt, as shown by the little man in the diagram. So I was glad to know that this wind game originated on the black cliffs of St. Helena. The *Beagle* then took a course for home, touching once again at the S. American coast owing to bad weather. But the entries are few—and his time was taken up with his notes.

Aug. 12. Pernambuco.

Arrived Friday, bad passage, heavy rains, winds Easterly . . . walked through town, filthy narrow streets, tall houses, prisons, built on mere sand-banks gained from sea, connected by broad wooden bridge. Population of black & brown. Filthy old hags of Nuns.

Sept.

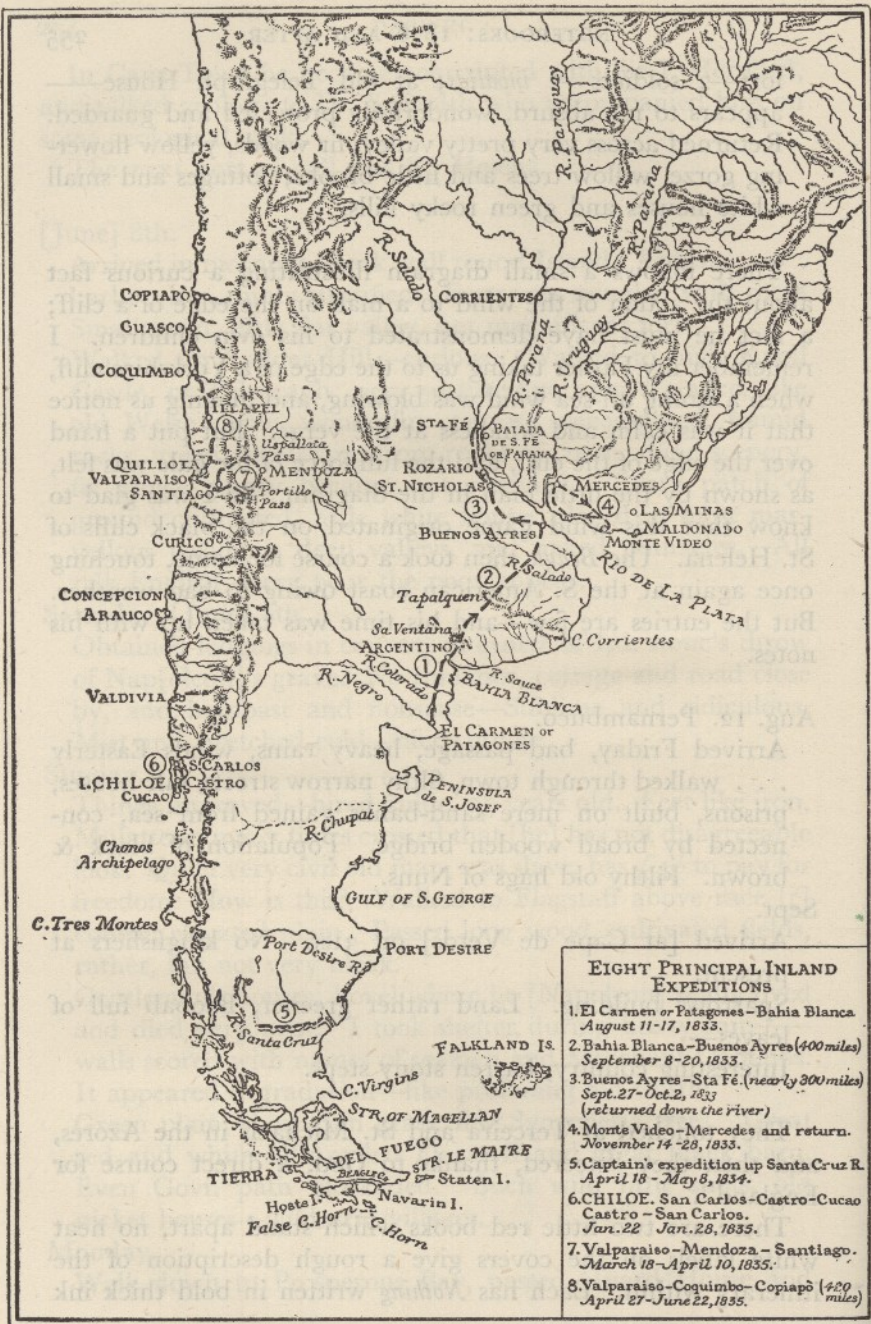
Arrived [at Cape de Verds] on 31st. No kingfishers at present.

Sparrows building. Land rather greener, Baobab full of leaves—

Interesting country, barren stony steps.

They touched at Terceira and St. Michaels in the Azores, and then they “steered, thanks to God, a direct course for England”.

There are two little red books which stand apart, no neat white labels on the covers give a rough description of the itinerary within. Each has *Nothing* written in bold thick ink



SOUTHERN PORTION OF SOUTH AMERICA

on the red leather; to one is added *St. Helena Model*, and there is no doubt from the contents that it was first used near the end of the voyage, and deals with the geology of St. Helena, Ascension and Cape de Verds Islands, the latter reviewed after an absence of over four and a half years. But the interest lies in the odd notes with which it is largely filled, which form a clear pointer showing the direction his thoughts were trending. Some of them must have been written after his return to England; there is a reference to "Lyell, Geograph. Journal, 1839". The little note-books still were carried in his pocket after two years ashore, and received his jottings—memoranda for the next geological meeting—and the more domestic memoranda and details of possible houses to purchase.

For in the end of 1838 he was engaged in house-hunting in London and the little note-book labelled "*St. Helena Model*" also contains the scribbled notes of the householder-to-be, anxiously choosing the home for himself and his wife Emma Wedgwood. The notes ring sadly today, when few of these walls are left standing. Certainly 12 Upper Gower Street, the house finally selected, where he lived for the first years of his married life, is gone, though the jagged wall with the plaque commemorating the fact that Charles Darwin lived here, remained as a ruin for months before final demolition.

Mr. Fuller, 8 Albany Place, Regents Park £200

Albany St. £70 per annum—No: 161 £100 premium.

Another further up this street £80. Montague Place house—

Keppel St, furnished, 1 Bernard St. Russell Square.

12 Upper Gower St.—Furnished or unfurnished—must be latter—

Furniture at valuation—Pearsall & Jordan: £100 year with *Stables* 4 years. (will hear on Tuesday from France)

Gordon Square 40, built this year—20 Woburn Square, rather nice house. Tavistock Sq. 2 houses from Mr. [?]

new house, belonging to Cubitt.

He wrote to Emma: "Houses are very scarce, and the landlords are all gone mad, they ask such prices"—but after much discussion they decided on the heart of London whilst his work

as Secretary of the Geological Society kept him tied, and to forego the "pleasures of the country (gardens, walks, etc.)". They must have decided on "Furniture at valuation" for the notes in another part of the little book continue, in between jottings on Volcanic dust and the skeletons of Pigeons:—

Remnant of carpets, mat for Hall.

Windows cleaned. Staircase cover washed; walls cleaned, white curtains washed. Two easy chairs, Blinds in Red Rooms washed.

Muslin in all to be washed.

Common table and second washstand.

How easy it all sounds to the harassed house-hunter of today! The little book must have been pushed across the table at a meeting of the Geological Society to Lyell. There is the query in ink:—

May I quote your statement about steep shores deep beneath water?

Find out about cliffs on banks of rivers—

Do rivers continue deep a little way above tidal action?

There are sundry reminders:—

Tell Lyell of Desnoyers Paper.

Tell Mr. Owen of Caout-chouk to stop bottle.

There are some admirable Tables of Distribution of Reptiles of S. America [del] world—de Buffon.

Ear doctor.

Stewart about the payment of the 100 guineas for Gould [for the drawings in his Ornithology of the Voyage]

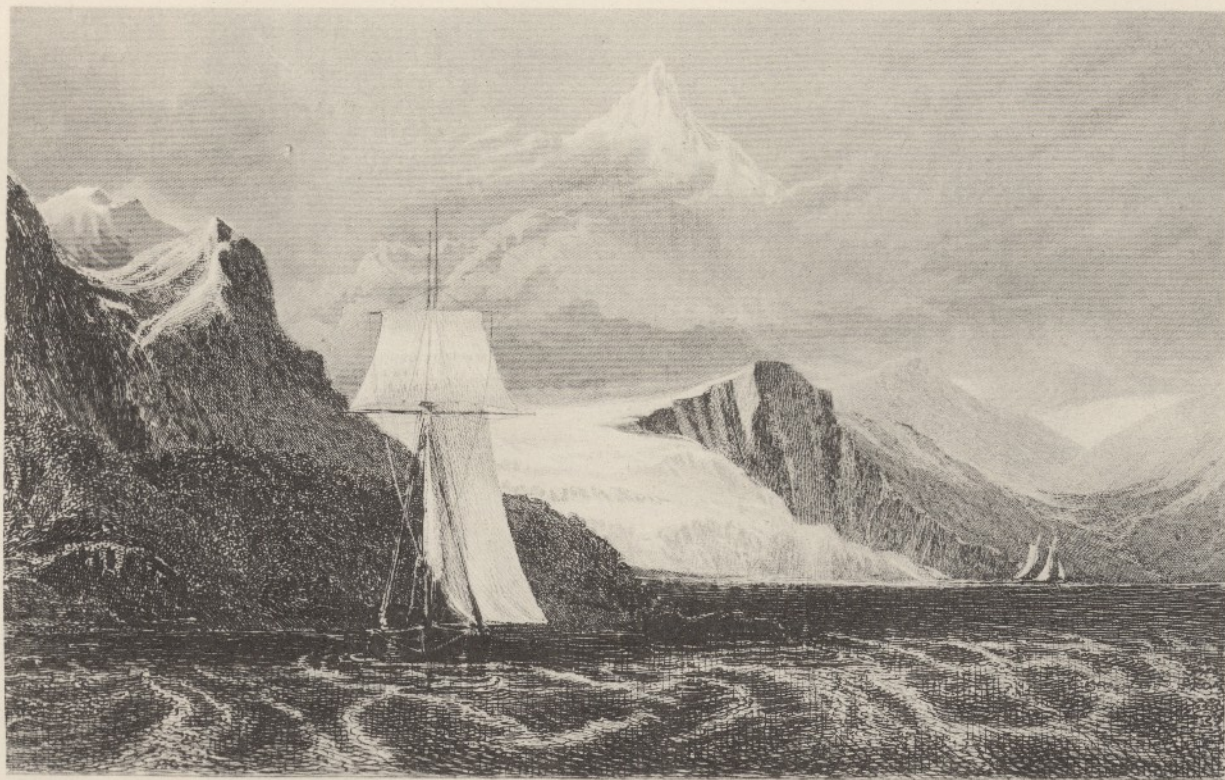
Gould drawing of Ostrich.

The remaining notes deal with jottings more directly concerned with his work on the origin of species. Here are the first enquiries into some biological problems since rendered familiar and famous in the work to be published 20 years later—these memoranda give an idea of the number of questions



[Photo.: J. Rhodes

Darwin's house in Gower Street after the bombing in the
Spring of 1941



Mount Sarmiento

that he had to follow up; of the number of people and books to be consulted after his return.

Eyton; Waterhouse thinks grey with black bars cat different spec. from small tortoise-shell cat. Skeletons. Do get shepherd's tail—Sullivan, get head of ox called "*Nata*".¹

History of cross breeds—

Dr. Smith—Sharks teeth, Navedad, Chile.

will examine them hereafter.

Major Mitchell; height of escarpment of Blue Mountains and hybrid dogs—foxes [del] dogs breed.

Do Australian dogs hunt in packs?

There are very early gropings towards the laws of Variation, which even at this date he knew to be the ultimate keystone to species formation—"There must be laws of variation—chance would never produce Varieties."

Hybridization already occupied him; and the query "Whether litters of true hybrids are heterogamous or homogamous" shows that the question asked by any Mendelian experiment was already in his mind, but the clue of segregation which would have delighted him, was to come too late.

Woods Esque.

Henrietta St. Bath would probably answer letter and give information about tailless breed of cats (origin?) near Malmesbury Head??

Wiltshire sheep with teeth pushing each other out.

Plants from Henslow.

Sullivan about English weeds—Fennel, Sow thistle.

Ask Fox to experiment on Frogs spawn and to procure eggs of Sand snail for me—

Pintail and Common Duck to get some half breeds.

Cross between black grouse and Ptarmigan.

Pheasant and form in wild—where species decreasing

¹ This race of Cattle, seen during the voyage at La Plata, was a breed corresponding in head structure to the Pug or bull-dog, with shortened upper jaw and projecting lower jaw. Sullivan was able to procure the skeleton head which was deposited in the Museum of the Royal College of Surgeons. A fuller account is given in *Animals and Plants Under Domestication*.

Caparcaltzie—Black grouse and sub-alpine
 Mr. Yarrell—1763 has book History of Pidgeons.
 Treatise on Domestic Pidgeons—very curious in comparison
 for time—Mr. Yarrel has recent comparison.
 Has Rock Pidgeon specks on shoulder, Pouters have specks.
 Have any new varieties of Pidgeons been established?
 There must be laws of Variation—chance never would pro-
 duce Varieties—

cat without legs?

Wild dogs on West coast see 1st Vol. Geograph Journal.

Fern of Australia being found in India

Ask directions about good lens in Paris.

Whether litters of true hybrids are heterogamous or homoga-
 mous.

Is there any relation between boss of Indian Cattle and
 structure Bison etc.

Analyse this in all cases—whether variation assumes char-
 acters altered to specific ones in same genus—[?]

Write to Sullivan to enquire about wild dogs of the Pampas—
 Have they long ears and what colour?

Do male animals lose passion from breeding in and in?

How many generations was this affected in case of Bantam—
 and Polish Cord[?]
 —Pidgeons: how many generations old on
 an average—

Vertebra of Indian cattle—Eyton—dissect skeletons—Pid-
 geons.

The final note-book, like the last, is a medley of varying date
 and content. A few entries on the islands of Ascension and St.
 Helena, and quotations from talks with Sir A. Smith and Sir J.
 Herschel, both of whom he met at the Cape of Good Hope,
 fix the period at any rate for most of the entries as written
 during the last months of the voyage.

Ascension, vegetation? Rats and Mice: at St. Helena there
 is a native Mouse.

He quotes from recent reading and begins a draft of a
 Geological paper, presumably in the leisure of the slow days
 failing home across the Atlantic.

In a Preface it might be well to urge Geologists to compare whole history of Europe with America; I must add I have drawn all my illustrations from America, purposely to show what facts can be supported from that part of the Globe; and when we see conclusions substantiated over S. America and Europe, we may believe them applicable to the world.

Here is a certainty of touch and an assurance, in great contrast to the baffled uncertainty of the first years. The structure of the earth becomes a coherent whole and vast distances of time and space are included in his view; he can compare "the older strata at Hobart Town and the bottom of the sea near T. del Fuego." Half the world lies unfolded before him after nearly five years of closest scrutiny and honest recognition of discrepancies and unanswered doubts. But the new assurance never prevented him from posing fresh questions, or from acknowledging fresh ignorance.

If great change of climate has happened, hurricane in bowels of earth cause:—does not explain cleavage lines.

Still he brings any new detailed observation to bear on the older riddles. Each stage of the voyage helps to fill in the whole picture.

I feel no doubt respecting the brecciated white stone of Chiloe, after having examined the changes of pumice at Ascension—

The hypothesis had to wait eighteen months for confirmation. He is exercised over the oscillations of the Surface of the Globe and the viscid nucleus beneath. He wants to experiment:—

Try on globe, with slip paper a gradually curved enlargement, see its increased length which will represent the dilation which dilated cracks must be filled up by dikes and mountain chains—

Consult, reconsult Geolog. map of Europe.

There are notes on many geological books, and references to the views of others. He can even criticise Lyell's opinions:—

Mr. Lyell seems to consider that successive terraces mark as many distinct elevations; hence it would appear he has not fully considered the subject.

S. America in the form of the land decidedly bears the stamp of recent elevation—which is different from what Mr. Lyell supposes:

Read Geology of N. America, India,—and remembering S. Africa, Australia and Oceanic Isles. Geology of whole world will turn out simple.

Fortunate for this science that Europe was its birth place—Some general reflections might be introduced on great size of ocean—will Geology ever succeed in showing a direct relation of a part of globe rising, when another falls:—when discussion connection of Pacific and S. America, Volcanos must be considered as chemical retorts—

Earthquake part of necessary process of terrestrial renovation—and so is Volcano a useful chemical instrument. Yet, neglecting these final causes, what more awful scourges to Mankind than the Volcano and Earthquake.—Earthquakes act as ploughs, Volcanos as Marl-pits.

After so much purely geological speculation and drafting for future publication he turned to the biological problems that were more and more claiming him. Geographical distribution and its effect on species formation was gaining ground in his mind, and had guided his biological observations towards the end of the voyage. But it was only on the last lap, sailing home after nearly five years, that he began to collect and compare the facts in a written form. It needed a great scientific imagination to set the problem; and the same imagination together with balanced sincerity of judgment to find the answer. At the end of the voyage he was still seeking precision in posing his questions; the processes of his mind are revealed in the notes on the species question. The natural limitations in time and space of *Natural Species* had haunted him; he had watched the changes of each species with its change of geographical

range. Now he must generalise from all this accumulation of fact.

Go steadily through all the limits of birds and animals in S. America.

Zorilla; wide limit of waders; Ascension: Keeling: At sea so commonly seen at long distances:

New Zealand rats offering in the history of rats, in the Antipodes a parallel case.

Speculate on neutral ground for 2 Ostriches: bigger one encroaches on smaller;—change not progressive; produced at one blow, if one species altered. Mem: my idea of Volcanic islands elevated, then peculiar plants created, if for such mere points, then any mountain, one is falsely less surprised at new creation for large [areas]—Australia—If for volc. islands then for any spot of land.—Yet new creation affected by Halo of neighbouring continent: as if any creation taking place over certain area must have peculiar character¹

Great contrast of two sides of Cordillera; where climate similar. I do not know botanically—but picturesquely.

Should urge that extinct Llama owed its death not to change of circumstances; reversed argument, knowing it to be a desert. Tempted to believe animals created for definite time:—not extinguished by change of circumstances.

The same kind of relation that common ostrich bears to Petisse—[S. Darwinii] and diff. kinds of extinct Guanaco to recent. In former case position, in latter time (or changes consequent on lapse), being the relation, as in first cases distinct species inosculate² so must we believe ancient ones [did] ∴ not *gradual* change or degeneration from circumstances, if one species does change into another it must be per saltum—or species may perish. This representation of species important, each its own limit and represented. Chiloe creeper; Fournarius, Callandria. Inosculatation alone shows not gradation.

Propagation, whether ordinary hermaphrodite, or by cutting

¹ See discussion of the two spp. of Ostrich (Struthio Rhea and S. Darwinii), the *Journal*, p. 92.

² O.D. inosculate. To pass into; to join or unite so as to become continuous; to blend.

an animal in two (gemmae parous by nature or by accident) we see an individual divided either at one moment or through lapse of ages. Therefore we are not so much surprised at seeing Zoophyte producing distinct animals, still partly united, & egg which becomes quite separate. Considering all individuals of all species as each one individual divided by different methods, associated life only adds one other method where the division is not perfect.

Dogs, Cats, Horses, Cattle, Goat, Asses, have all run wild and bred, no doubt with perfect success. Showing how creation does not bear upon solely adaptation of animals. Extinction in same manner may not depend. There is no more wonder in extinction of species than of individual.

When we see Avestruz [the Petisse or smaller Ostrich, *Struthio Darwinii*] two species certainly different, not insensible change; yet one is urged to look to common parent? Why should two of the most closely allied species occur in same country? In botany instances diametrically opposite have been instanced—

Here are gropings towards cohesion and comprehension in the species questions, very much in the same stage as were his geological gropings of four or five years earlier. The facts stand out, the questions are put, but nothing quite makes sense. We can see the mill at work, grinding out hypotheses. In geology, a certainty, and some completion had been reached. In biological fields the throes of question and doubt, of comparison of masses of facts, of discardings and reviewing, were still to continue for 23 years before the Theory of Evolution as we know it, found expression.

There are a few odd queries that fit into no category; showing that "enlarged curiosity" which his Uncle Josiah Wedgwood recognised, and knew would find opportunity in the voyage.

Miss Martineau—¹: Charity everywhere. I doubted it at first. Byron and the Fuegian woman. Have any other associated animals charity? Cows not. Wild cattle? Porpoise?

¹ Miss Harriet Martineau, the friend of Erasmus, and writer. See Letter 38.

How utterly incomprehensible that if meteoric stones simply pitched from moon, that the metals should be those which have magnetic properties.

Puncture one animal with recent dead body of other, and see if same effect as with man.

Does Indian rubber and Black lead unite chemically like grease and mercury?

Two sets of three note-books each sewn together with string, form the catalogue of the specimens he sent home. One set included 1,529 specimens all in spirits of wine—fishes, insects, sea-weeds, fungi, spiders, plants, corallines, reptiles, etc., each listed with a number as it was put into the bottle—and therefore in chronological order. Even in these dry lists a spark of original observation cannot help creeping in.

646

As the animal is supposed to be the wild Guinea pig, it would be interesting to compare their parasites with those inhabiting an European individual, to observe whether they have been altered by transportation and domestication.

It would be curious to make analagous observation with respect to various tribes of man.

794

The Cactus from Port Desire. The stamens when touched collapsed rapidly and with force on the pistol; as also did the petals, but in a less sudden manner.

The observations on plants are very few in the *Beagle* papers; but this entry shows that the movements of special organs in plants and the adaptations for fertilization were already claiming his attention. One gets the strong impression that in these years plants were less important to him than any other form of life, whilst all biological problems were dimmed by the urgency of the geological problems. Yet in later life six of his major works were on purely botanical subjects.

The oddities of collecting are noted; and he never omits any telling characteristic trait in bird or beast; even in this mere list he notes that a special Lizard was caught in a trap *with cheese*; and of a very fierce fish, immediately on seeing any person, opens its mouth, and will even spring out of water.

The second set of three notebooks has *Printed Numbers* on the covers; they are again bound together with string, and comprise a mixed bag of bird, beast and plant life.

207

Spider out of Cathedral at Ribera Grande.

353

Cimex drove its proboscis deep into my finger.

458

Geotropes; collect human dung into balls and push it along with hind legs.

536, 537.

I observed this insect carrying a large green caterpillar and watched it to the cell (537); when with its mandible by degrees it forced the caterpillar inside.

703.

This beetle seems to live on the dung of Ostriches. I saw one busily employed in pushing along a piece with its pointed horns.

756.

I saw at the cliffs of Mt. Hermosa a flock of these birds pursuing each other and screaming much in the same manner as the English Swift, in its characters it seems also to approximate to it; how frequently does structure and even trifling habits go together.

815.

[Deer] Common inhabitation the sandy plain, often in small herds; they are very curious and if the sportsman remains in a crouching position they will approach close to reconnoitre, It is curious to observe how much more afraid of a man on horseback than on foot; every person in this country riding; so totally the reverse of what happened amongst English deer. Crawling position will also attract Guanaco: they will advance neighing to reconnoitre a person in that position.

He noted a currant bush, scurvy grass and celery, all growing near the Fuegian wigwams, though never mentions their use by the natives—the celery, he added, has a very good flavour when boiled in soups, etc.

127.

Whether this is distinct species or domestic cat run wild I know not. It was much larger and stronger and more regularly coloured. It would be interesting to compare it with the aboriginal of the Domestic cat if they are the same species.

1782.

This bird is a complete diver in its habits; frequents quiet deep inland seas; flight direct, rapid—drops from the air, and instantly, like a stone, dives far and long; rises to the surface and will then instantly take to the wing. This is when frightened. Generally quietly swimming and diving after its prey. Common in the Beagle Channel. In the evening often flying in direct line from place to place.

1819

Gloomiest recesses of the forest, generally high up amongst the trees. Constantly uttering plaintive whistle in same tone; very difficult to be seen or found, as the noise seems to come from no particular spot or place or distance.

1921.

[E. Falklands] Mouse, caught far from houses, $\frac{3}{4}$ of mile in grassy bank. English? if so curious change from ship to such a country.

1947.

Interesting to Geologists; 10 Fathoms water, 3 miles from shore, where most rapid tides, yet living corallines possessed most delicate spines, showing how little pebbles are moved at the bottom.

2011.

Lanius, called Callandria, sings very prettily amongst the spiny bushes.

Now, after more than a century's oblivion, the twenty-four

little travel-worn pocket-books return to their permanent home:—the home of Darwin himself for forty years of his married life. There at Down House in Kent, they must have been stored with all the other *Beagle* documents; and there they will again be housed under the care of their present owners, the British Association. Not this time in the oblivion of the cupboard under the stairs, where so many of the papers were thrust; but in the show-cases, where with the return of peace, they will again be on view.

Darwin would have looked on with amused wonder at the homage paid to him. He would say he had made the most of a wonderful chance. "What fine opportunities for geology and for studying the infinite host of living beings!—If I was to throw it away, I don't think I should ever rest quiet in my grave. I certainly should be a ghost and haunt the British Museum."

GLOSSARY

Including the Latin names of some of the species and geological terms mentioned in the note-books, and the Spanish South American names and words used.

Molina in brackets after a definition indicates that the explanation has been found in *The Geographical, Natural and Civil History of Chili*, translated from the original of Don J. Ignatius Molina, 1809. Italian edition, 1787.

Neuman in brackets refers to Neuman's *Spanish-English Dictionary*, where some of the Spanish words were to be found.

| | |
|-------------------------|---|
| ALECTURUS | ? Alectorurus; an American species of bird, somewhat resembling a wagtail. |
| ALOJAMENTE | Lodging, or steerage in a ship. (Neuman.) |
| AMPHIBOLIC | Of the nature of the mineral hornblende. |
| AMPULLARIA | Tropical water-snail. |
| APERIA, OR APEREA | <i>Cavia aperca</i> , the Brazilian cavy. The Guinea pig and the Capybara are the chief representatives of this genus of S. American rodent. |
| APHODIA | Possibly <i>Aphodius</i> , a species of beetle. |
| ARDEA | Latin name for the heron. |
| ASADO | Burnt or roast. |
| AUGITIC | Of the nature of augite, one of the aluminous varieties of the mineral Pyroxene, occurring mostly in the volcanic rocks. |
| AVESTRUZ PETISE | The ostrich of Patagonia, <i>Struthio Darwinii</i> . |
| BALANUS | Shell of the order Thyrostraca; one of the barnacles. See Darwin's Monograph of the Cirripedia. |
| BARRANCA | A deep break or hole made by mountain floods or heavy rains. (Neuman.) Commonly used as a steep bank or ravine. |
| B B BIRD | Bahia Blanca bird, the Casarita, a species of <i>Furnarius</i> , smaller than the Oven-bird, and building a totally different type of nest in walls or banks. |
| BIZACHA, OR VISCACHE | <i>Lagostomus trichodactylus</i> : resembles a large rabbit, but with bigger gnawing teeth and a long tail and three toes behind like the Agouti. |

| | |
|---------------------------|--|
| BLATTA | The cockroach. |
| BOCA | Mouth (of a river). |
| BOLAS | Balls attached to a thong of leather which the Gauchos of S. America use with a whirling motion for catching game or cattle. |
| BRECCIA | A composite rock consisting of angular fragments of stone, etc., cemented together by some matrix such as lime: sometimes opposed to conglomerate in which the fragments are rounded or waterworn. |
| BULIMUS | Snail-like shell. |
| CALLANDRIA | The local name for <i>Mimus Orpheus</i> , the Mocking-bird. |
| CAPINCHA, or CARPINCHO | <i>Hydrocharis Capybara</i> , the largest rodent, allied to the cavies, and like a large aquatic guinea-pig. |
| CARACARA | Large carrion-feeding hawk of the genus <i>Polyborus</i> . |
| CARRANCHA | The carrion vulture, the largest species of <i>Polyborus</i> . But in the note-books also used for a smaller bird on the twigs, "enlivening <i>Traversia</i> ". |
| CASARA, CASARITA | Two spp. of <i>Furnarius</i> ; the larger is the Oven-bird; the lesser is <i>F. Cunicularis</i> , the often-mentioned B B bird, q.v. |
| CASSIGUS | Bird of the <i>Icteridæ</i> , a species of Oriole. |
| CASUCHA | Round little towers formerly used as store-houses by the Indians, with raised floors. (Neuman.) |
| CERTHIA, CERTHIDÆ | Birds of the tree-creeper family. |
| CHASQUI | Post-boy or foot messenger. (Neuman.) |
| CHIMANGO | <i>Polyborus Chimango</i> , one of the carrion-hawks, smaller than the Carrancha. |
| CHINA | Indian women. |
| CHEUQUE | Local name for the ostrich. |
| CHUSO | Indian spear. |
| CLYTIA | Hydroid; allied to the jelly-fish. |
| COLUBER | Snake. |
| COMADRAGA | ? <i>Comadreja</i> , the weasel. (Neuman.) |
| COPROPHAGOUS | Feeding upon dung, especially of beetles. |
| COYPU | Nutria (Molina). <i>Mus Coypu</i> . |
| CUERVO | The Raven. (Neuman.) |
| CUJA | <i>Mustela cuja</i> , a rodent the size of a ferret. |
| CULEU | <i>Canis culpæus</i> , a dog-like fox. |

- CUREU Turdus cureus, a species of thrush.
- CUY Lepus lepidus, a small rabbit.
- DIOMEDIA,
DIOMEDEA The largest of the petrels, the albatross.
- DONAX Marine bi-valve mollusc.
- EMBERIZA Birds of the bunting family.
- EPEIRA A spider.
- ESTANCIA Landed property. (Neuman.)
- FACENDA,
FACIENDA, or
FAZENDA Brazilian estancia. (Neuman.) Estate.
- FELDSPAR A name given to a group of minerals usually white or flesh in colour occurring in crystals or crystalline masses. (O.E.D.)
- FRINGILLA Birds of the finch family.
- FURNARIUS The often-mentioned B B bird, q.v.
- GAUCHO Of the S. American Pampas, a mixed European and Indian race of equestrian herdsmen. (Tylor, Primitive Culture.)
- GNEISS Metamorphic rock distinguished from granite by its foliated or laminated structure.
- GREYWACKE A conglomerate or grit rock consisting of rounded pebbles and sand firmly united together. (O.E.D.)
- GUANACO S. American lama.
- ICTERUS,
ICTERIDÆ Birds of the oriole family.
- JACANA The water-hen.
- JOTO The vulture.
- JULUS Species of millipede.
- LACERTA Latin name for the lizard.
- LACHUZOAS ? Lechuza, an owl. (Neuman.)
- LAZO A noose on the end of a long rope attached to the Gaucho's saddle, by which he catches his intended prey.
- LOYCA Local name for the starling. (Neuman.)

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| LYCOSA | Genus of spider. |
| MACTRA | Marine bi-valve Mollusc. |
| MATACO | Species of armadillo, the Apar. |
| MEDANO | Neuman gives Médana y Medaño, meaning sand-banks on the seashore. |
| MIL REYS | The local currency. |
| MITRA | Fossil shell. |
| MUREX | Gastropod Mollusc. |
| MYTILUS | Bi-valve shell. |
| NEBALIA | ? Nebularia, a shell of the family Mitridæ. |
| OTIS | The bustard. |
| PALUDO, PELUDO | The local name for a species of Armadillo, <i>Dasyopus villosus</i> . |
| PARUS | Birds of the Paridæ or tit family. |
| PEECHY, PICHI, and various other spellings | Local name for the Armadillo, <i>Dasyopus minutus</i> . |
| PEON | Pedestrian, labourer, foot soldier. (Neuman.) |
| PEQUEU | Owl. (Neuman.) |
| PICARO | Crafty, sly, merry, gay. (Neuman.) |
| PICUS | Latin name for the woodpeckers. |
| PICHI | See Peechey. |
| PILLU | The Ibis. |
| PITIU | Small wood-pecker. (Molina.) |
| PLANORBIS | Gastropod shell. |
| PORCELLANA | Gastropod shell. |
| PTERU-PTERU | See Teru-tero. |
| PUCGINEA | Small fungus; some of our rusts and mildews belong to this genus. |
| PUDA | Wild goat or deer of Chiloe. |
| PULPERIA | Chandler's shop where all sorts of provisions are sold. (Neuman.) |
| PYURA | A Mollusc. |
| RANA | Latin name for the frog. |
| RASTRO | Track on the ground. (Neuman.) |

- RIACHO Narrow arm of a river.
- SCOLAPUS ? Scolopax, the red-shank.
- STURNUS The starling.
- TAPACOLA, or
TAPACULO This bird and the larger Turco belong to a small family, the Pteroptochidæ, peculiar to S. America. The word Tapaculo, derived from the Spanish, means "cover your posterior" because of the absurd way the bird carries its tail. See *Journal of Researches*, Chap. XII, p. 270.
- TAUPES,
TALPE Probably *Ctenomys Braziliensis*, which Darwin describes "as a Rodent with the habits of a mole".
- TORO-TORO See Taupe.
- TERU-TERO, or
PTERU-PTERU *Vanellus cayanus*, a bird allied to our Lapwing, its wings armed with sharp spurs.
- TOSCA A soft dark brown limestone occurring embedded and sometimes stratified in the surface formation of the Pampas. (O.E.D.) A local name from the Spanish toscó, rough, coarse.
- TUCUTUCU See Taupe.
- TRAVERSIA Passage, road, distance. (Neuman.)
- TROCHILUS The Humming-bird.
- TURBO Gastropod shell.
- TURCO See Tapacola.
- TURDUS Birds of the thrush family. *Turdus thenca*, the Galapagos thrush.
- VENTA A poor inn on roads far from town or villages. (Neuman.)
- YERBA Garden stuff, vegetables, pasture, herbs. (Neuman.)
- YERGA Cloths woven of wool by Indian women.
- ZORILLA The skunk.

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